Journal of Conventional Weapons Destruction

Volume 12
Issue 2 *The Journal of ERW and Mine Action*

Article 38

March 2008

An Update on the ITEP Program and Activities

Franciska Borry
International Test and Evaluation Program for Humanitarian Demining (ITEP)

An Update on the ITEP Program and Activities

Since 2000, the International Test and Evaluation Program for Humanitarian Demining has been a crucial instrument in the research and development field, providing comprehensive test and evaluation information to the demining community worldwide. This article summarizes the main ongoing and planned test and evaluation activities carried out by the ITEP participants, either as coordinated efforts or as national projects.

by Franciska Borry [International Test and Evaluation Program for Humanitarian Demining]

Eight years have passed since the memorandum of understanding was signed establishing the International Test and Evaluation Program for Humanitarian Demining. Belgium, Canada, the Netherlands, Sweden, the United Kingdom, the United States and the European Commission (represented by the Joint Research Centre), signed the ITEP MoU in July 2000. Germany joined ITEP later, in 2002. After a slow start-up, ITEP-coordinated test and evaluation activities really kicked off in 2003 with several trials of mechanical-demining equipment, and the chairmanship of the first *Comité Européen de Normalisation* Workshop on Test and Evaluation of Metal Detectors. ITEP's activities peaked in 2006, but since then the number of test and evaluation projects carried out yearly by the ITEP participants have been on the decline. This downward trend is mainly due to policy changes in the ITEP member countries resulting in a shift toward test and evaluation in areas other than humanitarian demining. These policy changes were most pronounced in the European Commission and the United Kingdom, both of which discontinued their ITEP membership, in 2006 and 2007, respectively.

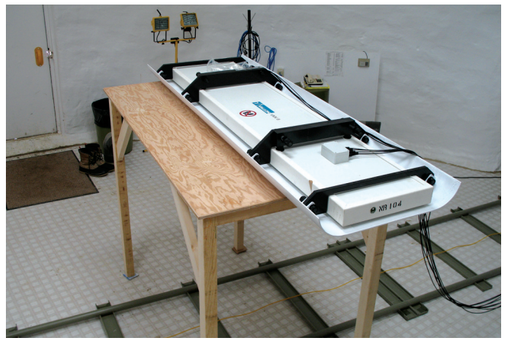
Although the ITEP participants now conduct fewer activities than in previous years, testing and evaluation has become more reactive to specific user requests, and therefore probably more effective. Decreasing budgets notwithstanding, it is the intention of the remaining ITEP members to continue delivering objective test and evaluation information to the demining community.

Detection Systems

Metal detector arrays. At the request of the user community, Canada started a metal-detector-array evaluation project in 2006[1] during which the Vallon VMV-8 and the Schiebel VAMIDS™ array systems were tested with direct assistance from Germany and the Netherlands. In October 2007, Canada together with the Netherlands completed this project with the evaluation of the Minelab 3m STMR system and the Ebinger array, made available by the United States Humanitarian Demining Research and Development Program. The evaluation was based on existing in-laboratory test guidelines developed for handheld metal detectors. The final report is expected to be released early in 2009. In order to obtain a full evaluation of the metal-detector arrays, it is necessary to complete the in-laboratory testing with in-soil and in-country testing. The latter evaluation[2] is being considered by the Netherlands and will be carried out as soon as national funding can be obtained.

The U.S. HD R&D program is currently developing and testing another electromagnetic sensor array system, the GEMINI,[3] in response to requests from Cambodia and Somaliland for a detection system with a better discrimination capability in difficult soil. The system is a vehicle-mounted gradiometer sensor array that can detect and characterize unexploded ordnance and metal anti-tank mines in real time. It is remote-controlled with an integrated mapping capability.

Ground-penetrating radar. The U.S. HD R&D program is evaluating the platform integrated Non-Intrusive Integrated Technology (NIITEK) Minestalker™ [4] in Cambodia. The Minestalker is computer-controlled with GPS tracking and allows for real-time detection and marking of anti-tank mines. A prototype system was evaluated in Angola and Namibia in 2005. This prototype was then further developed into a rugged, field-ready system over the course of 2006 and 2007. The system



Laboratory testing of the Vallon VMV-8 metal detector array.
PHOTO COURTESY OF K. RUSSELL, DRDC–SUFFIELD

is now under evaluation against the AT mines found in Southeast Asia at an extensive field test site constructed in Cambodia by the U.S. HD R&D program.

Germany is planning to test two handheld GPR systems as follow-up sensors to a metal detector.[5] The objective is to evaluate the usefulness of a stand-alone GPR applied in combination with a metal detector as an alternative to a dual-sensor mine detector. This test will be executed in September 2009, parallel to and at the same test site as the planned dual-sensor detector trial.

