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Ukraine Responds to New Mine Action Demands

The Ukraine has been testing demining equipment as well as practicing new mine action methods in order to meet international guidelines. The following article discusses the different types of demining equipment that Ukrainian deminers have tested and hope to use in the future.



Ukrainian deminers in south Lebanon used detectors and prods made in the Ukraine.

by Lt. Col. Sergei
Pashinsky, *Director, UMAIC*

Introduction

In addressing the landmine problem in the Ukraine, we must first examine the magnitude of the problem and secondly, categorize and distribute issues into relevant categories. With more than one million mines and pieces of UXO buried in Ukrainian soil and over 11 million munitions stockpiled, most of the Ukraine's problems relate to explosive remnants of war (ERW). Twenty to 24 domestic explosive ordnance disposal (EOD) teams travel daily to places where UXO is detected, and they neutralize on average 150 to 200 pieces of munitions. In 2001–2002, about 348,000 various explosive devices were found and destroyed. Fortunately, over the past 10 years, the international community has focused on alleviating the humanitarian impact of APLs.

In the Ukraine, we are taking steps to launch our own National Mine Action Program (NMAP), and the interim infrastructure of our prospective NMAP is actively being developed. In addition to the Ministry of Defense, the Emergency Ministry and the Special Police Bomb Disposal Division, which were traditionally involved in this issue, several EOD/demining and research and development (R&D) commercial companies have been established. The personnel of these companies has been trained according to the International Mine Action Standards (IMAS) and has experience using new mine action methodologies and technologies. However, we would also like to see the international mine action community expedite the process of implementing a global ERW program.

The work of EOD specialists is just as dangerous and tense as humanitarian demining. Sometimes people do not understand the phrases such as "mines other than APLs" or try to make a distinction between "landmines and not landmines." All explosive devices present equally serious threats to humans. Field EOD operators face the same danger on a daily basis; therefore, they need appropriate methodologies, effective projects, international standards, reliable equipment, etc.

International Experience

Ukrainian deminers and technicians learned their most important lessons during the UN mission in south Lebanon at the United Nations Interim Force in Lebanon Mine Action Task Force (UNIFIL-MATF). During the mission, they were strictly bound to IMAS and practiced mine detection, using a variety of protective equipment that met international standards. So far, the domestic demining operations have also adhered to national rules and standards. In the case of international demining operations, we had to pick detecting facilities as well as protective and demining equipment on the basis of IMAS requirements. Using the design of various foreign and domestic equipment available, our experts have been testing and developing the new equipment at our Humanitarian Demining (HD) Training Center.

Mine Detection

To identify detectors suitable for the upcoming demining mission in south Lebanon, we have been testing several different devices. In-soil and in-air testing was conducted in clay, sand and stony lanes, resembling Lebanese climatic conditions. In-air tests were conducted for the purpose of quantifying certain aspects of detector performance (sweep speed, calibration, drift, scan profile, sensitivity). The ergonomic factors, such as ease of use, weight, robustness and comfort were also tested. Unfortunately, the pressing deadlines and some other unfavorable circumstances prevented us from completing this research and forced us to pick an "old-fashioned" former Soviet army mine detector that was well-known to Ukrainian deminers. In spite of its ergonomic deficiencies, the mine detector still performed adequately.

Protective Equipment

In choosing the personal protective equipment (PPE), we also decided to use domestic products. The sapper's protective set ("Shell-300 m" flak jacket and flak shorts made from Kevlar) proved to be comfortable, provided protection for vital parts of the body, and was rather light and reasonable in cost. It provides frontal protection of the head, body, groin and hip joint from a distance of two to four m. Working in this flexible protective equipment at temperatures in excess of 35 degrees Celsius, our deminers felt comfortable, except maybe for the exceedingly heavy helmet and 5.0-mm, three-layer visor.

