

WORK PLAN
STANDARDIZED UXO TECHNOLOGY
DEMONSTRATION SITE
DEMONSTRATOR'S OPERATIONS

Revised September 08

WORK PLAN
DEMONSTRATOR'S OPERATIONS
APG/YPG STANDARDIZED UXO TECHNOLOGY DEMONSTRATION SITES

1. **PURPOSE:** To establish a work plan for the evaluation of new sensors, data acquisition and systems for UXO detection and discrimination by a demonstrator. This effort will involve demonstrator's providing and operating the sensor equipment/systems in field tests at the APG and YPG Standardized UXO Technology Demonstration Sites.

2. **GENERAL:** The APG/YPG Standardized UXO Technology Demonstration Sites consist of:

A. **Calibration Lanes/Ground Test Pit (APG/YPG).** A surveyed area with emplaced standardized munitions targets (inert munitions of various size and weight) buried below the surface in lanes at various depth, dip and azimuth. Metal clutter and non-metallic clutter has been cleared down to 1.2 m. Target placement sheets and a map will be provided to the demonstrator. Adjacent to the calibration lane is a 0.6m square ground test pit. The ground test pit is cleared down to 1.2m for the demonstrator to bury inert standardized munitions targets/spheres/hoops/and clutter items found in the calibration lanes, blind test grid, and open field site to calibrate sensor/detector test equipment. For this purpose at least one of each of the standardized targets/spheres/hoops and clutter items will be made available to demonstrators while on site. The calibration lanes will contain site-specific inert munitions.

B. **Blind Test Grid (APG/YPG).** A surveyed area with emplaced standardized munitions targets (inert munitions of various size and weight) buried below the surface in lanes at various depth, dip and azimuth. Metal clutter and non-metallic clutter has been cleared down to 1.2 m. A GPS location of the boundary and 400 opportunity points will be made available to the demonstrator. This site is for performance scoring of the demonstrator's sensor/detection equipment to discriminate between standardized munitions targets and clutter targets. Calibration lanes must have been completed first. The blind test grid will contain site-specific inert munitions (same as calibration lanes).

C. **Open field (APG/YPG).** The Open Field area provides the demonstrator with a variety of realistic scenarios essential for evaluating sensor system performance. The scenarios and challenges found on this Open Field area consist of a gravel road (APG), wet areas (APG), dips ruts and trees. Vegetation height varies from 15 to 25 centimeters. Other challenges that may be found on an open field site include electrical lines and metallic fencing that test the capabilities of the platform systems or hand held detectors. The same type of standardized targets used in the calibration lanes and Blind Test grid which have been buried at specific locations, depths, and orientations in accordance with instructions

of the Standardized UXO Technology Demonstration Site Ground Truth Committee. A map showing the boundaries and the GPS position of the scenarios and survey monuments will be made available to the demonstrator. This site is for performance scoring of the demonstrator's equipment to discriminate between standardized munitions targets and clutter targets under simulated field conditions within a time period of performance. Calibration lanes and blind test grid must have been completed first. The open field site will contain site-specific inert munitions (same as calibration lanes and blind test grid).

(1) Direct Fire (APG Only). A section of the open field area has been reconfigured to emulate typical impact area conditions. The direct fire area contains munition types that are typically found in an impact area of a direct fire weapons range. Munitions and clutter are emplaced in a pattern characteristic of direct fire munitions. The same types of standardized targets used in the calibration lanes and Blind Test grid are buried at specific locations, depths, and orientations in accordance with instructions from the Standardized UXO Technology Demonstration Site Ground Truth Committee. A map showing the boundaries and the GPS position of the scenarios and survey monuments will be made available to the demonstrator. This sub-area is for performance scoring of the demonstrator's equipment to discriminate between standardized munitions and clutter targets under simulated field conditions within a specific performance time period. Calibration lanes and the blind test grid must have been completed prior to surveying the Direct Fire area.

(2) Indirect Fire (APG Only). A section of the open field area has been reconfigured to emulate typical impact area conditions. The indirect fire area contains munition types that are typically found in an impact area of an indirect fire weapons range. Munitions and clutter are emplaced in a pattern characteristic typical for indirect fire munitions. The same type of standardized targets used in the calibration lanes and Blind Test grid are buried at specific locations, depths, and orientations in accordance with instructions from the Standardized UXO Technology Demonstration Site Ground Truth Committee. A map showing the boundaries and the GPS position of the scenarios and survey monuments will be made available to the demonstrator. This sub-area is for performance scoring of the demonstrator's equipment to discriminate between standardized munitions targets and clutter targets under simulated field conditions within a specific performance time period. Calibration lanes and blind test grid must have been completed prior to surveying the indirect fire area.

