

Final

**Site-Specific Work Plan Addendum
3X Scrap Removal**

**Training Area T-38
Former Technical Escort Reaction Area, Parcel 186(6)
Training Area T-24A
Former Chemical Munitions Disposal Area, Parcel 187(7)**

Fort McClellan, Calhoun County, Alabama

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, Alabama 36602**

Prepared by:

**Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923**

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Table of Contents

	Page
List of Tables	ii
1.0 Introduction.....	1-1
2.0 Field Activities.....	2-1
3.0 Cylinder Sampling, Decommissioning, and Disposal.....	3-1
3.1 Cylinder Sampling.....	3-1
3.2 Decommissioning and Disposal	3-3
4.0 Health and Safety	4-1
4.1 Cylinder Sampling Operations	4-1
4.2 T-38 Scrap Removal.....	4-1
4.3 Personnel Decontamination.....	4-2
4.4 Personal Protective Equipment.....	4-2
4.5 Activity Hazard Analysis	4-3
5.0 UXO Construction Support.....	5-1
6.0 Schedule	6-1
7.0 References.....	7-1

Attachment 1 – Revised Probability Assessment for 3X Scrap Removal at Training Area T-38
Request for Exception, Department of the Army, May 17, 2004
Response to CEHNC Comments

Attachment 2 – Variances to Site-Specific Work Plan, October 2003

Attachment 3 – Health and Safety Plan for Cylinder Sampling Operations

List of Tables

Table	Title	Follows Page
2-1	Variances to Final Site-Specific Work Plan	2-1
4-1	Activity Hazard Analysis for Soil Screening	4-3

1.0 Introduction

In accordance with Contract Number DACA21-96-D-0018, Task Order CK10, Shaw Environmental, Inc. (Shaw) will complete 3X scrap removal activities at Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) at Fort McClellan (FTMC), Alabama. Shaw will perform this work under the direction of the U.S. Army Corps of Engineers (USACE), Mobile District. This plan serves as an addendum to the *Final Site-Specific Work Plan, 3X Scrap Removal: Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) and Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7), Fort McClellan, Calhoun County, Alabama* issued October 2003.

On November 21, 2003, while excavating 3X scrap materials at Training Area T-38 (anomaly number T38-13), a Chemical Agent Identification Set (CAIS) ampoule was discovered. The CAIS item was structurally intact and contained fluid. The item was monitored for chemical agent however none were detected. Because the CAIS item potentially contained chemical agent and therefore was potentially harmful, all work was halted, the site was evacuated and a 450 ft. exclusion area was established upwind. Responsible parties were notified and the site was placed under 24-hour security. Work at T-38 was suspended until a probability assessment could be performed that evaluates the occurrence risk of an accident involving chemical agent contaminated media (CACM).

Shaw proceeded with the 3X scrap removal activities at Training Area T-24A in early December of 2003. On January 19, 2004 a Department of Transportation (DOT) style compressed gas cylinder was excavated from anomaly number T24-10. The cylinder was X-rayed and determined to contain a small amount of an unknown liquid. The unmarked and unlabeled cylinder was placed in an overpack drum and set aside for later handling and disposition. The remainder of the excavation and hot-boxing work at T-24 was successfully completed. On February 25, 2004, 16 boxes of 3X scrap material were shipped off site to EBV Explosives of Joplin, Missouri. The 3X scrap material was subjected to thermal treatment; the material was reclassified as 5X indicating that it had been completely decontaminated and could be released for general use.

Authorization. Fort McClellan (FTMC) concluded that the probability of encountering additional chemical agent at Training Area T-38 remained “remote” and again assumed the risk of conducting the remaining activities as a non-chemical warfare material (CWM) site (see

Revised Probability Assessment in Attachment 1). In addition, the Department of the Army issued a memorandum that will allow FTMC to proceed and to manage the removal of 3X material at T-38 as a hazardous toxic waste response action (see letter dated May 17, 2004 in Attachment 1). This exception was granted subject to the following:

- Should additional CWM items be discovered, operations will stop, a chemical event report will be submitted, and a determination will be made as to whether operations should revert to a CWM response.
- Depot area agent monitoring stations (DAAMS) will be emplaced close to the worksite to confirm agent detection. This monitoring strategy will work in consort with miniature continuous air monitoring (MINICAM) systems.
- Personnel trained in first aide related to chemical agent exposures will be on site during intrusive operations.

Objectives. The objectives of the remaining tasks required to complete the 3X scrap removal are the subject of this work plan addendum. They are:

- Complete the excavation, monitoring, identification and certification, packaging, transportation, thermal destruction, and disposal of 3X material at the T-38 anomalies,
- Sample, decommission, and dispose of the DOT cylinder that was previously discovered,
- Describe relevant health and safety procedures for the cylinder activities, and
- Review previously submitted variances to the Final Site-Specific Work Plan (SSWP).

To accomplish sampling, decommissioning, and disposal of the cylinder, the cylinder will be drilled and a sample retrieved and analyzed on site by QuickSilver Analytics, Inc. (QuickSilver). If it is confirmed that the material present inside the cylinder is non-CWM, the cylinder contents will be treated on site and the final material disposed of at a certified disposal facility. The cylinder sampling and decommissioning services will be provided by Integrated Environmental Services, Inc. (IES) of Atlanta.

2.0 Field Activities

The U.S. Army has determined that 3X scrap material consisting of CACM and munitions and explosives of concern (MEC) (previously defined as ordnance and explosives or [OE]) exists within two subsurface geophysical anomalies at T-38. These anomalies, identified as T-38-12 and T-38-13, are estimated to contain approximately 554 cubic yards of material. Shaw has estimated that approximately 1 percent is 3X material. The 3X material will be excavated, separated from the soil and debris, sorted, packaged and shipped to an off-site disposal facility for thermal decontamination to 5X standards. The work at T-38 will be performed following the Final SSWP, October 2003. A detailed figure of the T-38 area showing the site layout is located in the SSWP as Figure 2-1. Remaining operations will be staged as depicted in the figure. The following items are described in Sections 2-1 through 2.7 of the plan:

- 2.1 Introduction
- 2.2 Site Monitoring
- 2.3 Excavation of 3X Material
- 2.4 Monitoring and Identification of 3X Material
- 2.5 Certification and Verification of 3X and MEC Scrap
- 2.6 Packaging of 3X Material
- 2.7 Transportation and Disposal of 3X Scrap
- 2.8 Surveying
- 2.9 Investigation-Derived Waste.

A total of three variances to the final site-specific work plan of October 2003 were submitted during the performance of field activities. Table 2-1 lists these variances. Copies of the signed variances are included as Attachment 2.

Variance Number 1, dated November 14, 2003, allowed Shaw to place items, such as liquid-filled containers, into an overpack drum for future disposition. Variance Number 2, dated November 17, 2003, authorized the use of Level B personal protective equipment (PPE) to access DAAMS sampling equipment after a MINICAMS ring-off has occurred in the exclusion zone. Variance Number 3, dated February 5, 2004, amended the Unexploded Ordnance (UXO) Safety Plan allowing Shaw to further investigate an ordnance item that cannot be positively identified as inert.

Table 2-1

**Variations to Final Site-Specific Work Plan
3X Scrap Removal: Parcels 186(6) and 187(7)
Fort McClellan, Calhoun County, Alabama**

Variance No.	Date Issued	Description	Justification
1	Nov. 14, 2003	The site-specific work plan does not provide procedures for handling unknown items that do not appear to be chemical warfare material (CWM). This variance authorizes the changes presented in Section III (below) to the Site-Specific Work Plan and the Site Specific Safety & Health Plan (SSHP) for 3X Scrap Removal.	There are no technical and health & safety procedures in the SFSP to address the handling of items or containers that do not appear to be CWM but whose contents are still unknown. These procedures will allow Shaw to place items, such as liquid-filled containers, into an overpack drum for future disposition. The items or containers will not be overpacked until after the Shaw Senior UXO Supervisor (SUXOS) and the U.S. Army Engineering and Support Center, Huntsville have both made determinations that the items do not appear to be CWM. Prior to disposal of any overpacked items, the contents will be categorized using a HAZCAT test kit and, if appropriate, "hot boxed" (i.e., placed in a container for 4 hours at 70°F and monitored with MINICAMS).
2	Nov. 17, 2003	The site-specific work plan does not provide procedures for the use of Level B PPE to access depot area agent monitoring station (DAAMS) sampling equipment (i.e., the DAAMS pump) after a MINICAMS ring-off has occurred in the exclusion zone. Should this occur the following procedure would be followed: 1) Retrieve the DAAMS pump, 2) replace the DAAMS pump with a second unit to collect confirmation samples, and 3) retrieve this second pump for confirmation of the original sample. This variance authorizes the changes presented in Section III (below) to the Site-Specific Work Plan and the Site Specific Safety & Health Plan (SSHP) for 3X Scrap Removal.	There are no technical and health & safety procedures in the 3X Work Plan to address the use of Level B PPE after a MINICAMS ring-off has occurred to retrieve DAAMS sampling equipment located inside the exclusion zone at the excavation site. These procedures will allow Shaw to don appropriate levels of personnel protection to accomplish air monitoring.
3	Feb. 5, 2004	The <i>Final Site-Specific Work Plan, 3X Scrap Removal, October 2003</i> does not provide for the use of alternative methods of identifying inert OE material during excavation.	<p>The Site-Specific Safety and Health Plan (SSHP) and the Site-Specific Unexploded Safety Plan Attachment (UXO Plan) state that "all work will be immediately halted" if "any OE material is encountered that cannot be positively identified as inert".</p> <p><i>Only 3X scrap material (OE) is anticipated in the excavations. If any OE material is encountered that cannot be positively identified as inert; or if there is any indication of the presence of CWM materials, all work will be immediately halted, the site evacuated and the appropriate individuals notified (i.e., the site and project managers, the FTMC Base Environmental Coordinator, and the USACE representative).</i></p> <p>The verification that an OE item is positively inert is not easy in some cases and requires the utilization of techniques other than visual inspection. Depending on the ordnance encountered, X-ray analysis may be the only method available to determine if an item is hazardous (i.e., contains explosive fillers).</p>

3.0 Cylinder Sampling, Decommissioning, and Disposal

Items excavated from Training Area T-24A included two DOT-style compressed gas cylinders. One cylinder was discovered without a valve and contained a small amount of fluid. The fluid was determined by QuickSilver to be a mixture of fuel oil and water. The other cylinder was unmarked and unlabeled and the identity of its contents unknown. The condition and operability of the valve is also unknown because the valve cap was not removed. The objective of this task is to safely determine the cylinder contents, sample the contents, and dispose of the cylinder. In addition, the cylinder without the valve will also be decommissioned and disposed.

To accomplish this, the cylinder will be drilled and a sample retrieved. The sample will be collected using a pump and DAAMS tubes and analyzed on site for CWM by QuickSilver. If it is confirmed that the material present inside the cylinder is non-CWM, the cylinder contents can be treated on site and the final material disposed of at a certified disposal facility. If analytical results indicate the presence of CWM, the required response actions and procedures will be followed per Attachment 5 (Chemical Agent Monitoring Plan) and Attachment 6 (Transition Force SOP for Responding to Suspected CWM) of the Safety and Health Plan for the 3X Scrap Removal (Shaw, 2003).

Currently, the cylinder remains in an overpack drum located within the fenced exclusion zone of the T-24A work area. The cylinder sampling and decommissioning services will be provided by IES. IES will establish a work area within this exclusion zone (shown on Figure 2-2 of the SSWP). QuickSilver will maintain its mobile lab immediately outside of the exclusion zone in the contamination reduction zone (shown on Figure 2-21 of the SSWP).

3.1 Cylinder Sampling

To access the cylinder with inoperable valves, a device known as a saddle and penetrator will be used. The saddle and penetrator is often referred to as a “hot tap.” It is commonly used in the natural gas industry to access pressurized pipe. The saddle consists of a steel clamp which secures a bushing to the target cylinder. A gasket between the bushing and the target cylinder ensures a tight fit, thus prohibiting leakage.

The penetrator is a device with a valve containing a packed drill bit. The penetrator is secured to the saddle bushing and an electric drill is attached to the bit. A manifold is attached to the valve outlet. The drill is actuated, and a hole is made in the cylinder side wall. The drill bit is reversed

from the hole sufficiently to allow the gas to flow to the manifold, thereby allowing sample collection and ultimately treatment of the gas.

Currently the cylinder is adequately stored in a high pressure overpack. However, the current overpack is not sufficiently large to contain the cylinder with saddle and tap attached. As such, an additional pressure vessel to house the cylinder will be used until final disposition can occur.

