Final
Site-Specific Ordnance and Explosives Work Plan

Fill Area North of Landfill No. 2, Parcel 230 (7); Fill Area at Range 30, Parcel 231(7); and Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7) For Support of Construction Activities

Fort McClellan
Calhoun County, Alabama

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List of Acronyms

ASR	Archive Search Report
CEHNC	U. S. Army Corps of Engineers, Engineering and Support Center, Huntsville
CWM	Chemical Warfare Material
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
EZ	exclusion zone
°F	degrees Fahrenheit
FTMC	Fort McClellan
HTRW	hazardous toxic and radioactive waste
IT	IT Corporation
MPM	most probable munition
OE	ordnance and explosives
PPE	personal protective equipment
SAIC	Science Applications International Corporation
SAP	installation-wide sampling and analysis plan
SSHP	site-specific safety and health plan
SSHO	site safety and health officer
SUXOS	senior unexploded ordnance supervisor
USACE	U.S. Army Corps of Engineers
USAESCH	U. S. Army Corps of Engineers, Engineering and Support Center, Huntsville
UXO	unexploded ordnance
UXOQCS	UXO quality control specialist
UXOSO	UXO safety officer

1.0 Introduction and Objective

This site-specific ordnance and explosives (OE) work plan for Fill Area North of Landfill No. 2, Parcel 230(7); Fill Area at Range 30, Parcel 231(7); and Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7) has been prepared by IT Corporation (IT) for the U. S. Army Corps of Engineers (USACE)-Mobile District under Task Order CK009 of contract number DACA21-96-D-0018.

This document has been prepared in accordance with the installation-wide sampling and analysis plan (SAP), Appendix E, *Installation-Wide Ordnance and Explosives Management Plan for Support of Hazardous, Toxic, and Radiological Waste Activities and Construction Activities at Fort McClellan, Alabama* (IT, 2000a). This site-specific OE work plan provides technical guidance for OE avoidance and construction support activities for hazardous, toxic, and radiological waste (HTRW) investigation, sample collection, and analysis to determine the vertical and horizontal extent of the fill areas listed above. Where appropriate, reference to the installation-wide OE management plan for general information and procedures is provided in lieu of extended discussion that does not address site-specific characteristics.

1.1 General Information

The U.S. Army is conducting studies of the environmental impact of suspected HTRW contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the USACE-Mobile District. The USACE has contracted IT to provide environmental services to conduct an engineering evaluation/cost analysis (EE/CA) for the fill areas listed in Chapter 1.0 above. This site-specific OE work plan will be used to support HTRW and construction activities at the work sites should incidental OE/unexploded ordnance (UXO) be encountered and require disposal or avoidance.

1.2 Site Locations

The parcels covered by this plan are all located on the FTMC Main Post. Two of the parcels are in the northeast section, while the third is located on the southwest portion of the Main Post. The following sections provide more detailed site location information for the three parcels covered by this plan.

1.2.1 Fill Area North of Landfill No. 2, Parcel 230(7)

Fill Area North of Landfill No. 2, Parcel 230(7) is located in the northeastern area of the FTMC Main Post, a short distance northeast of Landfill No. 2 and north of the Ammunition Supply Point. Parcel 230(7) is also known as the Fill Area North of the Ammunition Supply Point. The fill area is located immediately east of an unimproved road extending north from the Chemical Defense Training Facility access road. The size of the fill area is about 2 acres. Fill Area North of Landfill No. 2, Parcel 230(7) is shown in Figure 2-9 of the IT *Engineering Evaluation/Cost Analysis Fill Area Definition Work Plan, Parcels 78(6), 79(6), 80(6), 81(5), 175(5), 230(7), 227(7), 229(7), 126(7), 231(7), 233(7) and 82(7), Fort McClellan, Calhoun County, Alabama,* (IT, 2000b).

1.2.2 Fill Area at Range 30, Parcel 231(7)

Fill Area at Range 30, Parcel 231(7) is located on the northeast portion of the Main Post, near the eastern end of Reilly Airfield. Parcel 231(7) fronts an unnamed paved road east of the northern end of 10th Street near Reilly Airfield and lies between two unimproved dirt roads. The size of the fill area is 3.6 acres. Fill Area at Range 30, Parcel 231(7) is shown in Figure 2-12 of the IT *Engineering Evaluation/Cost Analysis Fill Area Definition Work Plan, Parcels 78(6), 79(6), 80(6), 81(5), 175(5), 230(7), 227(7), 229(7), 126(7), 231(7), 233(7) and 82(7), Fort McClellan, Calhoun County, Alabama* (IT, 2000b).

1.2.3 Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7)

Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7) is located in the southwest area of the Main Post, approximately 550 feet west of Iron Mountain Road and immediately southwest of an unnamed asphalt road. The parcel covers just over 1 acre. Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7) is shown in Figure 2-12 of the IT *Engineering Evaluation/Cost Analysis Fill Area Definition Work Plan, Parcels 78(6), 79(6), 80(6), 81(5), 175(5), 230(7), 227(7), 229(7), 126(7), 231(7), 233(7) and 82(7), Fort McClellan, Calhoun County, Alabama* (IT, 2000b).

1.3 Site History

1.3.1 Fill Area North of Landfill No. 2, Parcel 230(7)

This fill area consists of an area where rusted drum parts, other metal, and construction and demolition debris have been observed. It appears that materials were dumped down the slope to the east from the unimproved road toward Cave Creek. The site is now overgrown with vegetation and has large trees growing between the base of the slope on the eastern side of the site and Cave Creek. Seeps were not observed during the IT June 1998 site visit; however, they were reported to be along the eastern side of the site at the base of the slope that runs north and south. Documentation is not available regarding the type of material placed at this location. Fill Area North of Landfill No. 2, Parcel 230(7) falls within a "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC Archive Search Report (ASR), Maps (USACE, 1999a).

1.3.2 Fill Area at Range 30, Parcel 231(7)

The dates of operation for the Range 30 could not be determined. However, Range 30 is visible on 1949, 1954, 1961, 1972, and 1982 aerial photographs. Based on interviews, it appears the range was deactivated between 1983 and 1989. There is a possible fill area on the acreage once occupied by Range 30. The fill area within Range 30 is the focus of the site investigation. Documentation or records of fill areas or disposal practices at Range 30 were not available.

Fill Area at Range 30, Parcel 231(7) falls within a "Possible Explosive Ordnance Impact Area" as shown on Plate 10 of the FTMC ASR, Maps (USACE, 1999a) and was also visible on 1949, 1954, 1961, 1972, and 1982 aerial photographs. Based on interviews, it appears the range was deactivated between 1983 and 1989.

1.3.3 Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7)

Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7) is identified from a 1949 aerial photo composite (U. S. Environmental Protection Agency [EPA], 1990). Information is not available regarding the type of material placed at this location. The boundaries of the parcel are not well defined.

Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7) is identified as the Combat Range No. 2 and Rocket Range in the FTMC ASR, Maps (USACE, 1999a). The Combat Range No. 2 was reportedly built during the Inter-War period and initial use is unknown. During World War II, the Combat Range No. 2 was divided into other uses including a rocket range, a machine

gun range, and two rifle grenade ranges. By 1958, all ranges in this area were closed or abandoned.

1.4 Topography

1.4.1 Fill Area North of Landfill No. 2, Parcel 230(7)

Fill Area North of Landfill No. 2, Parcel 230(7) comprises over 2 acres and has a slope of 20 to 25 feet running north and south through the center part of the site. The site is overgrown with vegetation and has large trees growing between the base of the slope on the eastern side of the site and Cave Creek. The fill area has been observed in the past to contain rusted drum parts, other metals, and construction and demolition debris.

1.4.2 Fill Area at Range 30, Parcel 231(7)

The front acreage of range 30 (approximately 10 acres) has been plowed and seeded as a feed area for wild animals. A rectangular body of water (seep) was noted near the southern part of the site in the study area of over three acres. An intermittent stream has its origins on the slope southeast of the parcel and flows north along the eastern boundary and crosses underneath the paved road at the northernmost point of the parcel. The far southern portion of the site is graded soil without any grass or shrubs. The unimproved road that crosses the rear portion of the site is covered near the midway point by a shallow pond during wet periods. The south portion of the site contains dense vegetation.