Magnets. The Netherlands started a project on the evaluation of the clutter-reduction effectiveness of demining tools with magnets in 2006.[6] The aim of this project was to quantify the effectiveness enhancement and resulting productivity increase in manual demining when handheld magnets and rakes equipped with magnets were used in the close-in detection phase. Based on criteria developed as part of the project, suitable magnet tools were selected, developed and tested in three phases. The first trial was carried out in Cambodia in fall 2006, in coordination with the Cambodian Mine Action Centre. The second and third trials were carried out in Angola throughout 2007 with Norwegian People's Aid as a partner organization. The final report[7] was released in March

An NPA deminer during a trial of magnet tools in Angola.
PHOTO COURTESY OF A. SCHOOLDERMAN, TNO DEFENCE, SECURITY AND SAFETY

2008 and is available on the ITEP Web site. Norwegian People's Aid has requested assistance from the Netherlands (The Netherlands Office of Defence, Security and Safety) for the delivery and integration of one of the tested magnet tools in all its manual-demining operations in Angola.

Dual-sensor. The long-term U.S. HD R&D Program projects related to test and evaluation of dual-sensor detector systems are still ongoing.

The Handheld Standoff Mine Detection System continues to be evaluated in actual operations in a variety of locations.[8] For nearly two years, the system has been used in more than 50 minefields as the primary detector by local deminers managed by The HALO Trust. Long-term operational evaluations have taken place in Afghanistan (May–July 2006) and Thailand (September 2006–March 2007) and have been ongoing in Cambodia since April 2006. The operations with HALO, the leading nongovernmental organization for HSTAMIDS fielding, have led to the development of new time and cost-saving operating procedures and demining team organizational structures that take advantage of the system's enhanced probability of detection and clutter-rejection capability. Mines Advisory Group is another NGO that has completed training on the HSTAMIDS and is using the system in Cambodia. Furthermore, CMAC established a project with the United States to train and operate with the HSTAMIDS.

Along with the deployment of the current HSTAMIDS detector (military version), the U.S. HD R&D Program is involved in the development and testing of an improved version of a dual-sensor mine detector (Discriminating Mine Detector).[9]

The German dual-sensor detector trial, which was planned in 2007 by the *Bundesanstalt für Materialforschung und Materialprüfung*, was cancelled at the last moment due to the short-term unavailability of two of the commercial, off-the-shelf, dual-sensor detector systems (HSTAMIDS and Vallon MINEHOUND™ VMR2). The objective had been to carry out a reliability trial of those systems at the Croatian Mine Action Center's Center for Testing, Development and Training, Ltd. to answer the long-standing user request for objective data on the probability of detection and false-alarm rate of the available dual-sensor detectors as compared to the corresponding stand-alone metal detectors. Such stand-alone detectors had been tested at the same facility during the 2006 Systematic Test and Evaluation of Metal Detectors field trial.[10] A similar trial is now being planned by the German Armed Forces at the German Armed Forces Test Center 52 in Oberjettenberg.[11] Belgium, the Netherlands and Canada are planning to provide support to this trial as required. Furthermore, in preparation for the dual-sensor detector trial, a purpose-built test facility is now being constructed at the Oberjettenberg Test Center.[12] This facility will be specifically designed to be able to evaluate metal detectors, GPR detectors and dual-sensor mine detectors according to ITEP-accepted test guidelines. It is further intended that this test facility will be accessible from 2009 onwards to NATO Partnership for Peace partners, ITEP partners and equipment manufacturers.

Soil characterization. The *Leibniz-Institut für Angewandte Geophysik* in Germany is working on a database of tropical soils with the aim of creating a soil-classification system to estimate soil influence on detector performance (both metal detectors and GPR).[13] The idea of a soil-properties database to satisfy soil-information requirements was first proposed in 2003.[14] Over the years, several activities were carried out under the ITEP umbrella to collect relevant soil information, as well as data on how soil characteristics influence the performance of metal detectors. However, the way in which physical soil parameters such as magnetic susceptibility and permittivity can be derived from the generally available soil classifications is less apparent. *Institut für Geowissenschaftliche Gemeinschaftsaufgaben* is now trying to establish empirical relationships between the soil information available on a conventional soil map (such as soil type, soil development and parent material) and the soil physical parameters relevant to metal detectors and GPR.

Mechanical Assistance

The ITEP Working Group on Test and Evaluation of Mechanical Assistance Clearance Equipment (WGMAE) under the leadership of Canada, initiated in 2006 a systematic campaign to test and evaluate commercial, off-the-shelf mechanical-demining machines.

CWA 15044 performance test of the Mini MineWolf with tiller.
PHOTO COURTESY OF C. BARTLING, GERMAN TEST CENTER FOR WEAPONS AND MUNITIONS

This initiative resulted in a large number of trials in 2006 but the withdrawal of the United Kingdom—an important player in the ITEP WGMAE—from ITEP, as well as the decreased resources for test and evaluation

of humanitarian-demining equipment from Canada and Sweden, has led to a considerable reduction in ITEP mechanical-demining equipment trials.