The basic procedure for accessing, sampling, and transferring the cylinder's contents is:

1. Two-person team suits up in Level B PPE which consists of a Trelborg suit and Interspiro airline respirator with five-minute escape pack (see Health and Safety Plan for Cylinder Sampling located in Attachment 3 for detailed steps).
2. Remove cylinder from overpack drum.
3. An area on the target container is cleaned and prepared for securing the saddle.
4. The saddle, with attached penetrator, is secured to the container.
5. All connections, including the seal of the saddle on the target container, are tested by applying nitrogen gas to the assembly at a minimum pressure of 100 psig.
6. The drill is actuated and a hole is drilled into the cylinder. To determine the release of CWM, MINICAMS, DAAMS, and Dräger[®] tubes will be used to monitor all aspects of this procedure and operations (Shaw, 2003).
7. The drill is withdrawn slightly in order to allow the container's contents to exit through the penetrator throat and valve.
8. The valve is opened to the sampling manifold and a sample for CWM analyses is collected using the pump and the DAAMS tubes. CWM analyses will consist of HD, L, GB, and VX. In addition, samples for the analysis of Arsenic (As) and Decontamination Solution No. 2 (DS2) will be collected. Also, a volatile organic compound (VOC) scan will be performed on the tubes.
9. The penetrator valve is closed.
10. The sample manifold is replaced by the transfer manifold.
11. If analytical results confirm CWM is not present proceed to Step 12. If analytical results indicate the presence of CWM, the required response actions and procedures will be followed per Attachment 5 (Chemical Agent Monitoring Plan)

and Attachment 6 (Transition Force SOP for Responding to Suspected CWM) of the Safety and Health Plan for the 3X Scrap Removal (Shaw, 2003).

12. Workers don Level B PPE (see Section 4.4). The target cylinder is rotated to ensure liquid content is situated above the penetration.
13. The transfer manifold is directed to an appropriate reagent tank and gas scrubber.
14. The penetrator valve is opened and (assuming the contained material is a liquefied gas) vapor pressure will push it into the reagent tank.
15. Nitrogen is subsequently introduced through the transfer manifold into the target cylinder and used to push residual liquid and vapor into the reagent tank.

3.2 Decommissioning and Disposal

The empty cylinder will be de-valved and rinsed with reagent to ensure that the carcass is fully decontaminated. The carcass will be made ready for scrapping by Shaw personnel. The cylinder carcass will be containerized in a DOT-approved, plastic-lined 1-cubic-yard fiber box (“hot-box”) as 3X scrap material and transported to the thermal treatment facility in Joplin, Missouri to be incinerated (see SSWP, Section 2.6, Disposal [Shaw, 2003]). After thermal treatment, the disposal facility will provide certification that the 3X scrap has been reclassified as 5X material. The 5X material will either be disposed at a Subtitle D landfill or circulated into the metal scrap market (see SSWP, Section 2.6, Transportation [Shaw, 2003]).

4.0 Health and Safety

This section serves as an addendum to the *Final Site-Specific Safety and Health Plan (SSHP), 3X Scrap Removal at Training Area T-38 and T-24A, Fort McClellan, Calhoun County, Alabama* issued as part of the SSWP in October 2003. This addendum has been prepared to clarify health and safety requirements based on current site conditions, additional site knowledge, scope of work changes, and previous field work variances.

All personnel that will work on the T-38 site will have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan for site investigations at FTMC, and be familiar with the requirements of the SSHP and this addendum. This SSHP must be used in conjunction with the FTMC project-wide SHP and the FTMC installation-wide OE Management Plan as well as the site UXO Safety Plan and the Chemical Agent Monitoring Plan, Attachments 3 and 5 of the Final SSWP for 3X Scrap Removal.

4.1 Cylinder Sampling Operations

The objective of this task is to safely determine the cylinder contents, sample the contents, and dispose of the cylinder. To accomplish this, the cylinder will be drilled in a controlled manner and an air sample retrieved. The sample will be collected using a pump and DAAMS tubes and analyzed on site for CWM by QuickSilver. Category 2 compounds including cyanogens chloride (CK) and phosgene (CG) will be sampled using Drager sorbent tubes. If it is confirmed that the material present inside the cylinder is non-CWM, the cylinders liquid contents can be treated on site and the final material disposed of at a certified disposal facility.

IES, who specializes in unknown compressed gas cylinder management and sampling operations, has provided a health and safety plan and is included as Attachment 3. The plan has been reviewed by Shaw and is acceptable for this task. Section 3 of this addendum details the step-by-step cylinder sampling procedure. This activity will be performed in Level B PPE as described in the IES health and safety plan.

4.2 T-38 Scrap Removal

During the resumption of T-38 scrap removal chemical agent monitoring will be performed as described in the Chemical Agent Monitoring Plan (Shaw, 2003). CWM monitoring will occur at the excavation and soil screening locations using near real-time monitors as previously

performed. Employees engaged in the excavation operations will utilize Level B PPE as described in Section 3 of this addendum.

4.3 Personnel Decontamination

In the event a ring-off occurs on near real time chemical agent monitors (MINICAMS), UXO technicians still in Level B PPE will retrieve the DAAMS pump, replace the DAAMS pump with a second unit to collect confirmation samples, and retrieve this second pump for confirmation of the original sample. Non-UXO personnel shall immediately exit the exclusion zone a minimum of 450 feet upwind and begin personnel decontamination. Hudson sprayers shall be prepared in advance and on standby containing a mild soap solution or 5 to 10 percent bleach solution (Clorox). The mild soap solution or Clorox bleach solution will be used to wash-off potential contamination working from the top of the employee downward beginning at the respirator face piece down the protective clothing to the gloves and boots. Protective clothing shall be carefully removed with minimal contact to the PPE exterior and placed into labeled, sealed plastic bags. Employees assisting in the contamination reduction zone (CRZ) doffing shall be in a minimum of Level C PPE. These Shaw personnel shall be trained in first aid related chemical agent exposures and decontamination procedures. In the event eye exposure to CWM is encountered an eye wash station shall be readily accessible in the CRZ during all intrusive operations. Following the removal of the personal protective equipment, a second wash of the affected employee shall commence using mild soap solution followed by a thorough rinse using potable water. Chemical agent monitoring of potentially contaminated personnel will be performed using MINICAMS in an enclosed environment to detect any evidence of vapor off-gassing. If confirmation of chemical agent monitoring (by DAAMS analysis) determines the presence of a chemical agent, affected employees shall be transported via the on-site ambulance service to the Northeast Alabama Regional Medical Center for evaluation (in accordance with the October 22, 2003 Memorandum of Agreement between the U.S. Army Corps of Engineers and Northeast Alabama Regional Medical Center to support 3X scrap removal activities at FTMC). The City of Anniston ambulance service will be standing by on site during all intrusive activities.

4.4 Personal Protective Equipment

The resumption of work activities at T-38 will begin in the following levels of protection. A complete description of Level D, Modified Level D, and Level C PPE is provided in the *Final Site-Specific Safety and Health Plan, 3X Scrap Removal at Training Area T-38 and T-24A, Fort McClellan, Calhoun County, Alabama* issued October 2003 (Shaw, 2003). Any change in PPE that may be required will require approval by the Shaw H&S manager and project manager.

Table 4-1

**Activity Hazard Analysis for Soil Screening
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 4)

Principal Steps	Potential Hazards	Recommended Controls
Daily equipment inspection, lubrication, fueling	Slip, trip, and fall hazards, wet walking surface, moving parts, fire or explosion.	Work surface and walking platforms shall be free of accumulated debris. Good housekeeping, keep work area picked up and as clean as possible. All mechanical systems shall be off during fueling. Moving parts shall be guarded.
Screening Operations	Potential contact with contaminated material	Level B PPE will be utilized. Emergency eye wash readily available near screening area. Employee notification of all chemicals on-site and location of all Materials Safety Data Sheets. CWM monitoring will be performed.
	Pressurized hydraulic systems	All hoses and connections shall be routinely inspected.
	Struck by Material	The screening operation will be barricaded and unauthorized personnel kept clear. Authorized personnel shall keep clear of the loading hopper and discharge conveyor. Equipment approaching the discharge shall be equipped with operator cap protection, wire mesh or screen of adequate design for protection.
Constructing conveyor systems	Improper assembly or interface	Inspection maintenance and repair shall be in accordance with the manufacturer's recommendations by qualified personnel.
	Improper assembly or interface	No maintenance or lubrication shall be done while conveyor is in operation by unauthorized and trained personnel
		When adjustments or maintenance is required while the conveyor is in operations, only trained personnel who are aware of the hazards shall be permitted to make the adjustment, do maintenance, or lubricate.
		Lockout and tagout procedures shall be used.
Safe access shall be provided to permit inspection, lubrication, repair and maintenance activities. No such work will be performed alone.		
Operation of conveyor	Injury or damage to persons or property	Safety devices. On all conveyors where reversing or runaway are potential hazards or the effects of gravity create a potential for hazardous uncontrolled lowering, antirunaway devices, brakes, backstops, or other safeguards shall be installed to protect persons and property from injury or damage.
		Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting of the conveyor. <i>>On overland conveyors systems, the devices shall be required only at the transfer, loading, and discharge points and those points where personnel are normally stationed.</i>
		All conveyors shall be equipped with emergency stopping devices along their full length.
		Safety devices shall be arranged to operate in such a manner that if power failure or a failure of the device occurs a hazardous condition would not result.

Table 4-1

**Activity Hazard Analysis for Soil Screening
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 4)

Principal Steps	Potential Hazards	Recommended Controls
<p>Operation of Conveyor (continued)</p>	<p>Exposure to moving parts and pinch points</p>	<p>All exposed moving machinery parts that present a hazard shall be mechanically or electrically guarded or guarded by location.</p>
		<p>Nip and shear points shall be guarded.</p>
		<p>Take-up mechanisms may be guarded as an entity by placing standard railings or fencing, and warning signs, around the area in lieu of guarding each of nip and shear point.</p>
		<p>In the case of a trolley conveyor when mechanical or electrical guarding would render the conveyor unusable, prominent and legible warnings shall be posted in the area or on the equipment and, where feasible, areas barricaded or lines marked on the ground to indicate the hazard area.</p>
		<p>Guards shall be provided at points where personnel could come into contact with cables, chains, belts, and runaways of exposed bucket conveyors.</p>
		<p>Unless guarded by location, those sections of chain conveyors which cannot be enclosed without impairing the function shall be provided with warning signs or personnel barriers.</p>
		<p>Trolley conveyors shall be provided with spill guards, pan guards, or the equivalent if there is a potential for material to fall off the conveyor and endanger personnel or equipment.</p>
		<p>At transfer, loading, and discharge points, unconfined and uncontrolled free fall of material that may result from flooding, ricocheting, overloading, trajectory, leakage, or a combination thereof, shall be prevented if the material would create a hazard to personnel. <i>>If the absence of a guard specifically erected to protect personnel, warnings shall be provided to restrict unauthorized personnel from entering such hazardous areas.</i></p>
<p>Access</p>	<p>Inherent hazards</p>	<p>Crossovers or underpasses with safeguards shall be provided for passage over or under all conveyors: crossing over or under conveyors is prohibited except where safe passageways are provided.</p>
		<p>When ever conveyors pass adjacent to, or over, work areas, roadways, highways, railroads, or other public passageways, protective guards shall be installed: the guards shall be designed to catch and hold any load or material that may fall off or become dislodged from the system.</p>
		<p>Where conveyors are operated in tunnels, pits, and similar enclosures, ample room shall be provided to allow safe</p>

Table 4-1

**Activity Hazard Analysis for Soil Screening
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 4)

Principal Steps	Potential Hazards	Recommended Controls
Access (continued)	Emergency while in operation	accessway and operating space for all personnel.
		Unless the design, construction, and operation of a conveyor is clearly non-hazardous to personnel, emergency stop buttons, pull cords, limit switches, or similar emergency devices shall be provided at the following locations for remotely or automatically controlled conveyors or conveyors where operator stations are not manned or are beyond voice and visual contact from drive areas: 1)loading arms, 2)transfer points, and 3)other potentially hazardous locations on the conveyor path not guarded by location or guards
		All emergency stop devices shall be easily identifiable and readily accessible.
		Emergency stop devices shall act directly on the control of the conveyor concerned and shall not depend on the stopping of any other equipment.
		Emergency stop devices shall be installed so that they cannot be overridden from other locations.
General operation	Injury	Any employee worker or visitor entering within the immediate area of a conveyor shall be trained. Trainer shall use applicable standards from and read verbatim from USACE EM 385-1-1 Section 17 Conveyors and OSHA standards.
		Conveyor equipment shall be used to convey only those materials for which it was designed and within the rated capacities and speeds.
		Flight and spron conveyors shall be "jogged" or hand run through at least one complete revolution at installation to check design clearances prior to running under automatic power.
		A conveyor that could cause injury when started shall not be started until all personnel in the area are alerted by a signal or by a designated person that the conveyor is about to start.
		When a conveyor that could cause injury when started is automatically controlled or must be controlled from a remote location, an audible warning device shall be provided that can be clearly heard at all points along the conveyor where personnel may be present.
The warning device shall be activated by the controller device that starts the conveyor and shall continue for a period of time before the conveyor starts; a flashing light or similar visual warning shall be used in conjunction with the audible device when conditions limit the effectiveness of the audible device.		

Table 4-1

**Activity Hazard Analysis for Soil Screening
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 4)

Principal Steps	Potential Hazards	Recommended Controls
General operation	Injury	If a conveyor system is not exposed to the public, and if function of the system would be seriously hindered or adversely affected by the required time delay or where the intent of the warning may be misinterpreted clear, concise, and legible warnings signs shall be provided and indicate that they system may be started at any time, that danger exists, and that personnel must keep clear: these warning signs shall be provided along the conveyor at areas which are not guarded or protected by their location.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none">• Hand tools• PPE• Heavy equipment• Conveyors	<ul style="list-style-type: none">• Pre-postmaintenance• Visual prior to use	<ul style="list-style-type: none">• Tailgate Safety Meeting• Site specific orientation• Hazardous waste operations• Hazard communication• UXO Training

Task	Initial Level of PPE
Initial UXO avoidance sweep and equipment staging	Level D
Excavation operations at T-38	Level B* with emergency escape pack
Identification of 3X materials	Level B* with emergency escape pack
Screening of debris and soil	Level B* with emergency escape pack
MINICAM and DAAMS sampling	Level B* with emergency escape pack
Packaging of scrap for shipment	Modified Level D** with escape pack

*Should another intact ampoule or any other CWM be discovered, work will be suspended, the discovered material will be immediately covered with plastic sheeting, and all personnel will evacuate a minimum of 450-feet upwind to the predetermined CRZ. The suspect CWM will not be disturbed after discovery; appropriate security measures will be implemented until the item can be safely contained.

