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The Mine Action Technology Newsletter lets you know where to find more information and who to contact, where to go and what is going on in support of your work.

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Introduction

This is the seventh issue of the Mine Action Technology Newsletter, produced by UNMAS and GICHD, dedicated to the promotion and development of related mine action technology.

technology that we can do things faster and safer eventually.

We welcome new ideas and would happily share them with others if sent for inclusion in the Newsletter. Feedback from the field, NGOs, manufacturers, donors or headquarter organizations helps to make the Newsletter more interesting.

We will continue to do everything we can to bring new technology to the field and information to you via this Newsletter and other means. In the meantime, we thank you for your contributions and interest in 2007 and hope that you will continue to help us produce the Technology Newsletter in 2008 by submitting information to be shared with others."

This issue includes four short articles: Improved Discrimination in Metal Detection; What can environmental sciences contribute to the mine search; R&D Technical Summary, Issue: Extreme Variance in USSR PMN Mine Signal; Cairo Mine Detectors test Trials.

This newsletter is sent out via e-mail to people and organizations who have expressed an interest in mine action technology. Those wishing to receive a copy as soon as it is available can simply click the sign-up link on the email accompanying this newsletter or subscribe at the following web page <http://www.gichd.org/gichd-newsletters/mine-action-technology-newsletter/sign-up/>

The newsletter is also available on the UN Mine Action Service website, **E-Mine** (www.mineaction.org).

As we close the calendar year of 2007, it is perhaps time to reflect on what has been achieved and what still needs to be done. Technology developments move very slowly compared to the pace of life in a Mine Action Centre but it is through

Readers are once again invited to provide their own comment and to make constructive suggestions to the Editors, Noel Mulliner, Technology Coordinator at UNMAS, or Erik Tollefsen, Technology Officer at the GICHD.

Mine Action
TECHNOLOGY
NEWSLETTER

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WHAT'S GOING ON IN TECHNOLOGY ?

Conferences, Training and other Events

Editor's Note: If readers have details of any forthcoming conferences, symposiums or training events please submit the information to one of the editors.

Aresa International TNT Symposium Copenhagen 16 January 2008

The symposium is the result of a 6 months intensive study of chemical leakage of TNT/DNT from landmines and UXO under different soil and climatic conditions in 7 different countries conducted by Aresa landmine department in corporation with Cranfield University, Faculty of Agriculture Zagreb University, Nordic Demining Research Forum, Swedish Defence, Demex, HCR-CTRO, Serbian Institute for Environment, Apopo, International Mine Action Centre in Nairobi, NPA Global Dog Training Centre in Sarajevo, DOK-ING Demining, Mechem Ltd, SWEDEC and DANDEC sponsored by Danish Ministry of Foreign Affairs (Danida) and Aresa.

The study of chemical leakage is part of the operational development of Aresa landmine plant RedDetect also included testing of new mechanical ground preparation machines (with tiller attachments) on live mines, use of scientific collection of weather data, use of internal quality control of the HPLC/G-C analysis using TNT spiked soil samples and counter check soil samples.

During the symposium Aresa will present the results from the study of leakage from landmines including international scientists from Germany and United Kingdom presenting latest news on TNT contamination from ammunition production and future study on mechanical demining impact on agricultural land.

NDRF Workshop on Molecular and Odour Detection in cooperation with University of Southren Danmark, Odense 5 March 2008

Molecular and odour detection plays an increasing role in the discovery and identification of hazardous, alien, or unwanted substances in connection with clearance of mines and UXO (Un Exploded Ordnance), protection against terrorist threats, narcotic control, and pollution analyses.

The goal of the workshop is to identify the four to five most important research and development activities to be supported or initiated in order to improve safety and efficiency of the daily work in subject area.

WWW address: www.ndrf.dk

UNMAS/GICHD Mine Action Technology Workshop. Geneva 9-11 September 2008

Following the first UNMAS/GICHD technology workshop in Geneva in February 2006 the participants attending recommended this to be an event to be repeated. We are now planning for a workshop with the tentative dates of 9-11 September 2008.