D. Moguls (APG/YPG). The Mogul Area consists of two (2) areas (the rectangular or driving portion of the course and the triangular section with more difficult, non-drivable terrain). The rectangular section includes six (6) test lanes, which incorporate a slope challenge, 0.61m and 0.91m moguls, 0.61m and 0.91m slanted moguls, and vibration lanes. This section of the course is designed for testing vendors' vehicles' (vehicle must minimize damage to terrain) abilities to traverse adverse terrain and to check accuracy of sensor equipment when subjected to vibration and offset angles created by rough terrain. The triangular section incorporates more intense moguls and terrain, which can be traversed only by foot using hand held or pushed sensor devices. The same type of

standardized targets used in the calibration lanes and Blind Test grid are buried at specific locations, depths, and orientations in accordance with instructions from the Standardized UXO Technology Demonstration Site Ground Truth Committee. A map showing the boundaries and the GPS position of the scenarios and survey monuments will be made available to the demonstrator. This sub-area is for performance scoring of the demonstrator's equipment to discriminate between standardized munitions targets and clutter targets under simulated field conditions within a specific performance time period. The calibration grid, blind grid and open field must be completed prior to surveying the mogul area.

E. Wooded Area (APG Only). The wooded area consists of cleared woods (tree removal with only stumps remaining), partially cleared woods (including all underbrush and fallen trees), and virgin woods (i.e., woods in natural state with all trees, underbrush, and fallen trees left in place). The same type of standardized targets used in the calibration lanes and Blind Test grid are buried at specific locations, depths, and orientations in accordance with instructions from the Standardized UXO Technology Demonstration Site Ground Truth Committee. A map showing the boundaries and the GPS position of the scenarios and survey monuments will be made available to the demonstrator. This sub-area is for performance scoring of the demonstrator's equipment to discriminate between standardized munitions targets and clutter targets under simulated field conditions within a specific performance time period. The calibration grid, blind grid and open field must be completed prior to surveying the wooded area.

F. Desert Extreme (YPG Only). The desert extreme portion of the test site consists of a 5,000 square meter area that is located south east of the open field site. The area is covered with desert-type vegetation and is used to test the performance of different sensor platforms in a more severe desert conditions/environment. The same type of standardized targets used in the calibration lanes and Blind Test grid are buried at specific locations, depths, and orientations in accordance with instructions from the Standardized UXO Technology Demonstration Site Ground Truth Committee. A map showing the boundaries and the GPS position of the scenarios and survey monuments will be made available to the demonstrator. This sub-area is for performance scoring of the demonstrator's equipment to discriminate between standardized munitions targets and clutter targets under simulated field conditions within a specific performance time period. The calibration grid, blind grid and open field must be completed prior to surveying the desert extreme area.

G. Buffer Zones (APG Only). Established outside the intended work sites (scoring areas) in order to provide a turn around area for equipment (See attached map for locations). This will allow the vendors to accomplish complete coverage of targets located inside the designated scoring areas. ***These zones have not been totally cleared of anomalies and are not part of the scoring area.*** Therefore, care should be taken to eliminate unintentional "hits" in these zones from the dig list provided at the conclusion of operations.

H. Other Areas. Other range areas may be designated for peculiar systems or needs when protocols/plans have been established/approved between Standardized UXO Technology Demonstration Site ATC/YTC Program Manager and Range Control.

3. APPLICABILITY: This Work Plan applies to all demonstrators involved in preparation, operation, and maintenance of sensor/detector/data acquisition systems for UXO detection and discrimination at the APG/YPG Standardized UXO Technology Demonstration Sites.

4. RESPONSIBILITY:

A. ATC Standardized UXO Technology Demonstration Site Project Officer is responsible for providing scheduling, oversight/control, and providing necessary information regarding operations at the test site to include range safety briefing (YPG Site Project Officer will do the same).

B. Immediate supervisor (demonstrator) or worker-in-charge of UXO detection and discrimination sensor equipment/systems is responsible for:

(1) Enforcing the requirements of this Work Plan.

(2) Instructing and furnishing guidance to subordinates to achieve and maintain safe work practices.

(3) Providing training on this Work Plan and ensuring only qualified personnel are permitted to engage in these operations. Training will include duties, responsibilities, hazards involved and any special precautions to be observed including range limitations and UXO awareness.