** Nitrile gloves shall be worn under outer heavy work gloves when handling scrap materials.

Level B. The following equipment will be used for Level B protection:

- NIOSH-approved positive pressure airline respirator with compatible component(s) 5-minute emergency escape air supply pack
- Saran coated Tyvek taped over gloves, over chemical resistant boots or PVC boot covers, and taped hood around respirator
- Outer Nitrile gloves under heavy work gloves for scrap handling
- Lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or PVC overbooties/steel-toed safety boots
- Hard hat secured to Saran coated Tyvek with duct tape or strap
- Hearing protection (when working near/adjacent to operating equipment).
- Ice or cooling vest to combat onset of heat related illness.

4.5 Activity Hazard Analysis

The activity hazard analysis for UXO operations (found in Table 5-1B of the SSWP [Shaw, 2003]) has been amended to include soil screening activities at T-38. The amended table is included in this addendum as Table 4-1.

All injuries and illnesses must be immediately reported to the site manager or the site safety and health officer, who will then notify off-site personnel and organizations as necessary per Shaw health and safety procedure HS020, *Accident Prevention Program, Reporting, Investigation, and Review*.

Before initiation of work activities, the site UXO safety officer, the site safety and health officer, or both, will ensure that the on site City of Anniston Ambulance Service and the Northeast Regional Medical Center is apprised of the nature of the work, the location the work is to be performed, and potential hazards that could be encountered.

5.0 UXO Construction Support

The UXO Plan contained in the SSWP states that “all work will be immediately halted” if “any OE material is encountered that cannot be positively identified as inert”. Variance Number 3, dated February 5, 2004, amended the UXO Plan allowing Shaw to further investigate an ordnance item that cannot be positively identified as inert.

The verification that an OE item is positively inert can be difficult and may require the utilization of techniques other than visual inspection. Depending on the ordnance encountered, X-ray analysis may be the only method available to determine if an item is hazardous (i.e., contains explosive fillers). Variance Number 3 changed the reference from the *UXO Plan, Section 1.0, General Information* (page 1, paragraph 5) to read:

Only 3X scrap material (OE) is anticipated in the excavations. However, if any ordnance item is encountered that cannot be positively identified as inert, and is determined to be safe to move, it will be further investigated. Further investigation may include the use of X-ray techniques. Should X-ray reveal that an ordnance item is non-CWM, the item may be explosively opened to ensure that it does not contain any explosive fillers or components. If the item is suspected to contain an explosive hazard and believed to be unsafe to move, it will be left in place, work will be halted, the site evacuated, and the appropriate individuals notified.

If there is any indication of the presence of CWM materials (such as a MINICAMS alarm), all work will be immediately halted, the site evacuated and the appropriate individuals notified (i.e., the site and project managers, the FTMC Base Environmental Coordinator, and the USACE representative [Shaw, 2003]).

Additionally, should munitions containing unknown fillers be encountered, Shaw will leave the item in place under plastic sheeting and with air monitoring, all work halted, the site evacuated, and the appropriate individuals notified, including the Technical Escort Unit (Department of the Army, Memorandum, Jan. 8, 2003).

Recent interim guidance provided by the Department of the Army establishes notification procedures for the discovery of recovered chemical warfare materiel (RCWM) (Department of the Army, Memorandum, April 23, 2004). Should RCWM be discovered, the on-site Shaw and USACE Project Team will notify the following:

1. FTMC Transition Force BRAC Environmental Coordinator [BEC] Security Supervisor and Site Manager (they will follow their established procedures for notification). The FTMC Transition Force will notify the 772nd EOD unit (who will in turn notify TEU). The UXO/HTRW/ Construction team will secure the item until TEU arrives.
2. USACE-Mobile Site Representative or Project Manager will initiate notification to the Chemical Warfare Design Center [OE-CW] at USAESCH by calling 256.895.1180.

6.0 Schedule

Shaw is prepared to mobilize field activities on August 2, 2004 and complete all fieldwork within 6 weeks. Subsequently, hot box transportation and disposal is scheduled to be complete within an additional 6-week period. A draft and final closure report will be submitted in October and December 2004, respectively.

7.0 References

Shaw Environmental Inc. (Shaw), *Final Site-Specific Work Plan, 3X Scrap Removal: Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) and Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7), Fort McClellan, Calhoun County, Alabama*, October 2003.

Department of the Army, Huntsville Center, Corps of Engineers, Memorandum, *Procedures for Assessing Munitions with Unknown Fillers, Ordnance and Explosives Center of Expertise (OE-CX) Interim Guidance Document 02-03*, Jan. 8, 2003.

Department of the Army, Chief, Environmental Community of Practice, Directorate of Military Programs, Memorandum, *Interim Guidance – Notification Procedures of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects*, CEMP-CE (200-1a), April 23, 2004.

ATTACHMENT 1

**REVISED PROBABILITY ASSESSMENT
FOR 3X SCRAP REMOVAL AT TRAINING AREA T-38**

**REQUEST FOR EXCEPTION
DEPARTMENT OF THE ARMY
MAY 17, 2004**

RESPONSE TO CEHNC COMMENTS

**Probability Assessment Revision 1
3X Scrap Removal at Training Area T-38,
Former Technical Escort Reaction Area, Parcel 186(6)
Fort McClellan, Calhoun County, Alabama**

1.0 INTRODUCTION

The U.S. Army is conducting environmental studies of the impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE contracted Shaw Environmental, Inc. (Shaw) to perform 3X scrap removal activities at Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6). In accordance with Department of the Army (DA) memorandum *Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance*, Army Regulation (AR) 385-10, *The Army Safety Program*, and AR 385-61, *Toxic Chemical Agent Safety Standards*, this document is provided to assess the probability of an accident occurring involving chemical agent contaminated media (CACM) during the 3X scrap removal at Training Area T-38.

2.0 SITE BACKGROUND

Training Area T-38 was the Former Technical Escort Reaction area also known as the Toxic Gas Yard. The site, approximately 6 acres in size, is located along a topographic ridge, Reservoir Ridge, east of Ruskin Avenue and the cantonment area on the Main Post. The fenced area in the northeastern portion of the parcel was referred to as the Toxic Agent (or Gas) Yard. The training area was reportedly used from 1961 to 1972 for training Technical Escort Unit (TEU) personnel in techniques of eliminating toxic hazards caused by mishaps to chemical munitions during transport.

The area also was used for storage of toxic agents and munitions. The storage facilities included four 1-ton containers of distilled mustard (HD). In addition, decontaminants were reportedly stored on at least two locations and were used for demonstration purposes. Extensive decontamination was reportedly conducted at the site for spills and for decontaminating training aids. The types of decontaminants used, quantities, and frequency of use are unknown, but are assumed to include decontamination agent noncorrosive (DANC), supertropical bleach (STB), and decontamination solution number 2 (DS2) (ESE, 1998).

Training Area T-38 is fenced with an entrance gate in the northern section. Reportedly, a former disposal pit, approximately 10 by 20 by 10 feet, was located in the central portion of the site and was used for disposal of decontaminants and other hazardous wastes. A burial site for an HD drum was also reportedly located in the southern portion of the site.

3.0 PREVIOUS INVESTIGATIONS

Previous investigations have been conducted at Training Area T-38, as summarized in the following paragraphs.

Site Investigation (SI). In 1993, Science Applications International Corporation (SAIC) conducted an SI that included limited geophysical surveys and collection of soil samples from four locations suspected to be areas of prior site activity. The soil samples collected were screened for HD, nerve agent (VX), and sarin (GB) using a miniature continuous air monitoring system (MINICAMS). Chemical agent was not detected in the screening samples. In addition, chemical agent degradation products were not detected in the laboratory (SAIC, 1993).

Remedial Investigation (RI). In 1995, SAIC conducted an RI at Training Area T-38 that included additional geophysical surveys, soil sampling, and the installation of monitoring wells and one soil boring into the disposal pit. Also, numerous shallow soil samples were screened using MINICAMS. Chemical agent was not detected in the soil samples collected. However, volatile organic compound (VOC) contamination was discovered in the groundwater consisting predominantly of chemical decontamination solutions (SAIC, 2000).

Chemical Warfare Materiel (CWM) Engineering Evaluation/Cost Analysis (EE/CA). In 2001, Parsons Engineering Science, Inc. (Parsons) conducted an EE/CA at T-38 to address potential CWM or other subsurface disposal. Field activities included geophysical surveys, excavation of suspect anomalies, continuous air monitoring using MINICAMS, trenching, soil sampling, and laboratory analysis of soil samples for GB, HD, and breakdown products (Parsons, 2002). CWM was not detected during air monitoring, headspace screening, or laboratory analysis of the samples. Parsons concluded that the probability of encountering chemical agent during follow-on intrusive activities at Training Area T-38 is considered remote (Parsons, 2002).

3X Scrap Removal. In November 2003, Shaw conducted 3X scrap excavation operations at T-38 and during excavation, unearthed an intact vial that the Army subsequently confirmed to be a CAIS (Chemical Agent Identification Set) item. There was no release to the environment during excavation, and continuous air monitoring at the site confirmed no release. Shaw

instituted approved notification procedures, and evacuated the site. The item remained secured at the site until the Army's TEU destroyed the vial and neutralized its contents. Fort McClellan managed the resulting hazardous waste. The Army Base Realignment and Closure, Hampton Field Office requested an exception to interim guidance policy for CWM response activities to allow the removal action of 3X material to proceed and be managed as a hazardous and toxic waste response action. The exception was requested based on the nature of the site coupled with the existing safety measures in place and the minimal safety hazard posed by CAIS modules, all of which did not justify the level of safety protocol that would be required for a CWM site cleanup. The Deputy Assistant Secretary of the Army, Installations and Environment, (Environment, Safety and Occupational Health) (OASA(I&E)), approved the request.

4.0 CONTINUATION OF 3X SCRAP REMOVAL ACTIVITIES

The 3X scrap removal activities, which include excavation at T-38 to locate, identify, sort, package, and verify 3X scrap material in preparation for off-site disposal (Shaw, 2004), will resume subject to compliance with procedures outlined in the request for exception and in the approval letter to the request:

- Should any other CWM, to include that associated with a K951 or K953 CAIS be discovered, operations will stop, a chemical event report will be submitted, and a determination, which will be coordinated with the OASA(I&E), the Army Safety Office, and the U.S. Army Technical Center for Explosives Safety, will be made as to whether operations should revert to a CWM response. The anomalies to be excavated at T-38 are believed to be buried in disposal pits that were used to support the training exercises conducted from 1961 to 1972. Based on the results of previous investigations, Shaw does not expect to find any munitions and explosives of concern (MEC) or further CACM. The previously discovered CAIS item is considered anomalous, and only 3X scrap material is anticipated in further excavations. Shaw will also perform unexploded ordnance (UXO) construction support incidental to the 3X scrap removal activities.
- During site activities chemical agent air monitoring will be performed. Depot Area Agent Monitoring Stations (DAAMS) will be emplaced close in to the worksite to confirm agent detection. The monitoring strategy will be designed with the intent to confirm the MINICAMS' real low-level near real-time detections with DAAMS rapidly and with confidence. MINICAMS will be set up near the excavation and the screening area locations to monitor for chemical agents during removal and sorting activities. Air monitoring support will be provided for chemical agents (HD, lewisite [L], GB, and VX) and Category 2 compounds

(cyanogen chloride [CK] and phosgene [CG]). One near-real-time (NRT) agent air monitor (e.g., MINICAMS) will be required for GB and VX and a second NRT monitor will be used for HD and L. For the Category 2 compounds, Dräger® tubes will be used for air monitoring. Air monitoring surveys will occur prior to excavation (baseline) and during excavation, screening, 3X clearing of waste in the hot boxes, and during closeout.

- Eyewash equipment and personnel trained in first aide related to chemical agent exposures will be on site during any intrusive operations.
- Before work resumes, the USACE will modify the contractor's work plan to meet requirements outlined in the request for exception to policy to include a requirement for upgraded PPE and revisions as necessary to address the PPE change. Additionally, the work plan will be revised to address the requirement for eye wash equipment and personnel trained in first aid related to chemical agent exposures to be on site.
- The Local Reuse Authority will be kept fully apprised of the actions to be taken on site. Additionally, to keep the public informed, a press release will be issued prior to continuation of the 3X removal.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on known site history, the results of previous investigations conducted at T-38, and the Army's approval to allow the removal action of 3X materiel to proceed and be managed as a hazardous and toxic waste response action, this assessment concludes the probability of encountering CWM when removing 3X scrap at T-38 to be "remote", i.e., could occur at some time (also described in AR 385-10 and AR 385-61 as having a hazard probability of "seldom"). This assessment recommends UXO construction support and compliance with procedures and conditions outlined in the request for exception to policy and in the approval letter to safely support 3X scrap removal activities at T-38.