The aim of the workshop is to put technology in mine action on the agenda and to create a vehicle for communicating ideas and sharing of experiences between the R&D community, manufacturers and field users of technology.

The workshop's proposed point of departure will be the application of technology in road clearance. Today this particular discipline is demanding a coordinated approach often with a number of different mine action methodologies and technologies integrated as a systems. Survey systems, GIS, GPS, DGPS, vehicle based metal detectors, GPR, REST, MDD, rollers, tillers, flails and manual demining are all systems in daily use on road clearance projects. We will however welcome ideas of other subjects as well as speakers and organisations that would like to contribute to the conference.

We hope not only to be able to present and discuss the strengths and weaknesses of the various technologies, but also how one can combine systems and thereby improve the output in terms of quality, quantity, cost efficiency and safety. Please communicate suggestions to the editors of the Technology Newsletter.

Improved Discrimination in Metal Detection

by
Hugh Graham



The minimum metal mine was developed to defeat the detection capabilities of metal detectors. To counter this challenge, metal detector manufacturers greatly improved the sensitivity of their products. However, this introduces a new problem due to the detrimental effects of mineralised soils which, at best, result in increased False Alarm Rates (FAR) which will slow down operations significantly and, at worst, force operators to reduce the sensitivity of their detectors.

In the mid 90s, Minelab adapted its Multi-Period-Sensing (MPS) technology, originally developed for detecting very small traces of alluvial gold in the heavily mineralised soils of Australia, for use in humanitarian demining. After successful trials and acceptance by the Cambodian Mine Action Centre in 1998, Minelab was quickly recognised as a global supplier of landmine and UXO detection products.

Although Minelab's MPS technology significantly reduces the impact of mineralised soils on detector sensitivity, the problem continues to present difficult challenges to manufacturers of metal detectors. (Refer to: STEMMD Interim Field Report Trial Mozambique http://www.itcp.ws/pdf/Interim_Final_Moz201205_02_web_optimized.pdf).

In general, a quality metal mine detector will simply detect metal but cannot substantially differentiate between a mine and a piece of metal fragmentation known as a false positive. Consequently, in some situations, FAR can be extremely high.

One approach to reduce FAR is to combine different sensors.



F4 Controls and Display

For example, the US HSTAMIDS system combines Minelab's F3 metal detector technology with Ground Penetrating Radar. This effective combination of sensors has been proven to dramatically reduce FAR. (Refer to: UNMAS/GICHD Mine Action Technology Newsletter, June 2006, Issue No 4)

Another approach is to obtain more information on the metallic composition of a target thereby differentiating it from other targets. Whereas the technology to achieve this has existed for some time, the accuracy and consistency of discrimination has varied considerably.

In 1999, Minelab launched the first in a series of hobbyist detectors known as Explorer. Unlike MPS, the Explorer incorporates Minelab's patented Full Band Spectrum (FBS) technology that makes use of a more advanced transmit signal consisting of multi-period rectangular waves. Consequently, FBS is able to obtain greater and more accurate information about a target's metallic signature.

Although originally designed for use by the hobbyist, the capabilities of the Explorer to

discriminate between targets was soon noticed by other users. Subsequently, the Explorer quickly found application in UXO detection.

The capabilities of the Explorer have undergone further development and improvement with the latest release of the Explorer SE. Through FBS technology, the composition of a target can be accurately analysed in terms of ferrous content and conductivity. Additionally, through a simple user initiated procedure, the characteristics of a target (or several targets) can be “learned” by the detector and a detection profile subsequently created and stored in the machine.

When selected, depending on the operator’s requirements, the detection profile will result in the machine either alarming or ignoring targets that share the same “learned” characteristics. Alternatively, an operator can choose to alarm on all targets in the same manner as a traditional metal detector.