1.4.3 Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7)

The width of Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7) is about 160 feet (east to west), and approximately 350 feet long (north to south) and comprises a little over one acre. The site slopes to the north. Vegetation across the parcel varies. The northern end of the parcel is thickly populated with large pine trees. In other areas of the parcel, vegetation is sparse. In the southern portion of the parcel, rocks, metal debris, dirt mounds, and partially exposed drums at the surface were observed. There is a tributary of Remount Creek approximately 220 feet northwest of the fill area that flows in a northeasterly direction.

1.5 Climate

FTMC is situated in a region with a temperate, humid climate (Science Applications International Corporation [SAIC], 1999). Summers are hot and long, and winters are usually short and mild to moderately cold. The climate is influenced by frontal systems moving from

northwest to southeast, and temperatures change rapidly from warm to cool due to the inflow of northern air. The average temperature is 63 degrees Fahrenheit (°F), with summer temperatures usually reaching 90°F or higher about 70 days per year (SAIC, 1999). Temperatures above 100°F are relatively rare. Freezing temperatures are common, but are usually of short duration. The first frost may arrive by late October. At Anniston, the average date of the first 32°F temperature is November 6 and the last date is March 30 (SAIC, 1999). Snowfall averages 0.5 to 1 inch. This provides a growing season of 221 days. Several inches of snow may accumulate from a single storm on rare occasions, as was the case during the blizzard of 1993. The average annual rainfall is approximately 53 inches and is fairly well-distributed throughout the year (SAIC, 1999). The more intense rains usually occur during the warmer months and some flooding occurs nearly every year. Approximately 80 percent of the flood-producing storms are usually thunderstorms with intense precipitation over small areas, and these sometimes result in serious floods. A study of wind velocity, duration, and direction indicates that winds in FTMC area are seldom strong and frequently blow down the valley from the northeast. However, there is no truly persistent wind direction. Most of the time, only light breezes or calm prevail, except during passages of cyclonic disturbances, when destructive local wind storms may develop into tornadoes, with wind speeds of 100 miles per hour or more (SAIC, 1999).

1.6 Identification of Guidance, Regulations, or Other Policies Under Which Operations will be Conducted

All activities that IT will perform at these fill areas will comply with the guidance, regulations, policies, and requirements set forth in the installation-wide OE management plan for support of HTRW and construction activities (IT, 2000a).

1.7 Chemical Warfare Materials

This section discusses site-specific procedures to be followed when suspect chemical warfare material (CWM) is encountered. General information and procedures are contained in Section 2.3.10 of the installation-wide OE management plan (IT, 2000a).

1.7.1 Response to CWM

Any time suspected CWM is encountered, all work will immediately cease. Project personnel will withdraw along cleared paths upwind from the discovery. The UXO team will immediately report the chemical event to the site manager and project manager, who in turn will report the chemical event to Ron Levy of the FTMC Directorate of Environment and Ellis Pope of the USACE-Mobile District. USACE-Mobile District personnel will report the chemical event to

the USACE, Engineering and Support Center, Huntsville (USAESCH). A UXO team consisting of a minimum of two qualified personnel will secure the suspect CWM discovery and standby in an upwind location until relieved by the government representative. The initial exclusion zone (EZ) for chemical weapons is 450 feet upwind per Field Manual 9-15, Explosive Ordnance Disposal Service and Unit and EP 110-1-18, OE Response (USACE, 2000).

1.7.2 Reporting Procedures

The UXO team will provide a suspect CWM report that contains the following information:

- Date and local time of event
- Location
- Preliminary identification of suspect CWM including quantity and type of munition(s) or container(s)
- Description of what has happened
- Description of any property damage, personnel casualties and/or injures
- Description of whether medical services or facilities were required
- List of immediate notification and support requirements identified during initial emergency response assessment
- Any other pertinent information.

1.8 Technical Scope of the Project

The technical objective of this project is to determine the vertical and horizontal extent of the fill areas. To accomplish this task, IT will use remotely-operated equipment to accomplish trench excavations. Remotely-operated equipment will be utilized because the depth of the trenches to be opened prohibits the safe performance of UXO avoidance procedures in each trench prior to excavation. The UXO team will perform surveys to enable the safe movement of equipment and personnel into the designated areas, inspection of spoils removed from each lift and disposal of any OE/UXO items found during excavation.

The UXO team will support these activities by conducting surface and near-surface UXO surveys over the fill areas (construction footprint) and during trenching activities by examining the spoils recovered during each lift. Surface UXO sweeps and surveys in and around the trench areas will

be conducted to identify anomalies for the purpose of UXO avoidance. Incidental OE/UXO discovered during project activities may be disposed in accordance with the Explosive Siting Plan in Section 4.0 of the installation-wide OE management plan (IT, 2000a). In-place destruction is the preferred method of disposal. If caches of UXO are encountered beyond what is considered incidental UXO, then intrusive operations will stop until further guidance is received.

1.9 Expected Number of Trench Excavations

Excavations of exploratory trenches are required to determine the vertical and horizontal extent of the fill areas. A total of 15 excavations are planned as noted on Table 1-1. Excavations will be conducted in lifts of 1 to 2 feet. The probability of encountering UXO is considered to be low for each of the fill areas.

Exploratory trenching activities will be conducted around the perimeter of fill areas. The purpose of the perimeter trenching activities is to determine the horizontal extent (outer boundaries) of each fill area. The trenches along the perimeter will be excavated perpendicular to the suspected fill material perimeter to confirm the horizontal extent of the waste fill material. The proposed trenches are approximately 50 feet long, 3 feet wide, and not likely deeper than 20 feet. However, the trenches may be longer or shorter depending on how quickly the interface of the fill material with the native soil is located in the trench.

Perimeter trenches will be started in the locations where the best information suggests the outside boundaries of the fill material exist. If the trench excavation begins in native soil, the trench excavation will be extended toward the center of the fill area until the interface of the native soil and fill material is encountered. Likewise, if the trench excavation begins in fill material, the trench excavation will be extended outward from the fill area until the interface of the fill material and native soil is encountered.

There are 15 trenches proposed for the 3 fill areas. The number of trenches proposed for each fill area is listed in Table 1-1. The trench locations and rationale for the fill areas are listed in Table 1-2.

1.10 Procedures to be Employed for UXO Disposal or Unidentified UXO

Destruction of recovered OE/UXO can take one of three forms: in place; on site; and off site. The decision regarding which technique to use is based on the risk involved in employing the disposal operation as determined by the site-specific characteristics and the nature of the OE

Table 1-1

Proposed Number of Trenches at the Three Fill Areas, Parcels 230(7), 231(7), and 233(7) Fort McClellan, Calhoun County, Alabama

Parcel Name	Parcel No.	Approximate Parcel Size (Acres)	Proposed Number of Trenches	Potential UXO Site
Fill Area North of Landfill No. 2	230	2	5	Yes
Fill Area at Range 30	231	3.6	6	Yes
Fill Area West of Iron Mountain Road and Range 19	233	1.12	4	Yes
Total Number of Acres, Trenches, Borings, and Samples		**6.72**	**15**	

Table 1-2

Trench Locations and Rationale for the Three Fill Areas, Parcels 230(7), 231(7), and 233(7) Fort McClellan, Calhoun County, Alabama