6.0 REFERENCES

Environmental Science and Engineering, Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Parsons Engineering Science, Inc. (Parsons), 2002, *Final Chemical Warfare Materiel (CWM) Engineering Evaluation/Cost Analysis (EE/CA), Fort McClellan, Alabama*, June.

Science Applications International Corporation (SAIC), 2000, *Final Remedial Investigation/Baseline Risk Assessment Report, Fort McClellan, Alabama*, July.

Science Application International Corporation (SAIC), 1993, *Site Investigation Report, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Installation Restoration Division, Aberdeen Proving Ground, Maryland, August 31.

Shaw Environmental, Inc. (Shaw), 2004, *Site-Specific Work Plan Addendum, 3X Scrap Removal, Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) and Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7)*, July.

U.S. Department of the Army, OASA(I,L&E), 1997, *Interim Guidance for Biological Warfare Materiel (BWM) and Non-Stockpile Chemical Warfare Materiel (CWM) Response Activities*, September.

U.S. Department of the Army, DACS-SF, 1998, *Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance*, March.

U.S. Department of the Army, HQ, U.S. Army Corps of Engineers, CESO-E, 1998, *Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance*, April.

U.S. Department of the Army, 2000, *The Army Safety Program*, Army Regulation 385-10, February.

U.S. Department of the Army, 2001, *Chemical Surety*, Army Regulation 50-6, June.

U.S. Department of the Army, 2002, *Toxic Chemical Safety Standards*, Army Regulation 385-61, March.

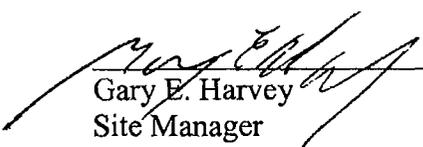
U.S. Department of the Army, BRAC-HFO, 2004, *Request for Exception to Interim Guidance for Non-Stockpile Chemical Warfare Materiel Response Activities*, March.

U.S. Department of the Army, OASA(I&E), 2004, *Request for Exception to Interim Guidance for Non-Stockpile Chemical Warfare Materiel Response Activities*, May.

U.S. Department of the Army, HQ, U.S. Army Corps of Engineers, CEMP-CE, 2004, *Interim Guidance – Notification Procedures for Discovery of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects*, April.

Approved by:

According to AR 385-10, AR 385-61, and DA memorandum "Interim Guidance for Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activities", which require that risk be determined to human health and the environment at potential non-stockpile CWM sites and to the OASA(I&E) approval letter for an exception to the aforementioned interim guidance policy, I concur with the conclusions presented in this risk assessment document regarding the potential for encountering CWM during 3X scrap removal activities at Training Area T-38. Per the signed Oct 2002 CWM EE/CA Action Memorandum, the Army assumes the risk of conducting site activities as a non-CWM site.



Gary E. Harvey
Site Manager
Fort McClellan, Alabama

14 July 2004
Date



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY
INSTALLATIONS AND ENVIRONMENT
110 ARMY PENTAGON
WASHINGTON DC 20310-0110

MAY 17 2004

MEMORANDUM THRU ASSISTANT CHIEF OF STAFF FOR INSTALLATION
MANAGEMENT

FOR CHIEF, BASE REALIGNMENT AND CLOSURE OFFICE

SUBJECT: Request for Exception to Interim Guidance for Non-Stockpile Chemical
Warfare Material Response Activities

Your request for an exception to the interim guidance policy for chemical warfare material (CWM) response activities to allow the removal action of 3X material at Training Area T-38, Fort McClellan, Alabama, to proceed and be managed as hazardous toxic waste response action is approved. This approval is subject to compliance with the procedures outlined in your request and the following:

- Should any other CWM, to include that associated with a K951 or K953 CAIS be discovered, operations will stop, a chemical event report will be submitted, and a determination, which will be coordinated with this office, the Army Safety Office and the US Army Technical Center for Explosives Safety, will be made as to whether operations should revert to a CWM response.

- Depot Area Agent Monitoring Stations (DAAMS) will be emplaced close in to the worksite to confirm agent detection. The monitoring strategy will be designed with the intent to confirm the MINICAMS's real low-level near real-time detections with DAAMS rapidly and with confidence.

- Personnel trained in first aid related to chemical agents exposures and eyewash equipment will be on site during any intrusive operations.

My point of contact is J. C. King, (703) 697-5564 or kingjc2@hqda.

Raymond J. Fatz
Deputy Assistant Secretary of the Army
(Environment, Safety and Occupational Health)
OASA(I&E)

cf:
DACs-SF
DAC, ATTN: SJMAC-ESM, MCALESTER, OK 74501-9053

DESIGN REVIEW COMMENTS

PROJECT

SITE DEV & GEO
ENVIR PROT& UTIL
ARCHITECTURAL
STRUCTURAL

MECHANICAL
MFG TECHNOLOGY
ELECTRICAL
INST & CONTROLS

SAFETY
ADV TECH
ESTIMATING
SPECIFICATIONS

SYSTEMS ENG
VALUE ENG
 OE CX TECH REVIEW TEAM

REVIEW Draft
DATE Tuesday, July 20, 2004
NAME Hank Hubbard 256-895-1586

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	Table 2-1	Variance 1, Who from Huntsville will assist in the determination the items do not appear to be CWM?	Representatives from Shaw and USACE-Mobile will be on site to assist in this determination. Digital photographs will be taken of any unknown item and sent to CEHNC should it be necessary.
2.	Table 2-1	Variance 3, does this mean an X-ray will be maintained on-site? If not, where will it be located, how does it get to the site. Is EOD called in to do the X-ray? Will need an Activity Hazard Analysis for any X-ray operation on site.	No. An X-ray will not be maintained on site. Should X-ray capabilities be needed, TEU will be notified to perform the X-ray operation. TEU will provide SOPs and Activity Hazard Analysis for X-ray operation.
3.	Page 3-1	Paragraph 3.0, much discussion on what will be done to the cylinder if the air monitoring/sampling indicates the filler is CWM?	Comment noted. Step 11 of the procedure described on page 3-2 describes what will be done should the cylinder contain CWM. However, the notification procedure will be introduced in Section 3.0 of the next version of the work plan.
4.	Page 4-2	Line21, what confirmation is this, from the downrange monitoring or from the monitoring of the individual after decontaminating? DA PAM 50-6 now requires low-level monitoring of all chemical agent casualties, or casualties that may have been exposed to chemical agent contamination before transporting to any medical facility. Strongly recommend inserting these procedures into your plan.	Chemical agent monitoring of personnel (after decontaminating) will be performed using a MINICAMS in an enclosed environment to detect any evidence of vapor off-gassing. The text in Section 4.3 will be modified to provide greater detail.

ACTION CODES W - WITHDRAWN
A - ACCEPTED/CONCUR N - NON-CONCUR
D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT

REVIEW

SITE DEV & GEO
 ENVIR PROT& UTIL
 ARCHITECTURAL
 STRUCTURAL
 DRAWING NO.
 OR REFERENCE

MECHANICAL
 MFG TECHNOLOGY
 ELECTRICAL
 INST & CONTROLS

SAFETY
 ADV TECH
 ESTIMATING
 SPECIFICATIONS
 SYSTEMS ENG
 VALUE ENG
 X OE CX TECH REVIEW TEAM

DATE Tuesday, July 20, 2004
 NAME Hank Hubbard 256-895-1586

ITEM

COMMENT

ACTION

7.	Page 5-1	<p>General comment, about the X-raying or whatever the procedures will be to determine the filler of an unknown item, see comment 2 above. Additionally, there is a USACE Interim Guidance document on procedures to be followed for items with unknown fillers.</p>	<p>Comment noted. Shaw has reviewed the <i>Procedures for Assessing Munitions with Unknown Fillers, Ordnance and Explosives Center of Expertise (OE-CX) Interim Guidance Document 02-03</i>, Jan. 8, 2003. As stated in the guidance, the POC for performing munitions assessments will be EOD or TEU.</p> <p>Should munitions with unknown fillers be encountered, Shaw will leave the item in place (covering the item and the end of the DAAMS monitoring hose with plastic sheeting), halt work, evacuate the site (along a cleared path in an upwind direction a minimum of 450 ft.), and notify the appropriate individuals (including TEU).</p> <p>It should be noted that the completion of the 3X scrap removal work at FTMC will proceed and be managed as a hazardous toxic waste response action per the approved <i>Request for Exception to Interim Guidance for Non-Stockpile Chemical Warfare Materiel Response Activities</i>, May 17, 2004.</p> <p>However, text will be added to Section 5.0 of the Work Plan Addendum stating the procedures to follow in assessing munitions containing unknown fillers.</p>
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ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT

REVIEW

SITE DEV & GEO
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 ELECTRICAL
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 ESTIMATING
 SPECIFICATIONS

SYSTEMS ENG
 VALUE ENG
 X OE CX TECH REVIEW TEAM

DATE Tuesday, July 20, 2004
 NAME Hank Hubbard 256-895-1586

ITEM

DRAWING NO.
 OR REFERENCE

COMMENT

ACTION

8.

Attachment 1

Page 4 of 5, References recommend adding the following:

On your reference of U.S. Department of the Army, 1998, the title should be "Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance.

On USACE projects there is another memo from Department of the Army, U.S. Army Corps of Engineers, CESO-E, with the same title that directs all USACE projects to comply with the DACS memo.

For Chemical Event Reporting, insert the following references;

AR 50-6, Chemical Surety

Memorandum CEMP-CE, SUBJECT: Interim Guidance – Notification Procedures for Discovery of Recovered Chemical Warfare Materiel (RCWM) During USACE Projects, dated 23 Apr 2004.

Agree. The references will be modified and/or added as recommended.

In addition, a reference for the *Procedures for Assessing Munitions with Unknown Fillers* will be added to the Work Plan Addendum.

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

ATTACHMENT 2

VARIANCES TO SITE-SPECIFIC WORK PLAN, OCTOBER 2003

*Unsigned copies of the variances have also been provided
because the signed versions are difficult to read*



Shaw Environmental & Infrastructure, Inc.

Variance No: 3X_variance1

Linked w/NC No:

Date of Issue: November 14, 2003

Page 1 of 1

Project Name: Fort McClellan

Project Number: 796887

-Variance Report -

I. Description: (by the person identifying the change)

The site-specific work plan does not provide procedures for handling unknown items that do not appear to be chemical warfare material (CWM). This variance authorizes the changes presented in Section III (below) to the Site-Specific Work Plan and the Site Specific Safety & Health Plan (SSHP) for 3X Scrap Removal.

Identified by: Stephen Moran

Date: November 14, 2003

II. Justification for Variance:

There are no technical and health & safety procedures in the SFSP to address the handling of items or containers that do not appear to be CWM but whose contents are still unknown. These procedures will allow Shaw to place items, such as liquid-filled containers, into an overpack drum for future disposition. The items or containers will not be overpacked until after the Shaw Senior UXO Supervisor (SUXOS) and the U.S. Army Engineering and Support Center, Huntsville have both made determinations that the items do not appear to be CWM. Prior to disposal of any overpacked items, the contents will be categorized using a HAZCAT test kit and, if appropriate, "hot boxed" (i.e., placed in a container for 4 hours at 70°F and monitored with MINICAMS).

III. Applicable Document/Work Plan: (by the person identifying the change)

Final Site-Specific Work Plan and SSHP for 3X Scrap Removal. The following procedures will be performed in the event that an unknown item that does not appear to be CWM is encountered.

1. Work Plan, Section 2.3 – Excavation of 3X Material, page 2-3:

If an item or container is identified as not being CWM, however, the contents are still unknown, the item or container will be overpacked according to procedures outlined in Sections 3.0 and 4.0 of the SSHP (see below). Prior to disposal of any overpacked items, the contents will be categorized using a HAZCAT test kit and, if appropriate, "hot boxed" (i.e., placed in a container for 4 hours at 70°F and monitored with MINICAMS).

2. SSHP, Section 3.0 – Personnel Protective Equipment, page 7:

If excavated containers, bottles, jars, drums, etc are intact and are not presumed to contain chemical agent (as determined by review of the item(s) by the Shaw SUXOS and U.S. Army Engineering and Support Center, Huntsville), the item(s) may be placed in an overpack of appropriate size and capacity by two qualified personnel selected from the UXO team on site. There will be a buddy system in place necessitating a minimum of 2 UXO team members to execute the task. There will be two back-up personnel on standby to support the task effort if additional assistance is required. Both team personnel (Overpack Team and Standby Team) will wear Level B PPE.

The contents of the unknown item or container require identification and, until such information is obtained, the container will not be opened, shaken, or disturbed in any manner such that the contents may be released. Any container that is leaking, cracked, releasing liquid or gas, shall not be handled to inspect the contents. The overpack will be secured in an area removed from personnel and vehicle operations.

3. SSHP, Section 4.0 – Site Monitoring Plan, page 11:

Should a suspect CWM item(s) be encountered, the item is intact, and there is no indication of exposure risk based on sampling using MINICAMS monitoring or a PID, it will still be presumed that chemical agent may be present in the intact

container. It will still be necessary to initiate the required communications as specified in Attachment 6, and if the item (container, bottle, jar, drum, etc.) is intact (not leaking, cracked, releasing liquid or gas), and the review conducted by the Shaw SUXOS and the U.S. Army Engineering and Support Center, Huntsville indicates the item is not presumed to contain chemical agent, it may be placed in an overpack for secure storage until more positive identification can be safely made of the contents. The PPE required for the overpack personnel team is specified in Section 3.0.