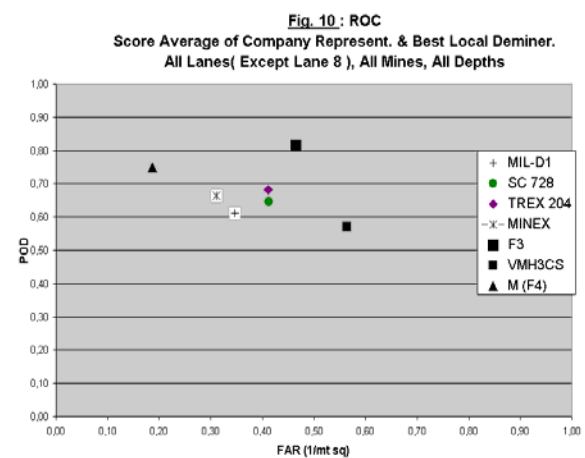
In May 2007, the opportunity to evaluate the Explorer SE capability in an independent mine and UXO detection trial arose by attending the Experimental Cairo Testing and Evaluation of Mine and UXO Detectors (ECTEMUD). In preparation for the trial Minelab modified the software of the Explorer SE and designated the detector as the F4.



Targets used for the trial comprised TS-50 and PMN AP mines. The F4 was not only able to discriminate between the mines and clutter, but in this instance, it was also able to identify each mine. This impressive capability is illustrated on the following diagram taken from the ECTEMUD Report. (Refer to: ITEP Reports <http://www.itep.ws/>)

Interestingly, although only second to Minelab’s F3 in terms of Probability of Detection, the F4 clearly achieved a significant reduction in FAR.

Although the ECTEMUD trial demonstrated the potential of the F4, like all other equipment used in demining, it does not provide a complete solution and has strengths and weaknesses when compared to other products. However, in keeping with the toolbox approach to landmine and UXO clearance, FBS technology may prove to be useful in specific circumstances.



Minelab is currently involved in research and development to combine the advantages provided by MPS and FBS technologies. The aim of this development will be to further improve target discrimination in all soil conditions using a metal detection platform.

For any questions relating to the F4 or any other Minelab products, please contact:

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What can environmental sciences contribute to the mine search?

By

Kai- Uwe Gross



Detection of explosives on the soil surface above buried mines is one promising technique when searching for mines. Typically this is done with dogs because they still out-compete even the most sophisticated analytical instruments. Rats and other animals (e.g. bees) are also being used although less widespread than dogs. But, there are limitations. Depending on the type of soil and the actual weather conditions there may just be no or not enough explosive molecules on the soil surface to provide a signal to the animal. Hence, an important part of employing animals in a mine search is the knowledge of when failure of the animals is likely due to adverse environmental conditions.

Environmental chemists have a good qualitative understanding on how explosives migrate through the soil to the surface. Based on the physico-chemical properties of the explosives we expect that any significant transport in the soil only occurs in and with the soil water. This is even true for extremely dry soils where a human would not be able to sense the presence of water any more. Hence, the better we can predict the movement of water in the soil the better we will understand whether a mine search is generally feasible

within a given climatic zone and also within a specific situation, e.g. after a rain event. Water that infiltrates into the soil during and after a rain event will flush the explosive molecules from the soil surface deeper into the soil. In a dry period following a rain fall evaporation starts to set in at the soil surface. This will cause the direction of water flow in the soil to reverse and upward transport of the explosives becomes possible again. But there will develop a water divide inside the soil below which water still continues to infiltrate deeper into the soil and it is only above this invisible water divide that water will creep upwards like in a sponge. During a rain event this water divide is located on top of the soil (i.e., all water is moving downwards). It will start to move down into the soil as soon as evaporation sets in but only when this water divide has reached the level where the explosive molecules are (either at the level of the mine itself or somewhere above where the infiltrated explosive molecules are just residing) will transport of the explosives to the surface start again. It is obvious that a search for mines before this point in time must fail. Currently, we are not yet able to come up with any accurate model that will predict the length of this time span that one has to wait before resuming the mine search. However, while working towards this goal we can try to offer some preliminary advice based on our current understanding that might prove useful to practitioners:

Time lag after rain: The development of a dry soil surface layer, about the upper 5 mm of the soil, should be a helpful indicator for the time one has to wait after rain before resuming the mine search. A dry layer is a clear indication that significant evaporation of water – and thus upward transportation- must have proceeded for some time (although we still cannot be sure whether this went down deep enough) A dry surface layer also acts as a trap for the explosives that are transported upwards with the water in the soil because sorption of explosives is much stronger in dry soils than in moist soils. The humidity in the

breath of dogs and rats will help them to access these sorbed odours during the sniffing process.