Trench Location	Parcel Location	Trench Location Rationale
T230-1	230(7)	Trench location to be placed in the eastern side of the Fill Area, Parcel 230. Trench excavation data will characterize the eastern horizontal extent of the Fill Area and anomaly at this location.
T230-2	230(7)	Trench location to be placed in the north central side of the Fill Area, Parcel 230. Trench excavation data will characterize the northern horizontal extent of the Fill Area and anomaly at this location.
T230-3	230(7)	Trench location to be placed in the north side of the Fill Area, Parcel 230. Trench excavation data will characterize the northern horizontal extent of the Fill Area and anomaly at this location.
T230-4	230(7)	Trench location to be placed in the northwestern side of the Fill Area, Parcel 230. Trench excavation data will characterize the northwestern horizontal extent of the Fill Area and anomaly at this location.
T230-5	230(7)	Trench location to be placed in the western side of the Fill Area, Parcel 230. Trench excavation data will characterize the western horizontal extent of the Fill Area at this location.
T231-1	231(7)	Trench location to be placed at the southeastern side of the Fill Area, Parcel 231. Trench excavation data will determine the southeastern horizontal extent at this location and characterize the mounds at this location.
T231-2	231(7)	Trench location to be placed at the northeastern side of the Fill Area, Parcel 231. Trench excavation data will determine the northeastern horizontal extent at this location.
T231-3	231(7)	Trench location to be placed at the northern side of the Fill Area, Parcel 231. Trench excavation data will determine the northern horizontal extent at this location and characterize the mounds at this location.
T231-4	231(7)	Trench location to be placed at the western side of the Fill Area, Parcel 231. Trench excavation data will determine the western horizontal extent at this location and characterize the mounds at this location.
T231-5	231(7)	Trench location to be placed in the western section of the Fill Area, Parcel 231. Trench excavation data will characterize the mounds at this location.
T231-6	231(7)	Trench location to be placed in the western section of the Fill Area, Parcel 231. Trench excavation data will characterize the mounds at this location.
T233-1	233(7)	Trench location to be placed at the eastern side of the Fill Area, Parcel 233. Trench excavation data will determine the eastern horizontal extent at this location.
T233-2	233(7)	Trench location to be placed at the southern side of the Fill Area, Parcel 233. Trench excavation data will determine the southern horizontal extent at this location.
T233-3	233(7)	Trench location to be placed at the western side of the Fill Area, Parcel 233. Trench excavation data will determine the western horizontal extent at this location.
T233-4	233(7)	Trench location to be placed at the northern side of the Fill Area, Parcel 233. Trench excavation data will determine the northern horizontal extent at this location.

recovered. Positive identification must be made on any OE item before destruction actions may be accomplished.

1.10.1 In-Place Destruction

In-place destruction is the method of choice and is appropriate for each of the three sites covered by this document. In-place destruction (blow-in-place) is a technique used when an OE item cannot be safely moved to an alternate location for destruction. All in-place destruction will be conducted in a manner that assures maximum control of the site. When this technique is employed, engineering controls are often used to minimize the blast effects. Only engineering controls approved by the USAESCH Engineering Directorate, Structural Branch will be implemented.

1.10.2 On-Site Destruction

Dependent on the location and physical surroundings, it may not be possible to safely destroy an OE item in place. In this instance, the OE item may be moved (if the item is determined to be safe to move) to a remote part of the project site where destruction and disposal can safely take place. When an OE item is destroyed on site, engineering controls are often used to minimize the blast effect. Engineering controls may consist of barriers or use of a U.S. Department of Defense Explosives Safety Board-controlled detonation chamber to reduce the effects of the detonation blast, fragmentation, and noise. Guidance for the on site destruction of OE is found in EP 1110-1-17, *Establishing a Temporary Open Burn/Open Detonation Site for Conventional OE* (USACE, 1999b) and EP110-1-18, Ordnance and Response (USACE, 2000).

1.10.3 Off-Site Destruction

If off-site destruction is the disposal method of choice, the OE will be transported by either military vehicles or by qualified UXO personnel. The OE is typically transported to an active military installation where it can be safely destroyed. The transportation of OE/UXO will be performed in accordance with the provisions of 49 Code of Federal Regulations, Part 172, applicable state and local laws, and Chapter 15 of EP 1110-1-18 (USACE, 2000). A transportation route plan detailing the route and procedures to be used during the transportation of OE/UXO will be prepared and approved prior to engaging in any off-site OE/UXO transport to ensure all safety aspects of the movement have been addressed. Since explosive operations may be accomplished in the three fill areas of concern, no off-site disposal is anticipated for the work sites covered in this document.

1.10.4 Unidentified UXO

In the event that an OE item can not be identified, the UXO team will stop on-site operations and mark the location of the item with wooden stakes and flagging tape. Due to the unknown hazards associated with an unidentifiable OE item, the site manager and all personnel working in the area will be notified of its presence. Unidentified UXO will not be handled or disposed until a positive identification has been made. Assistance in identifying unknown UXO will be requested through the USACE-Mobile District to the USAESCH Safety Office, who will in turn contact 52nd Ordnance Group (explosive ordnance disposal) to task assistance from a local military explosive ordnance disposal unit.

2.0 Organization, Personnel, and Responsibilities

2.1 Organization

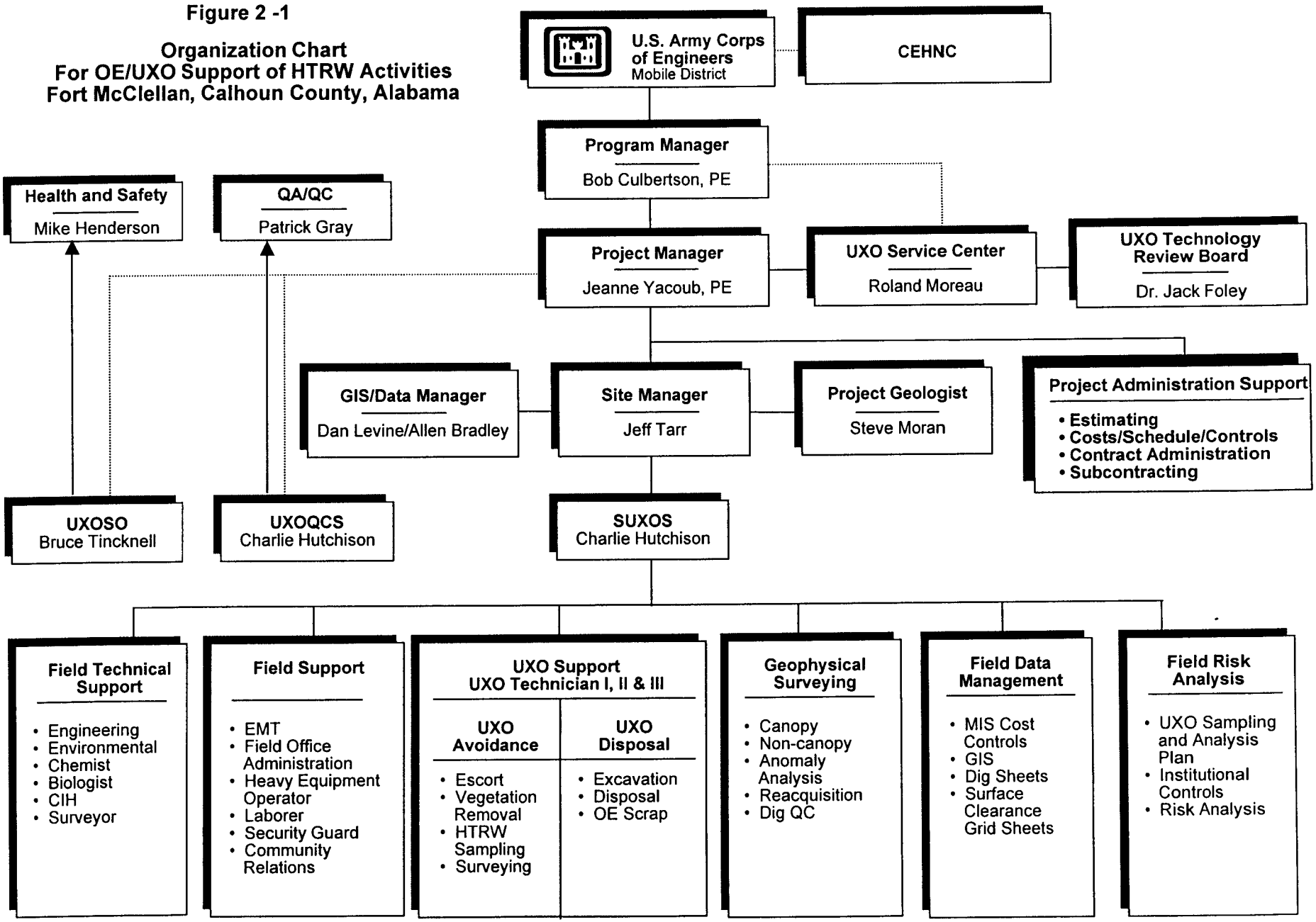
This work plan has been developed to address the potential for encountering OE/UXO in support of HTRW and construction activities at the fill areas. Figure 2-1 illustrates IT's UXO organization in support of HTRW investigation, exploratory trenching, sample collection, and analysis to determine the vertical and horizontal extent of the fill areas.

