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UXB International Inc. Offers Technological Capabilities for Global Mine Action

This article highlights the successes of UXB International Inc. in mine action through exploring its technological advances.

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Background

UXB International Inc. (UXB), is the first private ordnance and explosive disposal company in the United States. As its mission states, UXB provides a comprehensive program of explosive waste remediation engineering services that are designed to mitigate the hazards associated with ordnance and explosives, UXO, range residue, landmines, energetics and propellants, ammunition, and other dangerous articles. Established in 1983, UXB has grown to be recognized for its emphasis on safety and quality. As stated proudly on its website, UXB has never experienced an explosive-related fatality or accident, either by workers while clearing mines nor by community members after the field was cleared.¹ This level of safety and quality is possible through UXB's commitment to combining the knowledge of former combatants, military personnel and local experts so that the required work and clearance standards of its multi-national workforce can be efficiently carried out. UXB has developed specialized training courses that include classroom lectures, technical manuals, hands-on reinforcement training, field exercises and formal testing.² This dedicated approach qualifies UXB for many different applications of mine action internationally. Its most important contribution to mine action is its innovative technological response to the proper detection and disposal of landmines and UXO.

Technological Innovations

Geophysical Investigation and Demining in Africa

From June 2002 through June 2003, UXB conducted a route verification survey, which entailed surveying routes already opened or cleared by the UN Mission in Ethiopia and Eritrea (UNMEE). In order to meet site-specific requirements, UXB reconfigured the Kinematic Induction and Magnetic Survey (KIMS) system. This reconfiguration placed the platform on the front of the vehicle and incorporated different sensors and Global Positioning System (GPS) receivers into the system, thus allowing the system to operate in remote areas where parts and service are difficult and time-consuming to acquire. As explained in the UXB Capabilities Packet, the "KIMS" seven-meter search path maps geo-referenced positions of geophysical anomalies and navigates back to those positions for further investigation.



KIMS System at work in Eritrea, Africa.

KIMS can be configured with a varying number of sensors. It uses real-time kinematic (RTK) GPS receivers to collect location data. Real-time map displays allow the operator to view graphic representations of sensor data as it is being collected and to view tracking data on a base map as the work is in progress. Collected data is analyzed for anomaly determination off-line. Once mines are located and mapped, the Manual Route Clearance Team (MRCT) uses a combination of mine detection dogs (MDDs) and manual clearance techniques to investigate all indications and destroy any encountered devices. This technique has allowed UXB's Route Verification Team (RVT) to survey a total of 7,931,476

sq m and to clear 4,477,760 sq m.

Land Survey and Mapping Technology

UXB locates, maps, accesses, identifies, removes, transports and disposes of landmines and UXO. In order to carry out this broad spectrum of activities, UXB uses various technologies including:

- Electromagnetics
- Ground Penetrating Radar (GPR)
- Time Domain Metal Detection
- Standard Metal Detection
- Seismic Refraction
- Magnetometry
- Electrical Resistivity Profiling and Soundings
- Borehole Geophysics (EM, SP, Resistivity, Natural Gamma and Cross Borehole Seismic)
- Borehole Videos/Cameras

Environmental Systems Research Institute's (ESRI's) ArcView and Intergraph GeoMedia Geographic Information Systems (GIS) are used to manage and report project information. The ArcView software's powerful visualization tools make it possible to access records from existing databases and display them on maps.³ Intergraph's GeoMedia GIS provides a complete set of analysis tools that allows UXB to perform expert, complex spatial analysis.⁴ Mapping, engineering and architectural drawings are prepared in AutoCAD 2004 and MicroStation V8.

Demilitarization of Training Munitions, Range Residue and Small Arms

UXB designed and engineered a fleet of equipment to address the problem of demilitarization. The Lightweight Ordnance and Armaments Demilitarization System (LOADS) is a cost-effective, efficient way to attack the problem of demilitarizing of training munitions, range residue and small arms.



LOADS system.

LOADS effectively and safely breaks munitions into pieces that are small enough to allow 100-percent inspection and removal of all suspect or hazardous materials. This inspection is a key point in the process, as it allows the material to be thoroughly checked over to ensure that the proper processes have taken place and all munitions have been demilitarized.

Recently developed enhancements allow processing of numerous different-sized training munitions including fuzes and fuze systems, guidance and control units, practice missiles and components. LOADS will also demilitarize small weapons.

Conclusion

As the first private ordnance and explosive disposal company in the United States, the success of UXB is truly impressive. Through its innovative technological response, UXB has made a cost-effective and efficient contribution to mine action. With its technology, UXB is helping to make the global community safer by mitigating the hazards of UXO and landmines.

**All photos courtesy of UXB International.*

References

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