Dew fall or very light rain will dislocate a significant amount of the odour molecules from the soil surface into the adjacent air layer. Here the odours are quickly diluted and spread out so that this is not an ideal situation for the dogs especially not when they are supposed to pinpoint a mine. However, dew fall or light rain will not dislocate the odour molecules deep into the soil so that the search can probably be resumed quickly after the dew or light rain evaporates.

Vegetation: Vegetation significantly slows down evaporation of water from the soil surface. This hampers the transport of explosives to the soil surface. However, as long as vegetation does not completely prevent the soil surface from drying out (see criterion above) and as long as it also does not prevent the dogs from getting their nose close to the ground then the mine search should still be possible.

Temperature: Elevated temperatures generally accelerate the transport of explosives to the soil surface but they also accelerate the degradation of TNT. The range of acceptable temperature conditions is probably rather wide and much less of a concern than the humidity conditions. As it comes to diurnal temperature profiles it is noteworthy that we do not expect an increased volatility of explosives with increasing temperature on dry soil surfaces. Temperature effects on the physiology of the dogs are likely to be more relevant or limiting than the direct effects on surface concentrations.

Climate: Climates with long dry periods and little vegetation are certainly favourable for the operation of MDDs. In humid climates, the periods that are sufficiently dry may become so short that the work of MDDs is not cost-effective any more. According to one field operator a reliable mine search with MDDs in Bosnia is restricted to 2 or 3 months in summer. This can probably serve as a good general benchmark. In areas with an even more humid climate than Bosnia the deployment of MDDs does not seem advisable. Note, though that this also depends on the soil type.



REST: While the statements above are only qualitative, we can provide some very clear and specific statements for the use of REST. Presenting a REST sample to an animal will always provide the animal with a smaller vapour concentration than what the animal would encounter in the field. Hence, if at all, REST can only succeed under conditions where the direct operation of animals in the field would also have been successful (with the exception of really hot conditions where the dogs may have physiological problems to keep up the search). Secondly collecting and presenting a **dust** sample for REST rather than an **air** sample will provide the detecting animal not only with higher concentrations but it will also provide a signature pattern that is identical to the one in the field, which is not the case for an air sample trapped on a filter. Furthermore we can say that collecting a few mg of dust per square meter of soil surface will be enough to supply the maximum possible signal to the animal. More dust will not do any harm when collected representatively over the whole area but it will also not bring any improvement. Dust sampling can only be done efficiently when the soil surface is dry but, when we recall that this is a prerequisite for a successful direct mine search with animals anyhow, this is actually not an additional constraint.

Preparing training samples: Environmental sciences also come into play when preparing training samples for the animals. A comprehensive discussion of all the potential pitfalls that have to be considered when preparing training samples is beyond the scope of this text. Therefore a few ideas have to suffice here: (i) When the same amount of

explosives is spiked into different soil samples of the same weight then the resulting scent that will be available to the dog can easily differ by a factor 100 or more depending on the types of soil used and their moisture content; (ii) training dogs on pure military grade TNT will inevitably provide them with a different odour bouquet than they will encounter on the soil surface above a mine. This is because the various components of military grade TNT migrate at different velocity through the soil and are degraded to a different extent. Thus training should not rely on training with military grade TNT alone.

In summary, animals will probably stay the number-one detector for explosive odours in the environment for a long time. But even they cannot do the impossible. One can only make full use of their capabilities if one understands and acts in accordance with the limitations that environmental conditions pose to their deployment. We are able to provide some powerful and relevant statements concerning REST. These conclusions were based on fundamental thermodynamic reasoning and the knowledge of physico-chemical properties of the explosives and therefore leave very little room for uncertainty. In contrast, for other questions we can only come up with some preliminary hints because they depend in a complex way on the interplay of many environmental factors and not all of them are well understood yet. We will have to do more research and continuously double-check our results with the experience of practitioners before we can provide more specific and concrete answers.