2.2 Personnel Qualifications

UXO personnel qualifications are contained in Section 2.0 of the installation-wide OE management plan (IT, 2000a). Resumes of UXO personnel are attached in Appendix A.

Figure 2 -1

Organization Chart
For OE/UXO Support of HTRW Activities
Fort McClellan, Calhoun County, Alabama



3.0 Mobilization Plans

Mobilization will occur upon approval of all site-specific plans and issuance of a notice to proceed. Normally, a 1-week mobilization period will be necessary to mobilize, organize, and train the intrusive field activity staff, and mobilize, inventory, and test equipment. Mobilization activities will include the following:

- Transport and assemble the work force.
- Conduct site-specific training on the work plan, site-specific health and safety plan (SSHP), and OE procedures and hazards.
- Ship and inventory project equipment including geophysical detection equipment, hand tools and supplies, portable toilets, backhoes, vegetation clearance equipment, and other necessary equipment items.
- Ship and install explosives storage magazines.
- Repair and test lightning protection system.
- Ship explosives.
- Coordinate with local agencies including police, hospital, and fire department.
- Organize support facilities and test communication equipment.
- Test and inspect equipment.

3.1 Field Office

Existing IT facilities will be used as the central command location for direction and coordination of OE removal in support of HTRW and construction activities. This site has electrical service, sanitary facilities, employee parking, established communications, and equipment storage.

The IT field office will function as the control point for all OE support work. Personnel will report to this building at the beginning of each workday for the daily health and safety briefing. All removal action and health and safety records will be maintained in the field office.

The IT field office will be the central point of communications for the project. The office is equipped with phones, facsimile machine, and radio base station for radio communication with the field crew(s).

3.1.1 Kickoff/Safety Meeting

During mobilization, a kickoff/site safety meeting will be conducted on site in the field office which will include a review of the work plan and removal action tasks, and the review and acknowledgment of the SSHP by all site personnel. Attendees may include:

- USACE-Mobile District, Environmental Remediation Resident Office representatives
- Base Transition Office representatives
- Emergency response representatives (e.g., Fire Department).

Site-specific safety training will be provided to the project employees in the following topics:

- Site-specific health and safety plan;
- Hearing protection
- Fire prevention
- Fire extinguisher operation
- Inspection and use of personal protective equipment (PPE)
- Work practices to minimize risk
- Safe use of equipment
- Recognition of symptoms of overexposure
- Names of responsible site safety personnel
- Responding to emergencies
- Evacuation plans
- Daily prejob briefings
- Weekly safety meeting requirements
- Emergency procedures
- Flora and fauna hazards
- Eating and drinking precautions
- Sanitation.

3.1.2 Weekly Safety Meeting

A formal safety meeting will be conducted, in addition to the daily tailgate safety meetings, by the UXO Supervisor or UXO Safety Officer each week. Employees shall sign the Safety Meeting Attendance Record. These forms will be retained in the project files as required by 29 Code of Federal Regulations 1910.120 and 1910.20.

4.0 Procedures for Site Preparation

4.1 Site Setup, Control, and Exclusion Zones

The UXO Safety Officer (UXOSO) is designated to coordinate access control on the work site. Due to the hazardous nature of OE, only personnel authorized by the UXOSO will be allowed in areas designated as EZ. The EZ is the work site, encompassing an area large enough to prevent personal injuries from fragmentation as a result of OE operations. The limits of the EZ will be clearly defined to reflect the outer limits of the calculated fragmentation zones. Requirements for EZs are contained in Section 4.0 of the installation-wide OE management plan (IT, 2000a). During OE operations, only UXO trained personnel are allowed in the EZ. Authorized personnel are those that have completed the required training and medical requirements.

Visitors will report to the site-specific field offices, located in the support zones and access to the work zone will be controlled by the UXOSO. The support zone is the designated administrative area where operation and support equipment is located. All operations will cease if unescorted personnel are observed within the operating areas.

4.2 Vegetation Removal

No specific vegetation removal is anticipated for this project. Although some overgrowth is present at these sites, the trench locations are sited in areas without significant vegetation. Should any vegetation removal be required, this removal will be limited to what is necessary for efficient field operations as determined by the UXOSO and project manager. General procedures for vegetation removal are contained in Section 2.0 of the installation-wide OE management plan (IT, 2000a).

4.3 Instrument Geophysical Test Plots

A quality control test grid will be established at each of the fill areas cover by this document to demonstrate the site-specific performance and quality control of the selected geophysical instruments planned for use on this project. The Schonstedt GA-72 will be the magnetometer instrument used for surface clearance and avoidance. The Schonstedt GA-230 is the selected instrument for down-hole anomaly avoidance if required. Inert OE items of the type that may be encountered will be buried in the test plot(s) at a depth of 2 feet and each magnetometer used will be tested prior to each operational period.

4.3.1 Calibration of Equipment

Prior to use in the field each day, the geophysical instrumentation will be checked for operational reliability and calibration against a known response. If calibration checks indicate that the instrument is not operating within an acceptable range, and field adjustments do not resolve the performance discrepancy, the instrument will be immediately tagged and removed from service.

4.3.2 Maintenance of Equipment

Preventive maintenance will be performed on a regularly scheduled basis. If an equipment problem is encountered, IT will perform maintenance on the equipment as soon as possible; IT will also keep records of the unscheduled maintenance and corrective action. Those records will identify the equipment, problem description, corrective action, person performing the maintenance, and associated costs.

4.4 Access Surveys

The UXO team will conduct an OE anomaly avoidance survey of the following areas prior to allowing non-UXO qualified personnel on site:

- Safety support zone
- Site boundaries
- Proposed foot paths and vehicle routes
- Construction/excavation footprint.

Once performed, these areas will be marked to designate that the area is free of surface UXO contamination.

5.0 Statistical Sampling

Statistical sampling for OE/UXO is not a requirement of the scope of work and is not applicable to this site-specific OE work plan.

6.0 UXO Operational Plan

The following procedures apply to all fill areas covered by this document:

6.1 UXO Team, Procedures and Equipment

Work area inspection, site boundary surveys, UXO avoidance, construction support, and disposal of incidental OE items will be performed as required by the UXO team. The UXO team will consist of a minimum of a UXO Technician III (UXO Supervisor), a UXO Technician II, and a third individual who is not required to be UXO-qualified, but who is designated to support demolition operations. The third member of the UXO team will not perform UXO actions; his function is to serve as a safety observer during demolition operations. The UXO Technician III/UXO Supervisor may also serve, for the purposes of this project, as the UXOSO.

UXO Access Survey Operations. The UXO team will conduct an initial reconnaissance of the site to familiarize themselves with the soil sampling and trench excavation areas defined Section 3.0 of the EE/CA fill area definition work plan (IT, 2000b) for each of the fill areas covered in this document.

Following the initial reconnaissance of the work area, the UXO team will locate and mark the site boundaries with wooden stakes and establish the sampling and trench excavation areas as established in the EE/CA fill area definition work plan (IT, 2000b). A differential global positioning system or full station survey system will be used to accurately locate and delineate the work areas.

The location of all stakes will be checked for the presence of UXO using a geophysical instrument prior to placement of the stake.

6.2 Vegetation Removal Team, Procedures and Equipment

No vegetation removal is anticipated for this project.

6.3 OE Avoidance Procedures and Equipment

General procedures for OE avoidance are contained in Section 2.0 of the installation-wide OE management plan and are applicable to this site-specific plan (IT, 2000a).

6.3.1 Access Surveys

The UXO team will conduct access surveys of the footpaths and vehicular lanes approaching and leaving each of the fill area work areas. If UXO is found during the access survey, the ordnance will be conspicuously marked and avoided. No personnel will be allowed outside of the surveyed areas.

The UXO team will locate an access route to and from the proposed investigation site that is free of surface and near-surface UXO using an appropriate geophysical detection instrument as required. The access route should be as wide as the minimum number of feet of the widest vehicle.