Demining Tools

To provide low-cost equipment aids to our deminers in mine clearance operations, a Manual Demining Tool (MDT) was produced. The set is flexible and changes depending on terrain, weather and other conditions. Taking into account the desires of the deminers, an R&D laboratory is currently testing a new tool set containing a tripwire feeler, pick prod and profile probe, mini-spade, demining brushes, shears, root cutter, etc. Whenever possible, this set should include a blast guard for the hand, be robust and not separate into components during mine detonation.

Mechanical Assistance

Until now, only the former Soviet Union's mechanical applications were used in interior demining operations. In view of the recent requirements of HD, some modern designs with requisite characteristics are being developed. Among them is the Self-Propelled Remote Controlled Complex (SDUK) developed by

the Stroom R&D Company. This unit is based on a mini-excavator (ATEK-711 type on the caterpillar drive) and initially was designed to operate in hazardous environments (radioactive, highly toxic and contaminated areas). SDUK has been successfully tested while executing a project for the utilization of hazardous and unfit pesticides. Using the basic model, the second phase was to redesign removable attachments for demining operations: vegetation cutters, miniflail, etc. SDUK is guided by an operator via a remote control panel. It can be located at a distance of up to 500 m from the unit, with the use of a TV monitoring system, which creates black and white 3-D images of the objects.

Equipment We Want to Have

Detectors

In response to modern HD demands, we are currently seeking a portable, ergonomic and low-maintenance device or system for detecting and imaging landmines and UXO, which is capable of detecting and identifying shallow buried metallic and non-metallic munitions. Depending on terrain and other conditions, this unit would also ideally be able to be used by the deminer in a standing, kneeling or prone position. At the same time, this device must be easy to use and reasonably priced. Currently, several domestic laboratories that are developing pilot models attained adequate results, but the work was still rather time consuming. Thus, we are planning to cooperate with foreign partners. So far, overseas devices have either been lacking some requisite characteristics or are too expensive. The ideal detector we would like to see would:

- Be lightweight (up to 1.2 kg) and well-balanced
- Be easy to set up and simple to operate
- Have a range of length adjustment
- Have elbow restraints
- Be rugged and waterproof
- Be capable of use in shallow water
- Have versatility provided by several alternative sensors
- Have a choice of earpiece (external speaker/headphones) and volume control



A group of deminers investigates a mine incident.

- Have a low battery indicator
- Have minimum cable connections
- Have a detailed troubleshooting guide

PPE

The principal criterion for protective equipment is its reliability in shielding the deminer while operating in a minefield. The flexibility, light weight and the comfort of the deminers are also integral parts of the criteria. Equipment that provides protection for only the front and sides of the body, legs and torso, but leaves the back exposed (to reduce heat stress, weight or for whatever reasons) do not fully satisfy us. It is unacceptable to have the back exposed because in the case of a blast when a deminer is thrown and falls on a neighboring mine with an unshielded back, he has no chance of surviving.

Ukrainian deminers still operate in helmets with short visors, covering the gap between face and visor with a protective collar. Now we are leaning toward abolishing the helmets and designing a wide and long visor mounted on an absorbent headband. The PPE that Ukrainian deminers want is ideally reliable and flexible and has a light modular design (including protective footwear) allowing the deminer to select additional rigid and

soft ballistic components, depending on site requirements. It must provide protection against fragmentation mines and sufficient air circulation around covered portions of the body.

Conclusion

Launching our own national demining program in the Ukraine and taking part in demining projects abroad, we are looking forward to keeping on par with the international demining community. Strict adherence to IMAS and the implementation of the newest technologies and methodologies are of paramount importance to us. Along with the development of the domestic technologies and cooperation with national manufacturers, the Ukraine is interested in collaboration with foreign partners. I would like to inform you of our intention to restart the Ukrainian Mine Action Information Center (UMAIC) project Mine Action Technology Bulletin, which will highlight the tendencies and implementation policy for new technologies in Ukrainian domestic and foreign mine clearance operations. Each interested organization is encouraged to put in its comments, notes and reviews as

well as any product advertisements. Terms and conditions of the proposed project will be given out upon request.

**All photos courtesy of the author.*

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