(4) Ensuring that adequate equipment, materials and tools are provided to obtain maximum efficiency in accomplishing the work.

(5) Ensuring that operating personnel wear proper protective clothing and equipment.

5. LOCATION OF OPERATIONS:

APG Standardized UXO Technology Demonstration Site at Trench Warfare, and YPG Standardized UXO Technology Demonstration Site at KOFA Range.

6. PERSONNEL LIMITS:

A. Operating personnel are limited to the number required to safely and efficiently conduct the operation. At no time will this number be less than two, one of which may be the site project officer or his representative.

B. Visiting personnel will be limited to authorized personnel with an official interest in the operation.

7. MATERIAL LIMITS: N/A

8. SAFETY REQUIREMENTS:

A. Industrial:

(1) A signed copy of this Work Plan shall be on file. Supervisory personnel shall be responsible for the enforcement of its provisions.

(2) There shall be no deviation or change from the approved Work Plan without written approval by the ATC Project Officer. (YPG officer will also adhere)

(3) All detection and discrimination equipment and hand tools shall be maintained in a good state of repair.

(4) Operators lifting material/equipment will use proper, safe handholds, assume proper lifting positions, avoids twisting when lifting or carrying, and avoid sharp objects.

(5) Leather gloves will be worn, when necessary, to prevent cuts and abrasions to the hands.

(6) All Operating personnel will be instructed by the immediate supervisor or worker in charge, in the identification of poisonous vegetation (poison ivy, poison oak, sumac, etc.) and to the presence of insects that bite or sting, e.g., ticks, chiggers, bee.

(7) Personnel assigned to operations in an area suspected of containing poisonous vegetation, ticks, chiggers, etc. will be cautioned by their supervisor to wear clothing snugly fasten at the neck, wrist, and ankles.

(8) A bar of hand soap, water, and a container will be provided to each crew to wash exposed parts; crew members will wash as soon as possible after exposure.

(9) Insect repellent and sting swabs will be provided and employed as a protection against chiggers, ticks, wasps, etc.

(10) Each person will make a frequent inspection of the body for the presence of ticks. Personnel finding a tick embedded in the body should report to the nearest hospital or medical facility for its removal and treatment of the bite.

(11) Any person noting a skin irritation after exposure to poisonous vegetation should report to the nearest hospital or medical facility for treatment.

(12) Personnel should be further cautioned not to rub their faces, particularly the eyes, with gloves or shirt sleeves, not to eat in a infested area.

(13) Safety footwear/boots will be worn by all personnel at all times.

B. Explosive:

(1) Areas described in Section 2 A, B, and C of this work plan has been cleared of UXO and clutter to the greatest extent possible. However, the potential remains that ordnance items may still be present within these areas. Buffer areas described in Section 2 of this plan have not been cleared of UXO and clutter because they are not part of the delineated scoring area. The majority of these areas do contain UXO. To mitigate the risk of operating in these potentially hazardous areas, a countermine roller system was utilized that applies a uniform ground pressure of 50 psi. (APG only) Equipment applying a ground pressure exceeding 50 psi will not be allowed to operate in these areas.

(2) No intrusive activities will be permitted in the work site or buffer zones including driving stakes, inserting flags and surface disturbance by equipment maneuvering.

(3) Smoking and the use of matches or any other flame-producing or external spark producing device within an explosive storage area or a posted restricted area is prohibited. Smoking is restricted to buildings or clearly defined areas which have been approved in writing by the Commander, ATC, and which have been posted with appropriate signs.

(4) DO NOT pick up or disturb unidentified items.

(5) Report all unidentified items to ATC Site Manager/Representative, who in turn will report it to the Range Control Operator.

(6) Site Manager will perform a visual surface sweep for UXO of the entire work area, including buffer zones, prior to each user beginning operations onsite.

(7) **DO NOT go outside the boundaries of the access route or work site.**

C. Range:

(1) Personnel must obtain a clearance from the Range Control Operator before entering the Standardized UXO Technology Demonstration Site and cancel the clearance upon leaving.

(2) No vehicle or items of mechanized equipment will be left unattended while the motor is running or with the ignition switch in the "ON" position. Any vehicle or item of equipment which must be left unattended will have the motor mined off and will be parked at least 15 meters (50 ft) from any ammunition or explosive storage site.