The only non-U.S. activity during 2007 was the performance and survivability trial of the Mini MineWolf carried out by the German Test Center for Weapons and Munitions with support from Canada.[15] The Mini MineWolf flail and tiller were evaluated according to the Workshop Agreement on Test and Evaluation of Demining Machines (CWA 15044: 2004)[16] in August–September 2007 and the final test report[17] was released in January 2008.[18]

The U.S. HD R&D Program carried out several tests of adapted commercial, off-the-shelf attachments/accessories such as the Rotary Mine Comb and Setco tires[19] as well as of the purpose-built multi-tool demining machines MAXX,[20] MAXX+,[21] STORM,[22] RAPTOR[23] and TEMPEST Mk6.[24] Some of these tests were developmental, while others were part of longer-term operational field evaluations. The U.S. HD R&D Program has continued these projects in 2008 and carried out a few new trials including the performance evaluation of a commercial off-the-shelf sifter and rock crusher, as well as of the Nemesis M3 mechanical clearance and area preparation tool. The final reports of the latter two trials are available at the U.S. HD Program publications Web site.[25]

Sweden has executed several mechanical equipment trials in the course of 2008 at the SWEDEC Norra Kulla test facility. In May and September 2008 they ran performance and survivability trials of the DOK-ING MV-10 double tool system (flail and tiller)[26] and the Digger D2 flail and tiller[27] respectively. Furthermore, the Freeland 3000 flail, a Swedish machine currently under development, was evaluated in August 2008.[28] All trials were carried out following the CEN Workshop Agreement 15044: 2004 test guidelines. Test reports for the MV-10[29] and the Freeland 3000[30] have already been release and are accessible via the ITEP Web site. The MV4 with tiller, the new Bozena-5 and the Scanjack with flail and tiller are currently under consideration by SWEDEC for testing according to the CWA 15044:2004 in 2009.

Personal Protection

Upon request of the United Nations Mine Action Service, Sweden performed two series of tests on new personal protective equipment produced by ROFI[31] in November 2007 and November 2008 respectively. The trials were limited to blast tests executed according to the CEN Workshop Agreement on test and evaluation of Personal Protective Equipment (CWA 15756:2007).[32] The final test reports are available on the ITEP Web site.[33] The main objective of the Swedish PPE trials was to experimentally validate the CWA 15756:2007 test guidelines and to collect data on the blast performance of available PPE.[34] As a result of the Swedish trials, there is concern about the representativeness of the simulated mine as stipulated by the CWA 15756:2007, and further methodology tests are recommended in order to make the results obtained from the CWA 15756:2007 tests more representative of what happens in minefield operations.

Blast test on heat-treated scratched visor.
PHOTO COURTESY OF G. COLEY, DRDC–SUFFIELD

Positioning of Hybrid III anthropomorphic dummy prior to blast test on new PPE produced by ROFI.
PHOTO COURTESY OF A. BREDELIUS, SWEDEC

Canada conducted a trial during January–March 2008 to answer questions from the user community about a visor scratch-repair method described in a *Journal of Mine Action* article.[35] It was feared that the suggested method, consisting of heat-gun treatment of the scratched visor, would make the visor more brittle. All tests (blast, V50 and Vproof) were finalized at the end of March 2008[36] and an article discussing the results will be submitted in the near future to *The Journal of ERW and Mine Action* for publishing.

CEN Workshop Activities

Three CEN Workshop Agreements for test and evaluation of humanitarian-demining equipment have now been published: CWA 14747:2003 (test and evaluation of metal detectors),[37] CWA 15044:2004 (test and evaluation of demining machines) and CWA 15756:2007 (test and evaluation of personal protective equipment). The publication of a fourth CEN Workshop Agreement on soil characterization for metal detectors and ground-penetrating radar is expected at the end of 2008. Work on the latter CWA[38] started in November 2006 to produce a second part for the CWA on test and evaluation of metal detectors, providing a methodology for the classification and measurement of soil properties relevant for demining operations using metal detectors and ground-penetrating radar and/or dual-sensor detectors.

See Endnotes, page 113

Franciska Borry has been working for the Secretariat of the International Test and Evaluation Program for Humanitarian Demining since June 2002. Her main tasks are to provide advice, assistance and coordination services to the ITEP Executive Committee. She is further responsible for the maintenance of all ITEP information databases and serves as the point of contact for any communication with ITEP.

Franciska Borry
ITEP Secretariat
c/o Royal Military Academy
31 Avenue de la Renaissance
B-1000 Brussels / Belgium
Tel: +39 332 771 847
Fax: +32 27376349
E-mail: franciska.borry@itep.ws