Distribution List:

1. Jeanne Yacoub, Shaw Project Manager
2. Steve Moran, Shaw Technical Lead
3. Jack Gregston, Shaw Site Manager
4. Bill Hetrick, Shaw H&S
5. Darryl Stabile, US Army Corps of Engineers
6. Lee Coker, U.S. Army Corps of Engineers
7. Norm Honea, Shaw
8. Jorge Sanchez, Shaw QA/QC
9. Dan Copeland, CEHNC
10. Ben Hodges, Shaw SUXOS
11. Burney Chance, Shaw SSO
12. Bob Hickman, Shaw UXO Manager

- Signatures -

Requested by:

Date

Approved by:

Date

Project Manager Approval:

Date

Huntsville Engineering & Support Center Approval:

Date

Shaw H&S Approval:

Date

Shaw QA Approval:

Date

 <p>Shaw Environmental & Infrastructure, Inc.</p>	Variance No: 3X variance 1
	Linked WNC No:
	Date of Issue: November 14, 2003
Page 1 of 1	
Project Name: Fort McClellan	Project Number: 796827

-Variance Report -

I. Description: (by the person identifying the change)

The site-specific work plan does not provide procedures for handling unknown items that do not appear to be chemical warfare material (CWM). This variance authorizes the changes presented in Section III (below) to the Site-Specific Work Plan and the Site Specific Safety & Health Plan (SSHP) for 3X Scrap Removal.

Identified by: **Stephen Moran** Date: **November 14, 2003**

II. Justification for Variance:

There are no technical and health & safety procedures in the SFSP to address the handling of items or containers that do not appear to be CWM but whose contents are still unknown. These procedures will allow Shaw to place items, such as liquid-filled containers, into an overpack drum for future disposition. The items or containers will not be overpacked until after the Shaw Senior UXO Supervisor (SUXOS) and the U.S. Army Engineering and Support Center, Huntsville have both made determinations that the items do not appear to be CWM. Prior to disposal of any overpacked items, the contents will be categorized using a HAZCAT test kit and, if appropriate, "hot boxed" (i.e., placed in a container for 4 hours at 70°F and monitored with MINICAMS).

III. Applicable Document/Work Plans (by the person identifying the change)

Final Site-Specific Work Plan and SSHP for 3X Scrap Removal. The following procedures will be performed in the event that an unknown item that does not appear to be CWM is encountered.

1. Work Plan, Section 2.3 -- Excavation of 3X Material, page 2-3:
If an item or container is identified as not being CWM, however, the contents are still unknown, the item or container will be overpacked according to procedures outlined in Sections 3.0 and 4.0 of the SSHP (see below). Prior to disposal of any overpacked items, the contents will be categorized using a HAZCAT test kit and, if appropriate, "hot boxed" (i.e., placed in a container for 4 hours at 70°F and monitored with MINICAMS).

2. SSHP, Section 3.0 -- Personal Protective Equipment, page 7:
If excavated containers, bottles, jars, drums, etc are intact and are not presumed to contain chemical agent (as determined by review of the item(s) by the Shaw SUXOS and U.S. Army Engineering and Support Center, Huntsville), the item(s) may be placed in an overpack of appropriate size and capacity by two qualified personnel selected from the UXO team on site. There will be a buddy system in place necessitating a minimum of 2 UXO team members to execute the task. There will be two back-up personnel on standby to support the task effort if additional assistance is required. Both teams personnel (Overpack Team and Standby Team) will wear Level B PPE.

The contents of the unknown item or container require identification and, until such information is obtained, the container will not be opened, shaken, or disturbed in any manner such that the contents may be released. Any container that is leaking, cracked, releasing liquid or gas, shall not be handled to inspect the contents. The overpack will be secured in an area removed from personnel and vehicle operations.

3. SSHP, Section 4.0 -- Site Monitoring Plan, page 12:
Should a suspect CWM item(s) be encountered, the item is intact, and there is no indication of exposure risk based on sampling using MINICAMS monitoring or a PID, it will still be presumed that chemical agent may be present in the future.

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container. It will still be necessary to initiate the required communications as specified in Attachment 6, and if the item (container, bottle, jar, drums, etc.) is intact (not leaking, cracked, releasing liquid or gas), and the review conducted by the Shaw SUXOS and the U.S. Army Engineering and Support Center, Huntsville indicates the item is not presumed to contain chemical agent, it may be placed in an overpack for secure storage until more positive identification can be safely made of the contents. The PPE required for the overpack personnel team is specified in Section 3.0.

Distribution List:

1. Joanne Yacoub, Shaw Project Manager
2. Steve Moran, Shaw Technical Lead
3. Jack Gregston, Shaw Site Manager
4. Bill Hetrick, Shaw H&S
5. Darryl Stable, US Army Corps of Engineers
6. Lee Coker, U.S. Army Corps of Engineers
7. Norma Housa, Shaw
8. Jorge Sanchez, Shaw QA/QC
9. Dan Copeland, CERNC
10. Ben Hodges, Shaw SUXOS
11. Burney Chance, Shaw SSO
12. Bob Hitchman, Shaw UXO Manager

SIGNATURES

Requested by: *Joanne Yacoub* 11/17/03

Approved by: *Steve Moran* 11/17/03

Project Manager Approval: *Joanne Yacoub* 11/17/03

Huntsville Engineering & Support Center Approval:

Shaw H&S Approval: *Bill Hetrick* 11/17/03

Shaw QA Approval: *Jorge Sanchez* 11/17/03



Shaw Environmental & Infrastructure, Inc.

Variance No: 3X Variance No. 2

Linked w/NC No:

Date of Issue: November 17, 2003

Page 1 of 1

Project Name: Fort McClellan

Project Number: 796887

-Variance Report -

I. Description: (by the person identifying the change)

The site-specific work plan does not provide procedures for the use of Level B PPE to access depot area agent monitoring station (DAAMS) sampling equipment (i.e., the DAAMS pump) after a MINICAMS ring-off has occurred in the exclusion zone. Should this occur the following procedure would be followed:

1) Retrieve the DAAMS pump, 2) replace the DAAMS pump with a second unit to collect confirmation samples, and 3) retrieve this second pump for confirmation of the original sample.

This variance authorizes the changes presented in Section III (below) to the Site-Specific Work Plan and the Site Specific Safety & Health Plan (SSHP) for 3X Scrap Removal.

Identified by: Stephen Moran

Date: November 17, 2003

II. Justification for Variance:

There are no technical and health & safety procedures in the 3X Work Plan to address the use of Level B PPE after a MINICAMS ring-off has occurred to retrieve DAAMS sampling equipment located inside the exclusion zone at the excavation site. These procedures will allow Shaw to don appropriate levels of personnel protection to accomplish air monitoring.

III. Applicable Document/Work Plan: (by the person identifying the change)

Final Site-Specific Work Plan for 3X Scrap Removal. The following procedures will be performed in the event that a ring-off occurs.

1. Work Plan, Section 2.4 – Monitoring and Identification of 3X Material, page 2-4:

If MINICAMS air monitoring results in two (2) consecutive alarms or ring-offs, two UXO team members will don Level B PPE and enter the exclusion zone to retrieve the DAAMS sampling pumps, replace the pump, then exit the exclusion zone. After 12 to 15 minutes the UXO techs – still in Level B PPE – will re-enter the exclusion zone to retrieve the second DAAMS pump. There will be a buddy system in place necessitating two UXO team members to execute the task. In addition, there will be two back-up personnel on standby to support the effort if additional assistance is required. Both team personnel (DAAMS Team and Standby Team) will wear Level B PPE.

2. SSHP, Section 3.0 – Personnel Protective Equipment, page 9:

Because of the toxicity and physical safety concerns associated with chemical agent materials, site personnel will not be permitted to continue work in areas which chemical agent materials have been identified unless work is performed in Level B personal protective equipment.

- NIOSH/MSHA-approved self-contained breathing apparatus or approved positive pressure airline respirator.
- Escape/egress air supply pack
- Saran-coated Tyvek taped at gloves, boots, and respirators
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (double inner glove)
- Neoprene steel-toed boots
- Hard hat

- Hearing protection (when working near/adjacent to operating equipment).

3. SSHP, Attachment 5, Chemical Agent Monitoring Plan, Section 5.0 – Contingency Plan, page 9:

Following an alarm, all personnel will immediately evacuate the site. Two UXO technicians donning Level B PPE will re-enter the exclusion zone and re-position the end of the monitoring hose over the suspect CWM item. The UXO technicians will retrieve the DAAMS sampling pump. The retrieved pump will be taken to the UXO support team members located in the contamination reduction zone who will in turn take the pump to the monitoring personnel located in the support zone. After 12 to 15 minutes, the UXO team members, in Level B PPE, will re-enter the exclusion zone and retrieve the second DAAMS pump and transport this pump as described above.

Distribution List:

1. Jeanne Yacoub, Shaw Project Manager
2. Steve Moran, Shaw Technical Lead
3. Jack Gregston, Shaw Site Manager
4. Bill Hetrick, Shaw H&S
5. Darryl Stabile, US Army Corps of Engineers
6. Lee Coker, U.S. Army Corps of Engineers
7. Norm Honea, Shaw
8. Jorge Sanchez, Shaw QA/QC
9. Dan Copeland, CEHNC
10. Ben Hodges, Shaw SUXOS
11. Burney Chance, Shaw SSO
12. Bob Hickman, Shaw UXO Manager

- Signatures -

Requested by:

Date

Approved by:

Date

Project Manager Approval:

Date

Huntsville Engineering & Support Center Approval:

Date

Shaw H&S Approval:

Date

Shaw QA Approval:

Date

 Shaw Shaw Environmental & Infrastructure, Inc.	Variance No: 3X Variance No. 2
	Linked WNC No:
	Date of Issue: November 17, 2003
Page 1 of 1	
Project Name: Fort McClellan	Project Number: 796887

-Variance Report -

I. Description: (by the person identifying the change)

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- 1) Retrieve the DAAMS pump, 2) replace the DAAMS pump with a second unit to collect confirmation samples, and 3) retrieve this second pump for confirmation of the original sample.

This variance authorizes the changes presented in Section III (below) to the Site-Specific Work Plan and the Site Specific Safety & Health Plan (SSHP) for 3X Scrap Removal.

Identified by: Stephen Moran

Date: November 17, 2003

II. Justification for Variance:

There are no technical and health & safety procedures in the 3X Work Plan to address the use of Level B PPE after a MINICAMS ring-off has occurred to retrieve DAAMS sampling equipment located inside the exclusion zone at the excavation site. These procedures will allow Shaw to don appropriate levels of personal protection to accomplish air monitoring.

III. Applicable Document/Work Plan: (by the person identifying the change)

Final Site-Specific Work Plan for 3X Scrap Removal. The following procedures will be performed in the event that a ring-off occurs.

1. **Work Plan, Section 2.4 – Monitoring and Identification of 3X Material, page 2-4:**
 If MINICAMS air monitoring results in two (2) consecutive alarms or ring-offs, two UXO team members will don Level B PPE and enter the exclusion zone to retrieve the DAAMS sampling pumps, replace the pump, then exit the exclusion zone. After 12 to 15 minutes the UXO techs – still in Level B PPE – will re-enter the exclusion zone to retrieve the second DAAMS pump. There will be a buddy system in place necessitating two UXO team members to execute the task. In addition, there will be two back-up personnel on standby to support the effort if additional assistance is required. Both team personnel (DAAMS Team and Standby Team) will wear Level B PPE.

2. **SSHP, Section 3.0 – Personnel Protective Equipment, page 9:**

Because of the toxicity and physical safety concerns associated with chemical agent materials, site personnel will not be permitted to continue work in areas which chemical agent materials have been identified unless work is performed in Level B personal protective equipment.

- NIOSH/MSHA-approved self-contained breathing apparatus or approved positive pressure airline respirator.
- Escape/egress air supply pack
- Saran-coated Tyvek taped at gloves, boots, and respirators
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (double inner glove)
- Neoprene steel-toed boots
- Hard hat

- Hearing protection (when working near/adjacent to operating equipment).

3. **SSEP, Attachment 5, Chemical Agent Monitoring Plan, Section 5.0 – Contingency Plan, page 9:**
 Following an alarm, all personnel will immediately evacuate the site. Two UXO technicians donning Level B PPE will re-enter the exclusion zone and re-position the end of the monitoring hose over the suspect CWM item. The UXO technicians will retrieve the DAAMS sampling pump. The retrieved pump will be taken to the UXO support team members located in the contamination reduction zone who will in turn take the pump to the monitoring personnel located in the support zone. After 12 to 15 minutes, the UXO team members, in Level B PPE, will re-enter the exclusion zone and retrieve the second DAAMS pump and transport this pump as described above.

Distribution List:

- Jeanne Yacoub, Shaw Project Manager
- Steve Moran, Shaw Technical Lead
- Jack Gregston, Shaw Site Manager
- Bill Hetrick, Shaw H&S
- Darryl Stabile, US Army Corps of Engineers
- Lee Coker, U.S. Army Corps of Engineers
- Norm Honea, Shaw
- Jorge Sanchez, Shaw QA/QC
- Dan Copeland, CEHNC
- Ben Hodges, Shaw SUXOS
- Butney Chance, Shaw SSO
- Bob Hickman, Shaw UXO Manager

- Signatures -	
Requested by:	<i>[Signature]</i> 11/17/03
Approved by:	<i>[Signature]</i> 11/17/03
Project Manager Approval:	<i>[Signature]</i> 11/17/03
Huntsville Engineering & Support Center Approval:	
Shaw H&S Approval:	<i>[Signature]</i> 11/17/03
Shaw QA Approval:	<i>[Signature]</i> 11/17/03



Shaw Environmental & Infrastructure, Inc.