(3) EXTREME CARE WILL BE EXERCISED WHEN USING VEHICLES WITH CATALYTIC CONVERTERS IN AREAS OF DRY VEGETATION. AT NO TIME WILL SUCH VEHICLES BE PARKED IN AREAS OF DRY VEGETATION DUE TO THE DANGER OF FIRE.

(4) When determined by the ATC Range Control Officer, a range control operator will support the operation. When no range control operator support is provided, the appropriate emergency service will be notified of the planned activity.

(5) Ready communications by telephone or radio between the general working areas and the Range Control Operator will be maintained by the work crew at all times during occupancy of the Standardized UXO Technology Demonstration Site.

NOTE: COMMUNICATIONS WILL BE CHECKED BY THE WORK CREW UPON ENTERING THE AREA AND ALSO AFTER THE NOON HOUR PERIOD.

D. Environmental:

APG

(1) Should a spill of hazardous material/waste occur, immediately perform remedial action, contact the Emergency Spill Response Team, Dial "911" post phone or 4-0599 or 410-306-0599 (cellular phone) and the ATC Environmental Office 410-278-5294 (cellular phone) or 3-5294 post phone.

(2) The ATC Project Manager will be coordinated the disposal of any generated waste in accordance with APGR 200-2, APGR 200-50 and APGR 200-60.

YPG

Personnel on YPG ranges discovering unmarked containers or spills (e.g., leaking fuel tanks) will treat them as hazardous waste. These will be treated IAW the current YPG Integrated Contingency Plan.

Upon discovery of hazardous waste or spills, notify Range Control (KOFA or Cibola on the radio, or the Range Control Emergency number x5111 or (928) 328-5111 if using Cell Phone). Provide Location, type amount (if known), numbers and titles from hazardous material cards or shipping labels, fire or radiation danger, if identifiable, and proximity of any explosives/ammunition. Do not handle or attempt to move containers, boxes, etc. Move away from the materials to avoid contamination and wait for further instructions from the Scene Commander or wait for appropriate fire, safety, and environmental personnel to arrive to control the site.

E. Accident Reporting:

APG

- (1) Take care of personnel injury first
- (2) Dial 911 (post phone) or 410-278-7220 (cellular phone) for ambulance or other emergency assistance when needed; or, if a phone is not available, notify the Range Control Operator who will, in turn, obtain help.
- (3) Notify the range control operator, the immediate supervisor, and the ATC Safety Office 3-3607/4411 (post phone) or 410-278-3607/4411 (cellular phone).
- (4) ATC Project Manager will follow accident reporting procedures contained in CSTA Reg385-2, Chapter 9.

YPG

Activate the Emergency Response procedures by calling Range Control, KOFA or Cibola on the radio, or the Range Control Emergency number x5111 or (928) 328-5111 if using Cell Phone:

- (1) Ask someone to stay on the radio or telephone to assist in guiding the emergency response team and to maintain direct contact with Range Control.
- (2) Ask some knowledgeable person to identify safe helicopter landing zone, or determine safe lanes for evacuation if you are unable to do this yourself.
- (3) Provide First Aid for the injured
 - a. If necessary and possible, make the scene safe for personnel on-site and for Emergency Responders. Evaluate risk form further mishap at scene. If appropriate, take action to reduce the risk by withdrawing from the scene or performing some other action.
- (4) Guide Emergency Responders to the Scene and Assist Them.

F. Emergency Information:

APG

- (1) Coordination/Emergency Points of Contact Aberdeen Area (AA).
 - a. A-Tower - 410-278-2246/2256 (cellular phone) 3-2246/2256 (post phone)
Radio- Mode 1 Channel10 Call Sign 801
 - b. B-Tower- 410-278-2250/3971 (cellular phone) 3-2250/3971 (post phone)
Radio- Mode 1 Channel 11 Call Sign 800

(2) Emergency: 911 (post phone) 410-278-7220 (cellular phone AA)

(3) Fire & Emergency Services Division: 410-306-0599 (cellular phone) 4-0599 (post phone).

YPG

(1) EMERGENCY LINE: 928-328-5111, only dial last four if using a YPG Phone.
Dialing 911 will take longer than dialing 5111.

(2) KOFA: 928-328-3333, only dial last four if using a YPG phone.

(3) CIBOLA: 928-328-2047, only dial last four if using a YPG phone.

(4) YPG Police: 928-328-2110.

(5) YPG Fire Department: 928-328-2117.

9. PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT: Personal protective clothing and equipment (PPC&E) will be maintained at a level appropriate to protect personnel. Normal work clothing will be worn and will include long trousers, shirts, leather gloves, appropriate foot wear and safety glasses. Hard hats are required once clearing into any range (APG) or when overhead hazards are present.