Kai-Uwe Goss

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Feature Article 3

R&D Technical Summary

Issue: Extreme Variance in USSR PMN Mine Signal

by

Roger Hess

During a review of the detector performance in the DRED lanes in Kampong Chhnang; it was noted that the live USSR PMN mine targets produced an extremely wide detection result. Some mines were located reliably at 20-30 cm deep while others were consistently missed at 5 cm.



To seek answers on this issue, some of the PMN's previously seeded were excavated and 12 replacements were selected from the CMAC SHA. Prior to placement; base line tests were conducted with the Ebinger UPEX-740 wide loop detection to compare millivolt values (mV). All mines were recovered from actual clearance operations and had been planted in the ground for 20-25 years. It was immediately noted that two of the 12 mines provided an extremely high (3,277 mV) reading when compared to the rest (120-50 mV), even though the basic components were the same.

The two mines in question were dissected via remote band-saw at the Explosive Harvesting Site (EHS) along with one that produced a

return of approx 140 mV. While the explosive was considerable darker in the two mines with the high mV readings, all other components were the same.

The main charge was tested for conductivity (nil) and the other mine components were examined for differences (nil). Once re-assembled with the metallic components in a separate zip-lock bag; it was found that the mV reading was now in the 120-130 mV ranges.

The remaining PMN mines with intact firing pins, springs and cover bands were tested in the CMAC SHA and five more were found that produced values exceeding 3,000 mV. One was soaked overnight in a 20/80 mixture of dish soap & water to assess if a micro-thin membrane had formed around the components.



The mine was tested the following day and a 250 - 300 mV drop had occurred, however the mine still registered close to 3,000 mV on the UPEX.

A theory was then produced that an intact cover band with full conductivity could act as

its own “Mini-detector” once excited by a pulse induction system. This could enhance the eddy currents produced by the other metallic components, omitting a mV level far beyond what would be expected.



To assess this; one mine was tested again (3,277 mV) then the band was cut to the left of the cotter pin with a set of side cutters and measured again: the mV reading immediately dropped to only 145mV. This was repeated on a second mine with a similar reading and the same results occurred.

The EHS will assess if “depot stock” condition PMN mines can be obtained for base line tests; however it is of our opinion that the theory of a fully conductive band increasing the eddy current of the internal metallic components is correct.

This will have a direct effect of any RDT&E on any detection systems that employs technology based on eddy current decay. Surrogate mines which are “Dielectrically Identical” are often used as test sources to determine a detectors performance and the USSR PMN are often considered a standard.

The fact is that depending on the corrosion and conductivity of the cover band; the PMN can produce a signal as large as a metallic bounding AP mine or **small enough** to be considered background noise if the larger value is taken as a standard reading during testing.

Roger Hess
Director, Field Operations
Golden West Humanitarian Foundation

Feature Article 4

Cairo Mine Detectors Test Trials prepared by Dr Adel El Nadi

The North West Coast (NWC) Region of Egypt was the theater of many decisive battles during WWII. For more than sixty years the mines and explosive remnants of war (ERW) left over from these battles have caused thousands [do we mean thousands, or just many?]of human casualties and blocked the great development potential of this important part of the country. It is believed that millions of mines and unexploded ordnance (UXO), such as 2000lb aircraft bombs, artillery shells, projectiles and rounds of many different calibers have been hidden by sand over the years and at different depths.



The UNDP Mine Action Program in Egypt, was launched in January 2007 as a result of an agreement signed on 9 November 2006 between the Egyptian Government and UNDP. With the objective of deciding which metal detectors to use in the demining activities, it was decided to organize test trials, in Egypt, for metal detectors manufactured by the five leading international manufacturers: CEIA, EBINGER, FOERSTER, MINELAB and VALLON. The test trials, were conducted from 12-18 May 2007 at a specially designed and prepared test field in the vicinity of the 6th of October City, close to Cairo. The Egyptian Armed Forces built all test lanes, including a specially

designed ramp graded from 30 cm to 200 cm deep for the conduct of maximum depth tests and supplied the required target mines and ordnance as well as services. The lane officers were staff members from Cairo University and a special Jury was formed with International and Egyptian members, civilian and military. A representative from GICHD was closely observing the test trials.