Geophysical instrumentation will be used to locate potential UXO just below the surface that may be encountered through erosion from rain or continual vehicular traffic. If surface UXO or subsurface UXO related anomalies are encountered, the access route must be diverted to avoid contact.

The boundary of each access route and investigation site should be marked using white survey flagging and pin flags. Non-UXO qualified personnel will not be allowed outside designated access areas without proper UXO escort. Near-surface anomaly locations will be prominently identified with yellow survey flagging or pin flags. Red flagging will be placed adjacent to any discovered UXO for subsequent visual reference.

At the actual investigation site, the UXO team must also complete an access survey of an area sufficient to support mechanical excavation equipment maneuverability, parking of support vehicles, and establishment of decontamination stations. As a minimum, the surveyed area should have a dimension in all directions equal to twice the length of the largest vehicle or piece of equipment to be bought on site. Intrusive activities will not proceed if an anomaly is detected that cannot be positively identified as inert material. In this event, the HTRW sampling personnel must select an alternate investigation area or configuration.

6.3.2 Trench Excavations

The planned exploratory trench excavations are to determine the vertical and horizontal extent of the fill areas and characterize the fill material. HTRW personnel are responsible for identifying the location of these planned exploratory trenches. UXO personnel must conduct an access

survey to locate an access route to the proposed trenching site as well as an access survey at the proposed trenching site that is large enough to support mechanical excavation equipment maneuverability, parking of support vehicles, and establishment of decontamination stations.

Prior to commencing excavation of an exploratory trench, the UXO team will review the SSHP and all regulatory safety considerations with excavation personnel to ensure compliance. The operator of the remote excavator will operate this equipment from a safe location as required in Section 6.5 of this plan. The UXOSO will determine the exact location, but will comply with the requirements for minimum separation distance as determined by the hazard presented by the most probable munition for each site. UXO personnel are not required to perform pre-excavation magnetometer surveys for each lift since the excavation will be conducted remotely. Once spoils have been spread around the trench area, UXO personnel will conduct visual and magnetometer surveys of the spoils from each lift. UXO personnel may use rakes or other similar implements as required to inspect the spoils. UXO personnel will return to the trench site after each lift from the safe area located in an upwind location.

Once cleared by the UXO team, the spoils may be moved to prevent excess material from collecting around the trench. HTRW sampling personnel and/or the on-site geologist may visually inspect the trench and spoils, and conduct any necessary sampling of the spoils after they have been determined to be free of OE/UXO materials. Upon completion of the trenching operations, the removed material will be returned to the trench.

If an OE/UXO item is discovered, operations will be immediately halted and disposition made in accordance with Section 1.10 of this plan.

6.3.3 Boring Operations

All boring operations have been completed and therefore are not required for this project.

Underground Utilities. Utility clearance and/or excavation permits are not required for the fill areas addressed in this document. In the event subsurface utilities are suspected in an excavation area, the UXO team must attempt to verify their location using geophysical instrumentation. Note that only utilities with a ferrous content are detectable with a geophysical instrument. All located utilities should be marked with a series of pin flags to visually delineate their approximate subsurface routing.

6.3.4 Waste and/or Other Materials Encountered

In the event potentially hazardous waste, debris, or drums are encountered during trenching operations, excavation activities will cease and the appropriate HTRW remedial investigation representatives will be immediately notified. An assessment of the encountered materials must be completed to determine a correct course of action. The HTRW site safety and health officer (SSHO) will determine if an upgrade in PPE is warranted. If the identity and hazard level of the material or its contents cannot be confirmed, then SSHO has the authority to upgrade to maximum PPE precautions until positive identification can be made. The SSHO and the project manager have the authority to abandon the excavation if site conditions warrant abandonment. No waste will be removed from the excavation site. Detailed procedures to follow when waste and/or other materials are encountered are included in the installation-wide work plan (IT, 1998).

6.4 UXO Survey Procedures and Equipment

The UXO team will use Schonstedt GA-52CX or GA-72CD magnetometers, or a functional equivalent, to detect surface and subsurface UXO and scrap metal. They will use the survey lane method of survey control and the "mag and flag" method of UXO marking for OE/UXO avoidance.

The survey lane method of survey control is efficient to use in open areas with few obstructions. In this method, the UXO supervisor will direct the team members in dividing the site into grids and then hammering in wooden stakes at 5-foot intervals along opposite boundaries of the survey grid. Locations of the wooden stakes will be checked with a magnetometer to ensure that no subsurface anomalies are present prior to hammering the stake.

Highly visible rope, such as 0.25- inch nylon, will be run between the opposing stakes to create clearly marked 5-foot wide survey lanes. Each survey lane will be surveyed by a member of the UXO team who will walk down the length of the survey lane with the hand-held magnetometer back and forth across the lane making sure that the instrument covers all portions of the survey lane. The UXO team will ensure that the members of the sweep line maintain a 5-foot spacing between themselves and that they completely cover the entire surface of the area with magnetometers.

Detected metal objects will be investigated immediately to determine if the object is on the surface. If the object is on the surface the UXO technician investigating the object will determine if the object is UXO. If the object is UXO, it will be marked for handling and disposal by placing a wooden stake marked with red flagging tape next to the UXO.

If the detected object is located below the surface it will be marked with a pin flag for avoidance or if required, subsequent excavation and identification. The UXOSO will record the number and location of the pin flags on a grid sheet.

6.5 Excavation and Disposal Team, Procedures, and Equipment

Procedures for the excavation and disposal team are contained in Section 2.0 of the installation-wide OE management plan (IT, 2000a).

Most Probable Munition. The most probable munition (MPM) for the installation is the 155mm projectile. However, based on history of operations, and the ASR (USACE-1999a) for FTMC, IT does not expect to encounter this munition at the sites addressed in this plan. Since work is confined to the three fill areas described in this plan, the MPMs for each parcel have been identified, and the corresponding minimum separation distances will guide all work efforts. Attachment B to this plan provides the minimum separation distances calculations for the MPMs associated with these three parcels.

Fill Area North of Landfill No. 2, Parcel 230(7). The MPM for this parcel is the 66 millimeter M72A2 (light anti-tank warfare) rocket. IT will comply with the unintentional detonation minimum separation distance of 439 feet for operations at this parcel, as indicated in Attachment B.

Fill Area at Range 30, Parcel 231(7). The MPM for this parcel is the 37 millimeter Mk 1 practice projectile with black powder charge. IT will comply with the unintentional detonation minimum separation distance of 819 feet for operations at this parcel, as indicated in Attachment A.

Fill Area West of Iron Mountain Road and Range 19, Parcel 233(7). The MPM for this parcel is the 3.5 inch M28A2 rocket. IT will comply with the unintentional detonation

6.6 Quality Control

A UXO quality control specialist (UXOQCS) is not required to be onsite full time for this work. The UXOQCS will not perform any removal or investigative tasks. However, QC functions will be performed for all field activities as appropriate, and in accordance with the procedures described in Section 9.0 of the installation-wide OE management plan (IT, 2000a). The UXOQCS will ensure high quality in the field without compromising safety.

7.0 OE-Related Scrap and Non-OE Scrap Procedures

The inherently dangerous characteristics of Ammunition Explosives Dangerous Articles dictate that special precaution be taken to ensure that demilitarization is performed only by properly trained and technically qualified personnel. As appropriate, IT will follow the procedures for handling, processing, and certification of OE-related scrap that are contained in Section 2.0 of the installation-wide OE management plan (IT, 2000a).

8.0 Reporting

At the completion of field activities, OE/UXO reports, sample analyses, and other data collected during the fill area investigation will be included in the draft Fill Areas EE/CA. The EE/CA is being prepared in accordance with current EPA Region IV and the Alabama Department of Environmental Management guidelines.

9.0 References

IT Corporation (IT), 2000a, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, March.

IT Corporation (IT), 2000b, ***Engineering Evaluation/Cost Analysis Fill Area Definition Work Plan, Parcels 78(6), 79(6), 80(6), 81(5), 175(5), 230(7), 227(7), 229(7), 126(7), 231(7), 233(7) and 82(7), Fort McClellan, Calhoun County, Alabama,*** February.

IT Corporation (IT), 1998, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August.

Science Applications International Corporation (SAIC), 1999, ***Draft Final Fort McClellan Remedial Investigation/Baseline Risk Assessment Report***, February.