Variance No: 3X variance 3

Linked w/NC No:

Date of Issue: February 5, 2004

Page 1 of 2

Project Name: Fort McClellan

Project Number: 796887

-Variance Report -

I. Description:

The *Final Site-Specific Work Plan, 3X Scrap Removal, October 2003* does not provide for the use of alternative methods of identifying inert OE material during excavation.

Identified by: Norm Honea and Ben Hodges

Date: January 30, 2004

II. Justification for Variance:

The Site-Specific Safety and Health Plan (SSHP) and the Site-Specific Unexploded Safety Plan Attachment (UXO Plan) state that "all work will be immediately halted" if "any OE material is encountered that cannot be positively identified as inert".

Only 3X scrap material (OE) is anticipated in the excavations. If any OE material is encountered that cannot be positively identified as inert; or if there is any indication of the presence of CWM materials, all work will be immediately halted, the site evacuated and the appropriate individuals notified (i.e., the site and project managers, the FTMC Base Environmental Coordinator, and the USACE representative).

The verification that an OE item is positively inert is not easy in some cases and requires the utilization of techniques other than visual inspection. Depending on the ordnance encountered, X-ray analysis may be the only method available to determine if an item is hazardous (i.e., contains explosive fillers).

III. Applicable Document/Work Plan:

- SSHP, Section 4.0, Site Monitoring, page 11, paragraph 5
- UXO Plan, Section 1.0, General Information, page 1, paragraph 5.

Recommend that the reference quoted in the sections listed above be changed to read:

Only 3X scrap material (OE) is anticipated in the excavations. However, if any ordnance item is encountered that cannot be positively identified as inert, and is determined to be safe to move, it will be further investigated. Further investigation may include the use of X-ray techniques. Should X-ray reveal that an ordnance item is non-CWM, the item may be explosively opened to ensure that it does not contain any explosive fillers or components. If the item is suspected to contain an explosive hazard and believed to be unsafe to move, it will be left in place, work will be halted, the site evacuated, and the appropriate individuals notified.

If there is any indication of the presence of CWM materials (such as a MINICAMS alarm), all work will be immediately halted, the site evacuated and the appropriate individuals notified (i.e., the site and project managers, the FTMC Base Environmental Coordinator, and the USACE representative).

FTMC 3X variance 3 Page 2 of 2	
<p><u>Distribution List:</u></p> <ol style="list-style-type: none"> 1. Jeanne Yacoub, Shaw Project Manager 2. Steve Moran, Shaw Technical Lead 3. Jack Gregston, Shaw Site Manager 4. Bill Hetrick, Shaw H&S 5. Damon Young, US Army Corps of Engineers 6. Lee Coker, U.S. Army Corps of Engineers 7. Norm Honea, Shaw 8. Todd Davidson, Shaw QA/QC 9. Dan Copeland, CEHNC 10. Ben Hodges, Shaw SUXOS 11. Burney Chance, Shaw SSO 12. Bob Hickman, Shaw UXO Manager 	- Signatures -
	Requested by: _____ Date _____
	Approved by: _____ Date _____
	Project Manager Approval: _____ Date _____
	Huntsville Engineering & Support Center Approval: _____ Date _____
	Shaw H&S Approval: _____ Date _____
	Shaw UXO Manager Approval: _____ Date _____
	Shaw QA Approval: _____ Date _____

 <p>Shaw Environmental & Infrastructure, Inc.</p>	<p>Variance No: 3X variance 3</p>
	<p>Linked w/NC No:</p>
	<p>Date of Issue: February 5, 2004</p>
<p>Page 1 of 2</p>	
<p>Project Name: Fort McClellan</p>	<p>Project Number: 796867</p>
<p>-Variance Report-</p>	
<p>I. Description:</p> <p>The Final Site-Specific Work Plan, 3X Scrap Removal, October 2003 does not provide for the use of alternative methods of identifying inert OE material during excavation.</p>	
<p>Identified by: Norm Houma and Ben Hodges</p>	<p>Date: January 30, 2004</p>
<p>II. Justification for Variance:</p> <p>The Site-Specific Safety and Health Plan (SSHP) and the Site-Specific Unexploded Safety Plan Attachment (UXO Plan) state that "all work will be immediately halted" if "any OE material is encountered that cannot be positively identified as inert".</p> <p><i>Only 3X scrap material (OE) is anticipated in the excavations. If any OE material is encountered that cannot be positively identified as inert, or if there is any indication of the presence of CWM materials, all work will be immediately halted, the site evacuated and the appropriate individuals notified (i.e., the site and project manager, the FTMO Base Environmental Coordinator, and the USACE representative).</i></p> <p>The verification that an OE item is positively inert is not easy in some cases and requires the utilization of techniques other than visual inspection. Depending on the ordinance encountered, X-ray analysis may be the only method available to determine if an item is hazardous (i.e., contains explosive fillers).</p>	
<p>III. Applicable Document/Work Plan:</p> <ul style="list-style-type: none"> • SSHP, Section 4.0, Site Monitoring, page 11, paragraph 5 • UXO Plan, Section 1.0, General Information, page 1, paragraph 5. <p>Recommend that the reference quoted in the sections listed above be changed to read:</p> <p><i>Only 3X scrap material (OE) is anticipated in the excavations. However, if any ordinance item is encountered that cannot be positively identified as inert, and is determined to be safe to move, it will be further investigated. Further investigation may include the use of X-ray techniques. Should X-ray reveal that an ordinance item is non-CWM, the item may be explosively opened to ensure that it does not contain any explosive fillers or components. If the item is suspected to contain an explosive hazard and believed to be unsafe to move, it will be left in place, work will be halted, the site evacuated, and the appropriate individuals notified.</i></p> <p><i>If there is any indication of the presence of CWM materials (such as a MINICAL's drum), all work will be immediately halted, the site evacuated and the appropriate individuals notified (i.e., the site and project manager, the FTMO Base Environmental Coordinator, and the USACE representative).</i></p>	

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		FTMC 3X variance 3 Page 2 of 2
Signatures -		
Distribution List 1. Jessine Yacoub, Shaw Project Manager 2. Steve Moran, Shaw Technical Lead 3. Jack Grayson, Shaw Site Manager 4. Bill Kestick, Shaw H&S 5. Damon Young, US Army Corps of Engineers 6. Lee Coker, U.S. Army Corps of Engineers 7. Norm Hanes, Shaw 8. Todd Davidson, Shaw QA/QC 9. Dan Copeland, CRINC 10. Ben Hodges, Shaw SUXOS 11. Stanley Chance, Shaw SSO 12. Bob Hickman, Shaw UXO Manager	Requested by:	<i>Tublow</i> 2/5/04 Date
	Approved by:	<i>[Signature]</i> 2/5/04 Date
	Project Manager Approval:	<i>[Signature]</i> 2/5/04 Date
	Hamble Engineering & Support Plans Approval:	<i>[Signature]</i> Date
	Shaw H&S Approval:	<i>[Signature]</i> 2/5/04 Date
	Shaw UXO Manager Approval:	<i>[Signature]</i> 2/5/04 Date
	Shaw QA Approval:	<i>[Signature]</i> 2/5/2004 Date

ATTACHMENT 3

**HEALTH AND SAFETY PLAN
FOR CYLINDER SAMPLING OPERATIONS**

Health and Safety Plan

for

Cylinder Sampling Operations

at

**Fort McClellan
Anniston, Alabama**

Prepared by:

**INTEGRATED
ENVIRONMENTAL SERVICES, INC.**

Atlanta, Georgia

May 2004

The following Health and Safety Plan has been prepared in accordance with standard operating procedures developed by Integrated Environmental Services, Inc. for the performance of all phases of waste compressed gas cylinder management. The Health and Safety Plan follows the guidelines set forth in, "U.S. Army Safety and Health Requirements Manual."

Table of Contents

<u>Section</u>	<u>Page</u>
1.0 ADMINISTRATION	1
1.1 Purpose.....	1
1.2 Company Policy Regarding Accident/Injury Prevention	1
1.3 Safety Administration and Organization	1
1.3.1 Program Administration.....	1
1.3.2 Site Safety and Health Technician	2
1.3.3 Project Crew	2
1.4 OSHA Requirements.....	3
1.4.1 Training	3
1.4.2 Medical Surveillance.....	3
1.4.3 Other Requirements	5
1.5 Injury and Accident Reporting	5
1.6 Hazard Communication Information.....	5
1.7 Inspections and Records.....	6
1.8 Education and Training	7
1.8.1 40-Hour Training	7
1.8.2 Site Specific Training.....	7
1.8.3 Daily (Tool Box) Safety Meetings	8
1.9 Inspections and Records.....	8
1.10 Emergency Contacts and Telephone Numbers	9
1.11 Hospital Information	9
2.0 TECHNICAL PLAN.....	10
2.1 Hazard Analysis	10
2.1.1 Known Site Contaminants	10
2.1.2 Unknown Chemical Hazards	15
2.1.3 Compressed Gas Cylinder Hazards	15
2.1.4 Operational Hazards.....	15
2.1.4.1 Construction and Physical Hazards	16
2.1.4.2 Thermal Stress.....	16
2.1.4.3 Weather-related Problems	16
2.2 Emergency Procedures.....	16
2.2.1 Physical Injuries.....	16
2.2.2 Chemical Injury.....	17
2.2.3 Fire or Explosion.....	17
2.2.4 Spill Containment and Response	18
2.3 Personal Protective Equipment.....	19
2.3.1 Protective Suit	19
2.3.2 Air Supply	19
2.3.3 Communications.....	20
2.3.4 Foot Protection	20
2.3.5 Hand Protection.....	20

2.3.6.	Eye Protection	20
2.3.7	Head Protection.....	20
2.4	Safety Zones	20
2.5	Decontamination	20
2.6	Engineering Controls.....	21
	2.6.1 Cylinder Overpack.....	21
	2.6.2 Tap and Saddle	21
2.7	General Site Safety Procedures.....	21

1.0 ADMINISTRATION

1.1 Purpose

The Integrated Environmental Services, Inc. (IES) Health and Safety Plan (HASP) contains the administrative programs and technical procedures that will be used during the cylinder sampling operations at Ft. McClellan, Alabama.

All operations of IES will be governed by this HASP. IES personnel will be expected to read and understand the HASP to assure all provisions and requirements for the site are understood and followed. Coordination efforts will be made to align communications programs and emergency response requirements between IES, and Shaw personnel.

The programs and procedures with the IES HASP are designed to:

1. Minimize potential for accidents to occur during any project phase.
2. Safeguard personnel working at the site; and
3. Protect off-site personnel and surrounding areas during the project.

The guidelines used in this document are required to be followed by persons participating in the project with regards to accident prevention and for both administrative and technical procedure. It will be present at the offices of IES as a reference item. It will also be read and used by all operations crew members in the field during this project.

1.2 Company Policy Regarding Accident/Injury Prevention

In accordance with this policy, IES maintains a health and safety program geared toward achieving a zero accident/injury rate. This policy has been developed and adopted by the

It is the policy of Integrated Environmental Services, Inc. to furnish each employee a work environment which is free from recognized hazards.

management of IES and as a condition of each subcontract, must be adopted and followed for the duration of each project by any subcontractors working for us.

1.3 Safety Administration and Organization

Safe execution of all site related activities is the principal goal of this project. To achieve this goal, detailed, site specific plans and procedures have been developed for use on this particular site and will be implemented by competent, trained individuals.

1.3.1 Program Administration

Overall responsibility for the Health and Safety Plan development and enforcement will reside with Mr. Jeff Gold. Mr. Gold is President of IES and will work in concert with Shaw personnel to ensure that procedures set forth in this plan are adhered to for the duration of this project. Mr. Gold's primary responsibilities include:

1. Overall project execution;

2. Interface with technical and administrative personnel;
3. Review accident and injury prevention measures for use during the project;
4. Enforcement of safety protocols on a corporate level throughout the contract;
5. Oversee safety training of all on-site IES personnel;
6. Develop air monitoring activities for the gas cylinder handling area, to augment those already in force at the site.

1.3.2 Site Safety and Health Technician

The position of Site Safety and Health Technician (SSHT) Ken Feinberg. This individual will be responsible for implementing and enforcing provisions of this plan during the execution phase of this project.

The SSHT will be present at the site on a full time basis with duties including but not limited to:

1. Conducting daily on-site reviews;
2. Maintaining training, daily, and weekly reports and logs relating to project safety issues;
3. Providing on-site support and maintenance of safety equipment and supplies;
4. Monitoring crew members for heat/cold stress;
5. Notifying appropriate authorities during emergency situations;
6. Ensuring the currency of Occupational Safety and Health Administration (OSHA) certifications; and
7. Updating and informing Shaw personnel of any safety related issues arising during the project activities.

The SSHT will have complete authority to stop operations at the site any time conditions warrant such actions.

1.3.3 Project Crew

Mr. Gold and Mr. Feinberg will likely comprise the crew for this project. The disposal phase may include different individuals.

