

Topic 3: Military Munitions Detection, Classification, and Remediation

Objective

Demonstration projects are sought for technologies that address the needs listed below:

Classification Technologies: Technologies are needed that can discriminate munitions ranging from 20 mm projectiles to 2000 lb. bombs from other items in the sub-surface. A single technology need not be applicable to all possible munitions types, nor all possible site conditions. Technologies are requested for ultimate inclusion in a series of live-site Classification Demonstrations being conducted by ESTCP in four categories:

- Integrated systems (hand held, man-portable, or vehicle towed) that can survey tracts of land, detect potential munitions and discriminate munitions from clutter;
- Systems that are cued by other survey technologies which can cost effectively, non-invasively interrogate the suspected item and discriminate munitions from clutter;
- Signal processing technologies that can exploit the current state-of-the-art electromagnetic induction survey data to improve classification capabilities; and
- Production technologies that have demonstrated the ability to collect classification-quality survey data and analyze these data using advanced processing techniques.

Live Site Demonstrations: ESTCP has initiated a series of demonstrations at live munitions sites to facilitate the adoption of advanced sensors and analyses in the production environment. Reports describing the results of demonstrations at the former Camps Sibert and San Luis Obispo are available at www.serdp-estcp.org/Featured-Initiatives/Munitions-Response-Initiatives/Classification-Applied-to-Munitions-Response. Implementation of these classification technologies will require demonstrations at a number of sites spanning a wide range of munitions and site conditions.

As part of this series, demonstrations in one or a combination of the following areas by either individual performers or teams of performers are sought. Demonstrations that involve the use of these technologies as they would be used on production sites or with production teams are of particular interest.

- Data collection with advanced EMI sensors
- Data collection with production EMI sensors coupled with advanced analysis
- Innovative data collection methodologies
- Advanced technologies for data analysis and anomaly classification
- Use of these advanced techniques in the production environment

Proposals that focus only on data analysis and signal processing technologies can expect data sets from one, or more, of the following advanced sensors to be available:

- MetalMapper (ESTCP Project MR-200603)
- TEMTADS (ESTCP Project MR-200601)
- Man-Portable Vector sensor (ESTCP Project MR-201005)
- Handheld BUD (SERDP Project MR-1667)
- Man-portable TEMTADS (ESTCP Project MR-200909)

Details of each of these sensors can be found at www.serdp-estcp.org/Program-Areas/Munitions-Response/Land/Sensors.

Demonstrations in the live site program will be conducted at sites amenable to the use of towed arrays and other large platforms as well as sites on which smaller cart and man-portable sensors will be appropriate. Some sites will be open, with good sky view, while others will have vegetation and other obstructions that restrict access to GPS signals.

Proposers with technologies that may be applicable to only a subset of demonstration sites and conditions should specify in the pre-proposal the conditions under which their technology will operate most effectively. Proposals ultimately selected for funding will be matched with a demonstration site(s) based on these restrictions; therefore, it is imperative that proposers provide a clear description of applicable operating conditions.

To be considered for inclusion in the live site program, technologies should be mature enough that within three months of project initiation any required shakedown testing will be completed and a field-ready system can be deployed for testing. This will generally require testing that has been verified by a neutral third party, either at the Standardized UXO Test Sites or other sites that have supported such testing. Minor variations in practice using standard commercially available instruments or approaches currently deployed at DoD sites will be considered too mature.

Underwater Munitions: Technologies are needed that can reliably detect and classify munitions that are proud or buried, either individually or in clusters, in the underwater environment. Munitions of interest range from small projectiles to large bombs at depths to 120 feet.

Background

As a result of past military training and weapons-testing activities, military munitions, including unexploded ordnance, are present at sites designated for base realignment and closure (BRAC) and at Formerly Used Defense Sites (FUDS). Current estimates indicate that millions of acres of land and water potentially contain munitions contamination. Ongoing military operations deposit additional munitions on active installations, necessitating periodic maintenance. Construction and reconfiguration of ranges can involve substantial costs for unexploded ordnance (UXO) removal and safety support. Using current technologies, the cost of identifying and disposing of munitions in the United States is estimated to be in the tens of billions of dollars.

Proposed technologies should have completed required proof-of-concept work showing evidence of the technology's capabilities. Initial demonstrations may be at a controlled test site, in which case subsequent testing at live munitions response sites will depend on the performance demonstrated during the controlled tests. Demonstrations directly on live sites, with appropriate supporting performance information, will also be considered. These live site demonstrations may be integrated with ongoing munitions response projects or may be part of the series of large-scale ESTCP demonstrations that are currently being executed.

Technologies applicable to the detection and remediation of explosives in soil or groundwater are not responsive to this topic area.

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