U.S. Army Corps of Engineers (USACE), 1999a, ***Archives Search Report, Maps, Fort McClellan, Anniston, Alabama,*** June.

U.S. Army Corps of Engineers (USACE), 1999b, ***Establishing a Temporary Open Burn and Open Detonation Site for Conventional Ordnance and Explosives Projects,*** Engineer Pamphlet 1110-1-17, July 16.

U.S. Army Corps of Engineers (USACE), 2000, ***Ordnance and Explosives Response***, Engineer Pamphlet 1110-1-18, April 24.

U.S. Environmental Protection Agency (EPA), 1990, ***Installation Assessment, Army Closure Program, Fort McClellan, Anniston, Alabama (TS-PIC-89334)***, Environmental Photographic Interpretation Center (EPIC), Environmental Monitoring Systems Laboratory.

APPENDIX A

UXO PERSONNEL RUSUMES

IT CORPORATION
A Member of The IT Group

CHARLIE HUTCHISON

UXO QUALITY CONTROL SPECIALIST

DATE ATTENDED BASIC EOD SCHOOL: AUG - DEC 1972

OTHER PERTINENT TRAINING: HAZWOPER 40 HOUR 1995
HAZWOPER REFRESHER 8 HOUR 1999
TECHNICAL ESCORT COURSE 1995
QUALITY ASSURANCE (IT): 1998

EOD/UXO ASSIGNMENTS:

DEC 72 - JUN 75:	EOD TECHNICIAN, 87TH ORDNANCE DETACHMENT (EOD), PRESIDIO OF SAN FRANCISCO, CA. EOD TEAM MEMBER FOR EMERGENCY RESPONSE SERVICES.
JUL 75 - JUN 78:	SENIOR EOD TECHNICIAN, 20TH ORDNANCE DETACHMENT (EOD), GERMANY. EOD TEAM MEMBER FOR CWM STORAGE.
JUL 78 - JUL 85:	MASTER EOD TECHNICIAN, EOD TEAM LEADER AND SUPERVISOR, 176TH ORDNANCE DETACHMENT (EOD), FORT RICHARDSON, AK.
JUL 85 - AUG 89:	MASTER EOD TECHNICIAN, SENIOR EOD SUPERVISOR, 94TH ORDNANCE DETACHMENT (EOD), FORT CARSON, CO.
AUG 89 - DEC 91:	MASTER EOD TECHNICIAN, SENIOR EOD SUPERVISOR, 75TH ORDNANCE DETACHMENT (EOD), DETROIT, MI.
JAN 92 - SEP 93:	MASTER EOD TECHNICIAN/SENIOR EOD SUPERVISOR, 20TH ORDNANCE DETACHMENT (EOD), GERMANY. CWM SUPPORT.
OCT 93 - JUN 95:	SERGEANT MAJOR, SENIOR MASTER EOD TECHNICIAN, 168TH ORDNANCE DETACHMENT (EOD), GERMANY. DEPLOYED EOD RESPONSE TEAMS FROM SUBORDINATE COMMANDS.
JUL 95 - JUN 97:	SERGEANT MAJOR, SENIOR MASTER EOD TECHNICIAN, TECHNICAL ESCORT UNIT, ABERDEEN PROVING GROUND, MD. SUPERVISED PREPARATION FOR DEPLOYMENT OF TEUS RESPONSE FORCES.
JUL 96 - JUL 97:	SERGEANT MAJOR, SENIOR MASTER EOD TECHNICIAN, CHEMICAL AND BIOLOGICAL DEFENSE COMMAND, ABERDEEN PROVING GROUND, MD. RETIRED FROM ACTIVE DUTY.
FEB 98 - SEP 98:	RECOVERY TECHNICIAN FOREMAN, IT CORP, BRUNSWICK, GA.
OCT 98 - DEC 98:	SENIOR UXO SUPERVISOR/SITE SUPERVISOR, IT CORP, WAKE ISLAND, SOUTH PACIFIC.
JAN 99 - MAR 99:	SENIOR UXO SUPERVISOR/SITE SUPERVISOR, IT CORP, FORT SAM HOUSTON, TX.
MAR 99 - APR 99:	SENIOR UXO SUPERVISOR/SITE SUPERVISOR, IT CORP, REDSTONE ARSENAL, AL..
MAY 99 - JUN 99:	SENIOR UXO SUPERVISOR, IT CORP, FORT MCCLELLAN, AL.
JUL 99 - JUL 99:	SENIOR UXO SUPERVISOR, IT CORP, FORT ORD, CA.
JUL 99 - JUL 99:	SENIOR UXO SUPERVISOR, IT CORP, EL PASO, TX.
AUG 99 - SEP 99:	SENIOR UXO SUPERVISOR, IT CORP, FORT PICKETT, VA.
OCT 99 - OCT 99:	SENIOR UXO SUPERVISOR, IT CORP, JACKSON, TN.
OCT 99 - NOV 99:	SENIOR UXO SUPERVISOR, IT CORP, RAVENNA ARMY AMMUNITION PLANT, OH.
DEC 99 - DEC 99:	SENIOR UXO SUPERVISOR, IT CORP, EDGEWOOD, MD.
FEB 00 - MAR 00:	SENIOR UXO SUPERVISOR, IT CORP, FORT SAM HOUSTON, TX.
MAR 00 - MAR 00:	SENIOR UXO SUPERVISOR, IT CORP, REDSTONE ARSENAL, AL.

IT CORPORATION
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BRUCE TINCKNELL
DATE ATTENDED BASIC EOD SCHOOL:
OTHER PERTINENT TRAINING:

UXO SAFETY OFFICER
JUL - NOV 1971
HAZWOPER 40 HOUR 198[illegible]
HAZWOPER SUPERVISOR 8 HOUR 1987

EOD/UXO ASSIGNMENTS:

NOV 71 - DEC 73:	EOD TECHNICIAN, 34TH ORDNANCE DETACHMENT (EOD), SIERRA ARMY DEPOT, CA. NUCLEAR RESPONSE TEAM MEMBER.
JAN 74 - DEC 74:	EOD TECHNICIAN, 510TH ORDNANCE DETACHMENT (EOD), THESSONLIKINI, GERMANY.
JAN 75 - NOV 87:	SENIOR EOD TECHNICIAN, 70TH ORDNANCE DETACHMENT (EOD), SAN DIEGO, CA
DEC 87 - JUN 91:	MASTER EOD TECHNICIAN, 48TH ORDNANCE DETACHMENT (EOD), PRESIDIO OF SAN FRANCISCO, CA. RETIRED FROM ACTIVE DUTY.
JUL 91 - AUG 91:	UXO TEAM LEADER, ENVIRONMENTAL CHEMICAL CORPORATION, KUWAIT CITY, KUWAIT. RESPONSIBLE FOR SAFETY OF A FOUR MAN UXO RESPONSE TEAM.
JUL 95 - FEB 99:	SENIOR UXO SUPERVISOR, UXO SAFETY OFFICER, UXO QC SPECIALIST, IT CORP, FORT ORD, CA.
FEB 99 - FEB 99:	SENIOR UXO SUPERVISOR, IT CORP, CAMP PENDLETON, CA.
APR 99 - JUL 99:	SENIOR UXO SUPERVISOR, SITE HEALTH AND SAFETY OFFICER, IT CORP, NORTH ISLAND, CA.
AUG 99 - OCT 99:	SENIOR UXO SUPERVISOR, UXO SAFETY OFFICER, IT CORP, FORT PICKETT, VA - SUPERVISED HEALTH AND SAFETY PLAN IMPLEMENTATION FOR REMOVAL OF > 10,000 UXO ITEMS.
NOV 99 - NOV 99:	SENIOR UXO SUPERVISOR/SAFETY OFFICER, IT CORP, SAN DIEGO, CA.
JAN 00 - FEB 00:	SENIOR UXO SUPERVISOR/SAFETY OFFICER, IT CORP, CHINA LAKE, CA. SUPERVISED HEALTH AND SAFETY PLAN IMPLEMENTATION DURING HTRW REMOVAL OF > 2000 TONS OF SOIL.
FEB 00 - MAR 00:	SENIOR UXO SUPERVISOR/SAFETY OFFICER, IT CORP, BAKERSFIELD, CA.