A. Safety glasses meeting ANSI Standard Z87.1.

B. Gloves, leather or leather palmed.

C. Shoe/boot, safety toed, industrial.

D. Hard hats

10. TOOLS:

A. All tools will be carefully inspected for operational safety before use.

B. All cord-connected, electrically-operated tools must be effectively grounded or of the approved double-insulated type.

C. Electrical extension cords and plugs must be inspected periodically for deterioration or damage.

11. BARRICADES/OPERATIONAL SHIELDS: N/A

12. FIRST-AID EQUIPMENT:

A. A standard first-aid kit will be readily available on site. At least one person will be trained in CPR and general first aid.

B. Insect/tick repellent.

C. Insect sting swabs (MSA or other suitable type).

13. FIRE FIGHTING EQUIPMENT: Fire extinguisher, chemical, 10BC, readily accessible.

14. OPERATING EQUIPMENT:

A. Electromagnetic and magnetometer sensor/detection systems, man portable, towed, vehicle mounted, and airborne as provided and operated by demonstrator.

B. Standardized targets (15 types-inert munitions) available to demonstrators for calibrating sensor/detectors.

15. PROCEDURE:

A. The government representative will coordinate with Range Control and the Scheduling Office to gain access to the test site and be on-site during all operations.

B. Maximum of 10 hours are allowed on-site per day.

C. Field Schedule.

(1) First Day.

a. Review of demonstrator's test plan, schedule, and time frame for understanding of test operations and requirements.

b. Field visit - show demonstrator equipment storage site, base station operations, test sites, and area to mobilize equipment.

c. Review range control procedures, conduct UXO safety and security briefings, and test protocols.

d. Demonstrator mobilizes equipment

e. Time permitting begins field testing. Before entering the test site, the government representative will obtain a clearance from the range control tower operator. This clearance must be canceled immediately upon vacating the area. Entrance to and exit from the work area will not be accomplished by any road or route other than that specified by the range control tower operator, and no employee will leave the assigned work area without proper clearance.

(2) Daily Field Operations

- a. Conduct daily site safety briefing and review up-coming field operations.
- b. Demonstrator sets up equipment and conducts systems checks/calibrations.
- c. Demonstrator begins fieldwork (after obtaining a clearance from the range control tower operator) in the following sequence:
 1. Calibration lanes/ground test pit
 - a. Unlimited time (no recording of time).
 - b. Unlimited trial runs (no recording of trial runs).
 2. Blind Test Grid (calibration lanes must be completed first).
 - a. Time Critical - record time on each square or overall and account for any down time.
 - b. Runs - recording number of times and directions the sensor were over the grid.
 3. Open Field Site - approximately 4 hectares (calibration lanes and blind test grids must be completed first).
 - a. Time is limited to the function of the demonstrator's equipment (time will be recorded).
 - b. No limit on runs over the open field (number of runs will be recorded).

D. Last Scheduled Day

(1) A post briefing will be held with the demonstrator to discuss post test issues and operations including the following:

- a. In 30 days demonstrator sends processed data in prescribed format to the **STANDARDIZED UXO TECHNOLOGY DEMONSTRATION SITE U.S. ARMY ABERDEEN TEST CENTER PROGRAM MANAGER.**
- b. At least one set of raw data from each test area completed must also be submitted to government representative.
- c. Discuss overall field activities and any issues that came up during test.

(2) Demobilization of equipment by the demonstrator.

(3) Site clean up (good housekeeping, i.e., bag and dispose of trash properly).

16. LINE LAYOUT: N/A

17. ELECTRICAL STORMS:

A. During normal duty hours, the ATC/YTC Meteorological (Met) Team will notify the tower operator and the "Planning and Compliance Safety Team of approaching lightning storms. The Met Team will identify whether the storm affects the test areas and will also specify the time frame that the storm is threatening. Range Control will notify all operations under their jurisdiction to suspend operations.

B. On weekends, after duty hours, or when the Met Team is unavailable for information, the onsite Government representative, must use good judgment and determine when to halt and when to resume operations.

18. POSTING:

A copy of the Work Plan will always be in the possession of the on-site Government representative and the immediate supervisor of the demonstrator's crew during all active phases of the operation.

19. REFERENCES: CSTA-REG. 385-2, CSTA Safety Program; CSTA -REG 385-22, Development, Use, and Review of Standing Operating Procedures.