1.4 OSHA Requirements

The Occupational Safety and Health Administration (OSHA) requires certain measures be taken to minimize the risk of injury or accident in any work environment, particularly with hazardous substances. The cylinder processing phase of this project requires working with hazardous materials, and will be executed per OSHA requirements as found in 29 Code of Federal Regulations (CFR) 1926 and 29 CFR 1900-1910.

1.4.1 Training

As a part of the Superfund Amendments and Reauthorization Act (SARA), OSHA enacted detailed requirements for the training of personnel involved with hazardous waste operations. The requirements prescribe the minimum level of training and certification which must be met by both workers and site supervisors prior to working on

a hazardous waste site. These regulations are found in 29 CFR 1910.120. A detailed description of the training that will be implemented as part of this project is described in Section 1.8 of this plan.

1.4.2 Medical Surveillance

All personnel involved directly with this operation will have been given a medical examination by a licensed physician specializing in occupational medicine within 12 months prior to entering the site. This examination will form the basis of the medical surveillance program in force at this project site.

The medical surveillance program's purpose is threefold:

1. Ensure that workers involved in site operations are in good health and able to perform the duties expected of them.
2. Document that site workers are physically capable of performing necessary tasks.
3. Establish medical base-line data for the purpose of historical comparison (i.e., to establish a "starting point" against which future medical testing may refer to detect increase or decrease in the parameters examined).

The medical surveillance program described below conforms to requirements of OSHA (29 CFR 1910.120) and National Institute of Occupational Safety and Health (NIOSH) recommendations for such a program.

- 1) *Chest X-ray PA view, ILO interpretation (over 35 years of age)
(Final X-ray at physician discretion.)*
- 2) *Electrocardiogram (EKG)*
- 3) *Pulmonary Function (Vital Capacity, FVC, FEV-1, FVC-5)*
- 4) *Visual Acuity*
- 5) *Audiogram*
- 6) *Complete Blood Count with Differential*
- 7) *Complete Urinalysis with Micro*
- 8) *SMAC 26 Blood Chemistry*
- 9) *Physical Exam - Pulse, Blood Pressure, etc.*
- 10) *Medical History*
- 11) *Heavy Metals Screen (Serum analysis for cadmium, chromium, mercury, lead,
and zinc)*
- 12) *Evaluation of Ability of Employee to use Respiratory Equipment*
- 13) *Pulmonary History*

Once all tests have been performed, a certificate signed by the examining physician will be filed indicating that the employee is capable of performing necessary work and is medically approved to wear respiratory protection. A copy of this certification will be maintained at the project office.

The full battery of tests contained within the physical examination will be repeated for the affected employee under any of the following conditions:

1. After acute exposure to any toxic or hazardous material present at the site.
2. At the occupational physicians discretion when the employee has been exposed to dangerous levels of toxic or hazardous materials at the project site.
3. At the discretion of the occupational physician, and at the request of an employee with demonstrated symptoms of over exposure to toxic or hazardous materials present at the project site.
4. Upon termination of an employee who has performed hazardous waste remediation. Post-project exams will be administered to project crew members if any of the conditions outlined above are met. As required by law, medical records for site workers will be kept on file for 30 years subsequent to the project completion.

Prior to the initiation of site activities, all workers will have had to be approved as medically fit to work on the project. Anyone who is shown to have medical problems which would affect their ability to work under the conditions imposed by this project will be prohibited from working at the site.

1.4.3 Other Requirements

Please see Section 2.8 of this HASP which covers general site safety requirements per OSHA guidelines.

1.5 Injury and Accident Reporting

In the event that an accident, injury, or an incident such as an explosion, fire, release of gas, or exposure to toxic chemicals occurs during the project, proper notifications to the Shaw personnel will be made and a report listing the following items will be completed:

1. Name, organization, telephone number, and contractor's location.
2. Name and title of person filing report.
3. Date and time of incident/accident.
4. Location of incident/accident.
5. Brief summary of accident/incident giving pertinent details including type of operation ongoing at the time of accident, medical treatment required and who provided the treatment.
6. Cause of accident/incident.
7. Types and number of injuries.
8. Details of any existing chemical hazard or contamination.
9. Estimated property damage.
10. Nature of damage and effect on contract schedule.
11. Action taken by contractor to insure safety and security.
12. Other damage or injuries sustained.

All personnel will be instructed to report any injury to the SSHT as soon as possible after the injury. The SSHT will report significant injuries or lost-time injuries to Mr. Gold immediately. These injuries will be documented in the OSHA 300 Log and maintained at IES= corporate office and on site during project operations. A daily record of all first aid treatment not otherwise reportable (OSHA Form 300 or otherwise) will be maintained.

1.6 Hazard Communication Information

In conformance with Federal regulations addressing hazard communication and worker right-to-know, IES will actively inform all personnel participating on this project of the hazards associated with the work environment. As part of this effort, the following topics will be discussed to properly inform project members of potential hazards and appropriate safety procedures:

1. Project safety requirements;
2. Employee's responsibility for property and the safety of others;
3. Employee's responsibility for reporting all accidents;
4. Medical facilities and required treatment, including specific procedures for emergency medical services contact;
5. Procedures for reporting or correcting unsafe conditions or practices;
6. Fire fighting and other emergency procedures;
7. Job hazard and activity hazard analyses;

8. Alcohol and drug abuse policy; and
9. Chemical hazard data - Material Safety Data Sheets (MSDS).

This information will be given to project members at the job beginning and updated weekly on a regular basis for the duration of the project field activity portion.

These records will be made a part of the project file and maintained at the IES corporate office.

In conformance with Federal hazard communication and worker right-to-know legislation, MSDS for the known chemicals being handled will be maintained both at the IES corporate office and at the project site. Materials used in chemical processing at the project site which are classified as possessing potentially hazardous properties will be included in an hazard communication program. MSDS contain information vital to the safe handling of individual chemicals and includes information relating to the chemical's physical and chemical properties, spill containment techniques, personnel protective gear required when handling the chemical, and other pertinent safety-related data. Each employee working on site will be appraised of the hazards associated with chemicals included in this program and will be given free access to the MSDS for all inventoried chemicals.

MSDS information will be maintained in the on site analytical station and reviewed as a part of site-specific training activity. When any new chemicals are discovered on site, an appropriate MSDS will be generated.

1.7 Inspections and Records

IES will prepare a series of reports designed to maintain quality control throughout the project. While there are numerous reports prepared, those listed below are most closely associated with work performance.

- 1) Preparatory Inspections
- 2) Safety Inspections
- 3) Completion Inspection

These inspections and reports are more closely related to the Standard Operating Procedures and are discussed under that cover.

1.8 Education and Training

All personnel entering the work area will be informed of the possible dangers. All personnel involved directly with the cylinder management aspects of this project will be trained in both general and site-specific safety procedures.

The safety training's purpose is: 1) develop safe work habits among the work crew, and 2) train and inform personnel involved with site work regarding site hazards to minimize potential for accidents or exposure to hazardous conditions.

1.8.1 40-Hour Training

All personnel working on the site will undergo safety training in accordance with requirements set forth in 29 CFR 1910.120. This training involves a minimum of 40 hours of formal classroom and hands-on training offering a full range of topics related to safety while working on hazardous waste sites. In addition, each employee augments the 40-hour training with a minimum of 24 hours of actual field experience working under the supervision of a qualified supervisor.¹

Supervisory personnel will have successfully completed the 40-hour training plus an additional 8 hours of site supervisor's training addressing oversight and safety management at hazardous waste sites. Certificates of training, attesting to required training completion, will be kept on file at the IES corporate office and at the site office.

1.8.2 Site Specific Training

In addition to the 40-hour safety training required by Federal law, each employee with work responsibilities in the Exclusion Zone or Cylinder Contamination Reduction Zone (See Section 2.4) will be given site-specific safety training. The purpose of this training is to familiarize personnel with the hazards specific to the cylinder management job and provide instruction in safety procedures to adequately address them. Key areas in the site-specific safety training curriculum are detailed in Figure 1. Documentation of site-specific safety training will be maintained at the project office.

All safety training will be completed prior to activities at the site. New employees assigned to work after initial training has been conducted will undergo all required training and instruction as detailed in this program. Each employee will be advised that any disregard of safety precautions will be cause for termination and immediate dismissal from the site.

1.8.3 Daily (Tool Box) Safety Meetings

The daily (single) safety checklist is reviewed and current issues related to operations and safety are discussed and documented prior to initiating any cylinder sampling activity.

Tool box meetings will be attended by all IES site personnel assigned to the job and will be held daily at a regularly appointed time (usually prior to starting the day's work). Shaw personnel are invited to attend. This will help ensure good coordination between all parties.

1.9 Inspections and Records

Inspections will be conducted throughout the project to ensure that work is proceeding according to schedule within the framework of project specifications. The program will include the following:

Preparatory Inspections. This inspection will be performed prior to beginning each feature of work involving on-site operations and includes review of contract requirements, field controls, status of preliminary work, and inspection of equipment and equipment staging.

¹ "Qualified" person means one who can identify existing and predictable hazards in the working environment which are dangerous to personnel and has the authority to promptly eliminate them. This person is one who, by degree, certificate, professional standing, or extensive knowledge, training and experience has demonstrated his/her ability to resolve problems related to the work.

Safety Inspections. A daily site safety inspection will be conducted. Observations of safety procedures and conduct will be noted in the reports along with any deficiencies and corresponding corrective actions taken.

Site-Specific Training Curriculum

- 1) Safety organization at the site including reading the HASP.
- 2) Site-specific hazard analysis: chemical, physical and biological.
- 3) Toxicity information for known and suspected site contaminants.
- 4) Standard safety operating procedures.
- 5) Safety equipment to be used.
- 6) Personal protective equipment, respiratory equipment to be worn.
- 7) Cylinder removal and handling procedures.
- 8) IES areas of restricted access (site zones).
- 9) IES emergency procedures and plans.
- 10) Evacuation procedures.
- 11) Cylinder processing procedures.
- 12) Relevant first aid procedures.
- 13) Internal and external communications.
- 14) Air monitoring.
- 15) Hazard communication program (29 CFR 1910.1200)
- 16) Site administration and lay-out.
- 17) Public relations and third-party interactions.

Daily safety logs will serve to document the safety procedures, inspections, and events occurring at the site on a day-to-day basis. The SSHT maintains a complete set of report forms in a project notebook. All completed reports and records are maintained at the IES corporate office in Atlanta, Georgia as part of the project file.

1.10 Emergency Contacts and Telephone Numbers

Shaw maintains the list of emergency contacts. IES personnel will review this list and will have a copy with them prior to proceeding with the project.

1.11 Hospital Information

Emergency medical service will be provided by the City of Anniston Ambulance Service . They will maintain an on-site presence during all field activities. Should transport to a medical facility be required, the **Northeast Alabama Regional Medical Center** will be used. Their phone number is 256-235-5152.

IES will rely upon Shaw to provide emergency contact and response. IES personnel will read the SHAW HASP and will be aware of the hospital name and location.

2.0 TECHNICAL PLAN

2.1 Hazard Analysis

For this project there are two types of hazard: Physical hazards inherent in site preparation and cylinder handling work and chemical hazards associated with management of gases to be treated.

The execution of specific work procedures are required to minimize potential adverse effects. A detailed Hazard Analysis applicable to site operations is provided in Table 1.

A summary of tasks as associated Personal Protective Equipment (PPE) which will be worn is shown in the chart below:

Task	PPE
Mobilization, Site Preparation, Demobilization	Level D
Cylinder Inspection	Level B (Light weight ensemble)
Cylinder Sampling	Level B (Light weight ensemble)
Content Disposition	Level B (PPE per SSHT)

For the purposes of this project, Level B PPE encompasses a single ensemble: an airline respirator, 5-minute egress bottle, steel-toed work boot, chemical resistant gloves, and a poly-coated Tyvek coverall. Should the SSHT so direct, heavier weight suits will be employed.

2.1.1 Known Site Contaminants

The material contained in the single cylinder at Ft. McClellan is unknown. Once the content is determined by taking a sample and performing analysis, it may be necessary to dispose of it. If such is the case, IES may bring to the site reagent material for this purpose. This material will likely be either sodium hydroxide or sulfuric acid depending upon the gas type.

MSDS will be available for all chemicals maintained on site.

There are two primary chemical exposure routes applicable to this project:

1) Inhalation

Chemical inhalation may damage the mucous membranes of the mouth, nose, throat, and lungs. It often passes rapidly to the lungs attacking the circulatory system capillaries. In addition, a large number of chemicals are capable of entering the body via inhalation and targeting various internal organs including the brain, central nervous system, liver, and kidney.

2) Dermal

Dermal contact with gaseous contaminants found in target gas cylinders is unlikely due to the coverage afforded by the protective suits that will be worn by personnel working with the cylinders during transport and treatment. Although the chances of exposure are remote, contact with materials contained inside some target cylinders, even in small amounts, could result in

injuries such as mucous membrane irritation, irreversible eye damage, and third degree burns. Great care will be taken to ensure that all portions of the protective suits worn during this job, are completely intact before personnel are allowed to handle other hazardous chemicals identified on this site.