IT CORPORATION
A Member of The IT Group

ALBERT C. GRANT

UXO SUPERVISOR III

ATTENDED BASIC EOD SCHOOL:

OTHER PERTINENT TRAINING: HAZWOPER 40 HOUR
HAZWOPER 8 HOUR

EOD/UXO ASSIGNMENTS:

AUG 84 - OCT 86: **EOD Technician, - 259th EOD, Fort. Irwin, California** - Provided EOD support for the National Training Center, Fort Irwin; U.S. Secret Service; U.S. State Department; local and state law enforcement departments in California. Participated in the vast range clearance activities at Fort Irwin. Encountered all types of explosive ordnance as well as improvised explosive devices.

OCT 86 - JUL 90: **Senior EOD Technician, EOD Instructor and Technical Writer, U.S. Naval School for Explosive Ordnance Disposal, Indian Head, Maryland** - Instructed U.S. and foreign EOD students and developed curriculum for EOD tools and procedures. Worked in Ground Ordnance Division, Air Ordnance Division, Improvised Explosive Devices Division, and the Advanced EOD Division. Lead instructor for the Navy EOD Mobile Training Team to the Kingdom of Kuwait. Developed and mentored new EOD instructors as a Navy Master Training Specialist.

JUL 90 - JUL 92: **Master EOD Technician, EOD Operations Sergeant, U.S. Army, 16th EOD, Camp Darby, Italy and Helenacon AB, Greece** - Supervised, coordinated, and provided EOD support for Camp Darby, the 10th Special Forces, and the U.S. Army Special Weapons Detachments stationed in Greece, Italy, and Turkey. During Operations Desert Storm and Provide Comfort disposed of several thousand tons of enemy ordnance and supervised minefield clearance operations in northern Iraq. Also provided EOD support for the U.S. Secret Service, U.S. State Department VIP protection details.

JUL 92 - OCT 93: **Master EOD Technician, EOD Operations Sergeant, U.S. Army 21st EOD, Wildflecken, Germany** - Supervised and coordinated range clearance operations, and stockpile ammunition disposal for the Wildflecken Training Area. Also provided EOD support for the U.S. State Department, U.S. Secret Service, and U.S. Army Criminal Investigation Division VIP protection details. Honorably ended active military service.

OCT 93 - DEC 93: **UXO Specialist, HFA, Indian Head, Maryland** - Worked on various UXO contract delivery orders at Aberdeen Proving Ground, Maryland;

Thiocol Project, Saint Mary's County, Maryland; and at Fort Mead, Maryland. Involved in :Level B" ordnance location operations at Aberdeen Proving Ground. Ordnance encountered: Mortars, artillery projectiles, grenades, fuzes, detonators, and chemical warfare material associated with the storage yards at Aberdeen Proving Grounds.

JAN 94 - JUN 94: **UXO Supervisor, HFA, Waldorf, Maryland** - Supervised a five man UXO Clearance Team and two eight-man vegetation removal teams for ordnance investigation and removal contracts at Fort Ord, California. Ordnance encountered: projectiles, grenades, simulators, abandoned explosive demolition materials, and riot control agents.

JUN 94 - JUN 94: **UXO Supervisor, HFA, Edgewood Arsenal, Maryland** - Supervised a three man UXO clearance team in support of construction activities. Worked closely with the Base Technical Escort Team to locate potential CWM associated with 4-inch Stokes mortars found in the area.

JUL 94 - JAN 95: **UXO Supervisor, HFA, Camp Croft, South Carolina** - Supervised a five man UXO clearance team and a three man survey team for an emergency ordnance removal contract on private land in Spartenburg, South Carolina. Ordnance encountered: Artillery projectiles, fuzes, grenades, and rockets.

APR 95 - DEC 95: **UXO Supervisor, HFA, Fort Devens, Massachusetts** - Supervised a five man UXO clearance team for The Fort Devens ordnance removal contract. Ordnance encountered: 3-inch and 4-inch Stokes mortars, 37mm projectiles, grenades, pyrotechnic simulators, and Levens projectiles. This project required the UXO personnel to guard against the possibility of Chemical Warfare Material used in the area during World War I.

MAY 96 - MAY 96: **UXO Supervisor, IT Corporation, Sandia Labs, New Mexico** - Supervised a UXO clearance team charged with the clearance of a 9-acre remediation site. Cleared all of the access routes and surrounding areas prior to excavation of two unknown burial mounds. Ordnance encountered: naval artillery projectiles and experimental fuze systems.

JUN 98 - JUL 98: **UXO Supervisor, IT Corporation, Dahlgren, Virginia** - Supervised a three man UXO clearance team at the U. S. Naval Weapons Station, Dahlgren, Virginia. Provided UXO clearance support for a landfill consolidation project. Cleared 25-acres of land contaminated with naval artillery projectiles, fuzes, and electrically initiated devices utilized in naval aircraft.

MAR 96 - Present: **UXO Technician III and UXO Task Order Manager, IT Corporation at Fort Ord, California** - Supervised UXO safety and escort efforts for a $90-million superfund environmental clean-up project, at the Former Fort Ord. Developed and implemented work plans, and policy memoranda. Operated heavy equipment as a working foreman during "Level B" operations. The project involved down-hole surveillance, a landfill consolidation that was contaminated with municipal waste and UXO, lead remediation within the firing range, and general UXO avoidance for all construction activities. Ordnance encountered: 2.36" rockets, mortars, artillery projectiles, grenades, and simulators, and CWM test kits.

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BILLY LAMBERT — UXO TECHNICIAN II

DATE ATTENDED EOD SCHOOL: JUN 1991 - MAR 1992

I HAVE NEVER BEEN REMOVED FROM AN EOD/UXO ASSIGNMENT FOR PERSONAL RELIABILITY REASONS.

OTHER PERTINENT TRAINING: HAZWOPER 40 HOUR 1995
HAZWOPER 8 HOUR 1998
HAZWOPER SUPERVISOR 1997
LEAD AWARENESS 1997
RAD WORKER II 1996
FIRST AID 1997

EOD/UXO ASSIGNMENTS:

MAR 92 - JUN 94: **EOD Technician - 47th EOD, Fort Hood, Texas** - Served as a member Of an EOD Team and provided EOD support for 77 Counties of central Texas and Fort Hood. Deployed with unit to Kuwait in support of Operation Intrinsic Action (Aug - Nov 92). Supported the safe destruction of more than 2,000 pieces of unexploded ordnance during a surface clearance of a 20 by 30 kilometer area. Honorably ended active duty.

APR 95 - JUN 95: **UXO Specialist, UXB International, Inc. at Baywoord Park, California** - Performed UXO detection using magnetometers, UXO excavation and disposal. Ordnance encountered included: projectiles, rockets, grenades.

JUN 95 - OCT 95: **UXO Specialist, UXB International, Inc. at Fort Bliss, Texas** - Performed UXO detection using magnetometers, UXO excavation and disposal. Ordnance encountered included: projectiles, rockets, grenades.

OCT 95 - JAN 96: **UXO Specialist, UXB International, Inc. at Crab Orchard, Illinois** - Performed UXO detection using magnetometers, UXO excavation and disposal. Ordnance encountered included: mines and fuzes.

APR 96 - MAY 96: **UXO Specialist, UXB International, Inc. at Crab Orchard, Illinois** - - Performed UXO detection using magnetometers, UXO excavation and disposal. Ordnance encountered included:mines and fuzes

MAY 96 - MAY 98: **UXO Specialist, IT Corporation, at Fort Ord, California** - Performing UXO escort and identification services, as well as UXO avoidance in support of a major contaminated landfill and base wide remediation efforts. Ordnance encountered included: projectiles, rockets, grenades, and mines.

(continued)

MAY 98 - AUG 98: **UXO Specialist, IT Corporation, at NSWC Dahlgren, Virginia -** Performing UXO escort and identification services as well as UXO clearance using magnetometers. Ordnance encountered: projectiles, bombs, and fuzes.

AUG 98 - NOV 98: **UXO Specialist, IT Corporation, at Wake Island, Hawaii -** Performing UXO escort and identification services. Ordnance encountered: Projectiles, bombs.