2.1.2 Unknown Chemical Hazards

The single cylinder has uncertain contents. Careful evaluation of cylinder type and markings as well as valve type and markings will provide clues as to the general types of gas which may be found. Flammables require a specific type of valve; poisons require another; etc. The single cylinder was excavated from an area which was thought to contain chemical warfare material (CWM). As such, the cylinder may contain such things as:

- Mustard (HD)
- Phosgene (carbonyl chloride [CG])
- Lewisite (L)
- Nerve Agent (VX)
- Sarin (GB)
- Cyanogen Chloride (CK)
- Hydrogen Chloride

In the absence of specific data, it must be treated as a very dangerous chemical. Until the gas has been identified, all personnel tasked with sampling will dress in Level B PPE.

2.1.3 Compressed Gas Cylinder Hazards

During the preparation stage for the sampling and, later for the disposal of the cylinder, breathing air and nitrogen cylinders will be staged. Working with compressed gas cylinders presents several unique physical hazards. Most notable, is the danger of breaching the cylinder vessel or valve. Such a breach allows the cylinder's pressurized contents to escape in an uncontrolled manner and can violently propel the cylinder causing it to become a missile if the valve is damaged or forcibly removed from the cylinder end. The consequences of such an uncontrolled release can be devastating. Numerous deaths have been caused by careless handling of cylinders containing compressed gases, even when the gases themselves were non-toxic.

2.1.4 Operational Hazards

Operational hazards at any construction site include cuts, abrasions, punctures and other bodily injuries caused by equipment and machines used during the job. Physical hazards also include temperature impact. Due to the heavy and impermeable nature of the personal protective equipment, heat represents a constant concern. Processing is scheduled to take place during a summer month, possible heat stress will be monitored.

2.1.4.1 Construction and Physical Hazards

The designated SSHT will be responsible for inspecting the area to identify potential work place hazards. Any hazards identified by the SSHT will be corrected before work operations begin. The SSHT shall utilize caution when inspecting the work site and not attempt to remove physical hazards without assistance unless it can be accomplished safely.

2.1.4.2 Thermal Stress

Given the time of year that the cylinder sampling project will be performed, heat stress is may be a problem.

2.1.4.3 Weather-related Problems

Weather related problems such as wind, and rain, may delay work related activities and create hazardous working conditions. The SSHT will evaluate any inclement weather conditions and decide upon appropriate measures.

2.2 Emergency Procedures

All communication equipment will be operable upon arrival at the site and will be tested prior to initiation of work activities.

In the event of an emergency, Shaw personnel will be alerted at the earliest possible moment, particularly if it may effect others working in and around the area.

Each crew member will have designated duties and responsibilities to perform in the event of an emergency at the site. These duties will include such tasks as shut-down of various equipment, activation and use of containment procedures, and other emergency-related tasks. The following subsections discuss various emergencies and IES' planned response.

2.2.1 Physical Injuries

Physical injuries occurring during the project will be managed in the following manner:

1. For minor injuries, routine first-aid procedures will be used.
2. For major injuries (bleeding, broken bones, shock burns, hypothermia, seizure, etc.) the on site ambulance staff will be immediately summoned.
3. If the injury is more serious and/or warrants further medical attention, the victim shall be transported to the Northeast Alabama Regional Medical Center (256-235-5152).

2.2.2 Chemical Injury

Cylinder handling activities could potentially involve chemical injury. The following information is provided as basic guidance in managing such an injury.

A chemical injury at the site requiring off-site medical assistance will be treated in the following manner:

1. For persistent contaminants, rescue personnel will don gloves, chemical protective coveralls, and an airline respirator before initiating response actions.
2. The victim will be removed to fresh air and resuscitated, if necessary.
3. The victim's vital signs will be assessed.

4. If skin or clothing is chemically contaminated and injuries permit, clothing will be removed and skin will be flooded with copious amount of water.
5. If the eyes are contaminated, they will be irrigated immediately with copious amounts of water for 15 minutes (minimum).

2.2.3 Fire or Explosion

In the event that a fire or explosion occurs at the project site during processing operations, the Anniston Fire Department located on FTMC will be notified immediately (256-231-7684).

Fire extinguishers will be located at the site to facilitate control of small fires which might occur. Each fire extinguisher will be rated 1-A:10-B:C at a minimum. Employees will be shown the location of all extinguishers.

In the event of a small fire at the site, the following actions will be taken (at a minimum):

1. Evacuate all unnecessary personnel from the area, if possible, to an upwind location.
2. Request emergency assistance.
3. Attempt to extinguish fire using portable fire extinguishers or by smothering, if appropriate.
4. Decontaminate all personnel at the deluge safety shower before leaving the exclusion zone.
5. Notify the designated representative.

Larger fires and small fires which cannot be extinguished will be managed in the following manner:

1. Evacuate all personnel from the active site to an upwind location or prescribed evacuation route.
2. Notify the designated representative.

For fire situations involving gas cylinders, the following actions will be taken:

Fire threatening compressed gas cylinders: There is a risk of rupture/explosion of cylinders subjected to prolonged heating (such as in a fire). The SSHT shall make the determination if it is safe to move cylinders that may be at risk of becoming too hot. If this is not possible, the cylinders should be cooled with water hosed from a safe distance.

2.2.4 Spill Containment and Response

In an emergency situation involving a leaking cylinder, the following actions will be taken immediately:

1. The area around and downwind of the leaking cylinder will be identified and notifications issued to downwind receptors, if necessary.
2. The leak's source will be determined and rectified if possible. Due to the high level of protection afforded by the safety apparel chosen for this project, it will be possible for all crew members to work directly with the leaking cylinder, if necessary, in order to safely and expeditiously contain leaks or spills. The corrective actions for various gas cylinder leakage situations are shown in the Table 1.
3. When use of the secondary containment vessel or a cylinder overpack is not possible, and the cylinder contains liquefied gas, the cylinder will be oriented in such a way that the leak is above the liquid level (generally with leak point located at the highest possible position).
4. Unnecessary personnel will be kept away from the site and entry will be denied to all but emergency personnel.
5. All crew members not essential to the containment or scrubbing activity will exit the site and await further instructions or perform pre-assigned emergency duties.
6. All non-essential or unprotected personnel will evacuate the site.
7. Air monitoring equipment will be used to determine when contaminant gas levels have subsided.

2.3 Personal Protective Equipment

The following subsections describe the equipment used to protect IES personnel. This discussion includes clothing, respirators, and air supply.

2.3.1 Protective Suit

IES personnel will don poly-coated Tyvek outer clothing and nitrile gloves for the sampling operation. During the disposal operation, the PPE will likely be the same subject to the determination by the SSHT.

2.3.2 Air Supply

Breathing air supplied to the airline respirators comes from a bank of breathing air cylinders. Cylinders may be obtained from a commercial supplier or generated by IES. In either case Grade D (minimum) standard is required. The air bank is comprised of a single cylinder to a pressure-reducing regulator and manifold where standard breathing hose airlines are connected and routed to individual users.

Standard heavy-duty airlines route air from the distribution manifold to individual users involved in the cylinder repackaging operation. Care is taken to avoid crossing and tangling the airlines during active site operations.

2.3.3 Communications

While on site, IES personnel will rely on cell phones for off-site communications and radios for on-site communications.

2.3.4 Foot Protection

All personnel at the site will be equipped with steel-toed boots to protect the wearer's feet from crushing forces or puncture wounds. This type of protection is afforded either through standard work boots or chemical-resistant boots.

2.3.5. Hand Protection

Leather work gloves will be used during different phases of project execution to minimize hand injuries caused by cuts, scrapes, minor impacts, and abrasions.

2.3.6. Eye Protection

Safety glasses shall be worn by personnel working at the site during those tasks that do not require respiratory protection (e.g. Level D operations). Shatter-resistant lenses on the respiratory gear face pieces will protect the wearer's eyes during work involving hazardous substances.

2.3.7 Head Protection

Hard hats will not be required during this operation.

2.4 Safety Zones

IES personnel will conform to Shaw requirements for operating in an area removed from the workforce. It is anticipated that a single, exclusionary zone, will be established and demarcated. This zone should be approximately 150 feet around the target cylinder.

2.5 Decontamination

Shaw will provide water and spray bottles which may be used for decontamination during the sampling phases of the project.

Once the gas is identified and should it not be CWM, IES will destroy the content of the cylinder and decontaminate the cylinder carcass. In this case the carcass will be rinsed with a solution of reagent and water. This rinsate will be collected for disposal by Shaw.

2.6 Engineering Controls

IES will use two engineering controls for this project.

2.6.1 Cylinder Overpack

The cylinder is currently stored in an IES high pressure overpack. This overpack is not DOT approved for over-the-road transport, but is more than adequate to hold the target cylinder until sampling is completed.

IES will use the tap and saddle approach for accessing the cylinder. IES will leave the tap and saddle in place until the sample is analyzed. The current overpack is not sufficiently large to contain the cylinder with saddle and tap attached. As such, IES will be supplying another pressure vessel to house the cylinder until final disposition.

2.6.2 Tap and Saddle

The penetrator is a valved device containing a packed drill bit. The penetrator is secured to the saddle bushing and an electric drill attached to the bit. A manifold is attached to the valve outlet. The drill is actuated and a hole made in the cylinder side wall. The drill bit is backed out of the whole sufficiently to allow the gas to flow out of the cylinder. The valve on the penetrator is then opened to allow the gas to flow to the manifold from which a sample may be collected and through which the gas may be directed to treatment.

2.7 General Site Safety Procedures

In addition to the procedures outlined throughout this plan, the following pages list general safety rules and procedures that will be applied and enforced for the project duration. The plans reflect good safety practices and follow military standards for construction-type work. These rules cover such topics as:

- 1) Personal Precautions
- 2) Housekeeping
- 3) Fire Prevention
- 4) Electrical Safety
- 5) Hand and Power Tool Safety
- 6) Machinery and Mechanical Equipment Safety
- 7) Medical and First Aid Procedures
- 8) Potable Water and Sanitary Facilities

**Table 1
Hazard Analysis**

PHASE	POTENTIAL HAZARD	CHEMICAL HAZARD	PHYSICAL HAZARD	SAFETY PROCEDURE
1) Mobilization/Site Preparation and Demobilization	1A. Construction-related injury. Including: a) Slips b) Trips c) Falls d) Cuts e) Abrasions f) Impacts g) Lifting injury		X	1a. Equip personnel with steel-toed, work boots, leather gloves, safety glasses, and hard hats to be worn whenever working inside work area boundary. (Environmental Protection Agency - EPA Level D) Access ways into and out of the work area will be kept free open. Tools, materials, extension cords, hoses, or debris will be positioned to eliminate tripping or impact hazards. When required to work at heights above six feet (6'), workers will use a personal fall arrest system that has been inspected prior to use and meets the requirements set forth in 29 CFR 1926.500-503. Tools, materials, and equipment subject to moving or falling will be secured in place. All hand and power tools will be in good repair and used only for the purpose for which they are designed. Tools having defects that will impair their strength or render them unsafe will be removed from service. When work is being performed overhead, tools not in use will be secured or placed in holders. Throwing tools or materials from one location to another, from one person to another, or dropping them to lower levels, will not be permitted. Any machinery or equipment found to be unsafe will be dead lined and its use prohibited until unsafe conditions have been corrected. Lifting of heavy objects will be done in strict accordance with proper lifting techniques
	1B. Heat Stress		X	1b. Given the time of the year, heat stress may be a problem. The time required to tap and pull a sample should mitigate heat stress. Monitoring will be instituted as required.
	1C. Electrical Shock		X	1c. Only those workers qualified for electrical wiring work will be allowed to perform such work. In addition, all electrical tools will be in good working condition, properly grounded and insulated. Electric wire passing through work areas will be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, projections, or pinching. Extension cords or cables will not be fastened with staples, hung from nails, or suspended by bare wire. Flexible cord sets will be of a type listed by the Underwriters Laboratory (UL). Flexible cord sets used on construction sites will contain the number of conductors required for the service plus an equipment ground wire. The cords will be Type ST, STO, SJT, S, SO, SEO, W or G. Ground fault circuit interrupters will be checked prior to installation to ensure proper operation. In the event of a near-by thunderstorm, site operations will cease until the storm has passed.

**Table 1
Hazard Analysis**

PHASE	POTENTIAL HAZARD	CHEMICAL HAZARD	PHYSICAL HAZARD	SAFETY PROCEDURE
PHASE	POTENTIAL HAZARD	CHEMICAL HAZARD	PHYSICAL HAZARD	SAFETY PROCEDURE
2) Cylinder Inspection, and Evaluation	2A. Physical hazards including: a) Slips b) Trips c) Falls d) Cuts e) Abrasions f) Impacts g) Lifting injury h) Air supply hose cut, kinked, or disconnected.		X	2a. (See 1a - Omit use of Level D PPE) All personnel in Level B will be equipped with a 5 minute escape pack thus mitigating any problems with cut or kinked airline.
	2B. Electrical Shock		X	2b. Operations under this task will not require working around or with energized electrical equipment which pose a potential hazard to operations personnel.
	2C. Fire		X	2c. Fire extinguishers will be maintained near the evaluation location at all times.
3) Cylinder Sampling and content disposition	3A. Physical hazards 3B. Chemical Exposure: Gas or Liquid release from cylinder.	X	X	3a. (See 2a omit use of Level D PPE) 3b. Personnel handling target cylinders will be attired in EPA Level B protective gear. Air-line respirators are to be used. Hard hats are not required. Emergency eyewash will be on site has well as spray bottles to wash any contacted area. Target cylinders are to be handled very carefully. Handling will be kept to a minimum. If possible, gas leaks from target cylinders will be repaired by operating personnel fully attired in Level B protective gear.