NOV 98 - FEB 99: **UXO Technician II, IT Corporation, at Fort Mcclellan, Alabama -** Performing UXO escort and identification services. Ordnance encountered: Projectiles, bombs. Ordnance encountered: rockets and grenades.

FEB 99 - DEC 99: **UXO Technician II, IT Corporation at NSWC Dahlgren, Virginia -** Performing UXO escort and identification services . Ordnance encountered: fuzes.

Dec 99 - Present: **UXO Technician II, IT Corporation at Fort Ord, California -**

APPENDIX B

MINIMUM SEPARATION DISTANCES

Minimum Separation Distances
Ft. McClellan
66 mm M72A2 (LAW) Rocket (case only)
27 June 2000

REQUESTED BY: Valerie Clinkenbeard
PREPARED BY: Michelle Crull, PhD, PE

This form shows calculated distances only. It does not constitute approval. Concurrence of CEHNC-OE-S is required to determine the applicable distance for a specific site.

In accordance with (IAW) OE Center of Expertise Interim Guidance Document 00-01, use of the range to no more than 1 hazardous fragment/600 sq ft as the minimum separation distance for accidental detonations requires written justification, a risk analysis, calculation of this distance by CEHNC-ED-CS-S, and concurrence of CEHNC-OE-S.

CALCULATIONS FOR UNINTENTIONAL DETONATIONS

Maximum Fragment Range = 439 ft
Range to No More Than 1 Hazardous Fragment/600 sq ft = 200 ft
Range to 0.9 psi Overpressure = 48 ft

IAW OE Center of Expertise Interim Guidance Document 00-01, the minimum separation distance for intentional detonations may not be less than the default distance provided in DoD 6055.9-STD or the maximum fragment range or the K328 overpressure distance.

CALCULATIONS FOR INTENTIONAL DETONATIONS

Maximum Fragment Range = 439 ft
K328 Overpressure Range = 314 ft

The primary fragmentation characteristics used in the calculation of the values listed above were computed IAW CEHNC-ED-CS-S-98-1. The maximum fragment range was calculated using the maximum weight fragment and the initial velocity from these characteristics in the computer software TRAJ. The range to no more than 1 hazardous fragment/600 sq ft was calculated IAW CEHNC-ED-CS-S-98-2.

SANDBAG ENCLOSURE FOR INTENTIONAL DETONATIONS

Required Sandbag Thickness = 20 in. with 6" standoff between munition and sandbags
Sandbag Throw Distance = 125 ft
Minimum Separation Distance = 200 ft

Minimum Separation Distances
Ft. McClellan
66 mm M72A2 (LAW) Rocket (case only)
27 June 2000

The required sandbag thickness and the sandbag throw distance were calculated IAW CEHNC-ED-CS-S-98-7. The minimum separation distance is based on the largest of the sandbag throw distance or 200 ft or the K328 distance for the total NEW (munition plus donor charge). A copy of HNC-ED-CS-S-98-7, "Use of Sandbags for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions" must be available on site. This report may be downloaded from the USAESCH homepage at http://www.hnd.usace.army.mil Select "Product Lines", "Ordnance and Explosives", "Innovative Technology", then "Analytical Tools". The first time you access the site you will have to register. You will be notified by e-mail when your login and password have been activated. You must have a login and password to download the report.

SIGNATURES:

Michelle Crull 6/27/00
Subject Matter Expert

William H. Rhodes Jr. 27 JUN 00
CEHNC-ED-CS-S Branch Chief

Minimum Separation Distances
Ft. McClellan
37 mm Mk I Practice
27 June 2000

REQUESTED BY: Valerie Clinkenbeard
PREPARED BY: Michelle Crull, PhD, PE

This form shows calculated distances only. It does not constitute approval. Concurrence of CEHNC-OE-S is required to determine the applicable distance for a specific site.

In accordance with (IAW) OE Center of Expertise Interim Guidance Document 00-01, use of the range to no more than 1 hazardous fragment/600 sq ft as the minimum separation distance for accidental detonations requires written justification, a risk analysis, calculation of this distance by CEHNC-ED-CS-S, and concurrence of CEHNC-OE-S.

CALCULATIONS FOR UNINTENTIONAL DETONATIONS

Maximum Fragment Range = 819 ft
Range to No More Than 1 Hazardous Fragment/600 sq ft = 200 ft
Range to 0.9 psi Overpressure = 13 ft

IAW OE Center of Expertise Interim Guidance Document 00-01, the minimum separation distance for intentional detonations may not be less than the default distance provided in DoD 6055.9-STD or the maximum fragment range or the K328 overpressure distance.

CALCULATIONS FOR INTENTIONAL DETONATIONS

Maximum Fragment Range = 819 ft
K328 Overpressure Range = 83 ft

The primary fragmentation characteristics used in the calculation of the values listed above were computed IAW CEHNC-ED-CS-S-98-1. The maximum fragment range was calculated using the maximum weight fragment and the initial velocity from these characteristics in the computer software TRAJ. The range to no more than 1 hazardous fragment/600 sq ft was calculated IAW CEHNC-ED-CS-S-98-2.

SANDBAG ENCLOSURE FOR INTENTIONAL DETONATIONS

Required Sandbag Thickness = 12 in. with 6" standoff between munition and sandbags
Sandbag Throw Distance = 25 ft
Minimum Separation Distance = 200 ft

Minimum Separation Distances
Ft. McClellan
37 mm Mk I Practice
27 June 2000

The required sandbag thickness and the sandbag throw distance were calculated IAW CEHNC-ED-CS-S-98-7. The minimum separation distance is based on the largest of the sandbag throw distance or 200 ft or the K328 distance for the total NEW (munition plus donor charge). A copy of HNC-ED-CS-S-98-7, "Use of Sandbags for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions" must be available on site. This report may be downloaded from the USAESCH homepage at http://www.hnd.usace.army.mil Select "Product Lines", "Ordnance and Explosives", "Innovative Technology", then "Analytical Tools". The first time you access the site you will have to register. You will be notified by e-mail when your login and password have been activated. You must have a login and password to download the report.

SIGNATURES:

Michelle Crull 6/27/00
Subject Matter Expert

William H. Patrick Jr. 27 JUN 00
CEHNC-ED-CS-S Branch Chief

Minimum Separation Distances
Ft. McClellan
3.5 in M28A2 Rocket (case only)
27 June 2000

REQUESTED BY: Valerie Clinkenbeard
PREPARED BY: Michelle Crull, PhD, PE

This form shows calculated distances only. It does not constitute approval. Concurrence of CEHNC-OE-S is required to determine the applicable distance for a specific site.

In accordance with (IAW) OE Center of Expertise Interim Guidance Document 00-01, use of the range to no more than 1 hazardous fragment/600 sq ft as the minimum separation distance for accidental detonations requires written justification, a risk analysis, calculation of this distance by CEHNC-ED-CS-S, and concurrence of CEHNC-OE-S.

CALCULATIONS FOR UNINTENTIONAL DETONATIONS

Maximum Fragment Range = 1420 ft
Range to No More Than 1 Hazardous Fragment/600 sq ft = 235 ft
Range to 0.9 psi Overpressure = 70 ft

IAW OE Center of Expertise Interim Guidance Document 00-01, the minimum separation distance for intentional detonations may not be less than the default distance provided in DoD 6055.9-STD or the maximum fragment range or the K328 overpressure distance.

CALCULATIONS FOR INTENTIONAL DETONATIONS

Maximum Fragment Range = 1420 ft
K328 Overpressure Range = 457 ft

The primary fragmentation characteristics used in the calculation of the values listed above were computed IAW CEHNC-ED-CS-S-98-1. The maximum fragment range was calculated using the maximum weight fragment and the initial velocity from these characteristics in the computer software TRAJ. The range to no more than 1 hazardous fragment/600 sq ft was calculated IAW CEHNC-ED-CS-S-98-2.

SANDBAG ENCLOSURE FOR INTENTIONAL DETONATIONS

Required Sandbag Thickness = 36 in. with 6" standoff between munition and sandbags
Sandbag Throw Distance = 220 ft
Minimum Separation Distance = 220 ft

Minimum Separation Distances
Ft. McClellan
3.5 in M28A2 Rocket (case only)
27 June 2000

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