The following tests were performed:

1. Maximum detection depth in air (Two suitable jigs were used).
2. Detector footprint (Spatial sensitivity profile) in air (A special tool was added to each jig).
3. Resolution of two nearby targets (Two lanes with different types of clean soil).
4. Maximum detection depth in soil (Four 6 m x 1 m lanes with different types of clean soil: pure sand, sand with added hematite and black earth).
5. Reliability test by regular metal detectors for two types of rendered-safe mines in eight lanes with soil similar to 4 above. In every lane, 24 mines were buried within an active area of 24

m x 1 m. An area of 1 m x 1 m in each lane was dedicated to ground compensation and left free of targets.

6. Reliability test for detectors which are able to discriminate between different metallic objects. Two lanes similar to 5 above with the two target types in addition to artificial metallic clutter .

7. Maximum detection depth of metal cased mines and UXO located below a specially prepared ramp with a maximum height of two meters.

For the purpose of training local deminers and detector preparation, each company was offered four 4 m x 1 m lanes containing different soil types for training local deminers. A private tent for storage was also provided for each company.

In each blind lane 24 targets were placed at different depths. Both TS-50 and PMN rendered-safe AP mines were used. While a rendered-safe TS-50 mine (T*) was more difficult to detect (as it contained less metal) than a live one , the rendered-safe PMN mine (P*) contained the safety pin and was easier to detect than a live one. The T* targets were placed at depths of 5, 10, 15 and 20 cm while the P* targets, which contained more metal, were placed at depths of 35, 40, 45 and 50 cm in eight lanes with different types of soil. Each detector was tested by four dedicated operators, one provided by the company and three by the Egyptian army.

For the UXO test the following deactivated targets were used:

1. MK7 AT mine, Great Britain (25cm diameter).
2. M71, AT mine , Egypt (25 cm diameter)
3. T80 , AT mine , Egypt (15 cm diameter)
4. Projectile, solid metal, 10 kg.
5. Projectile, solid metal, 1 kg.
6. Projectile , solid metal, 0.9 kg.
7. Projectile , solid metal, 0.160 kg.

Again every UXO detector was tested by the four dedicated company deminers along the ramp.

The test results can be found in the more detailed final report.

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Mine Action Technology Information Resources

The following websites contain information on the latest technical mine action activities and organizations, as well as calendars showing forthcoming technology conferences.

E-Mine

The Official Website of the United Nations Mine Action Service (UNMAS) designed to support both the planning and coordination of global mine action efforts.

<http://www.mineaction.org>

Geneva International Centre for Humanitarian Demining

The Official Website of GICHD that provides regular updates on GICHD activities, studies and projects, including the Equipment Catalogues.

<http://www.gichd.org>

International Test and Evaluation Programme

Provides information, updates, current test and evaluation reports of demining machines and technologies.

<http://www.itep.ws>

Mine Action Information Center at James Madison University

Contains a good global mine action registry, the Journal of Mine Action, Lessons Learned database, and a Spatial Information Clearing House.

<http://www.maic.jmu.edu>

The International Mine Action Training Centre (IMATC)

The International Mine Action Training Centre (IMATC) is a joint British and Kenyan venture aimed at alleviating the suffering caused by landmines and Explosive Remnants of War by providing high quality Mine Action Training.

<http://www.army.mod.uk/aroundtheworld/ken/imatc/>

UXOInfo.com

Website devoted to information on Unexploded Ordnance (UXO). Latest news on UXO, photo galleries and technology information available.

<http://www.uxoinfo.com>

Canadian Forces National Defense Mine/Countermine Information Center

The NDMIC provides mine and countermine information for Canadian Forces in international operations.

<http://ndmic-cidnm.forces.gc.ca>

US Humanitarian Demining R & D Programme

This site provides an overview of the optional products and technologies that are available for use in global humanitarian demining and developed, or being developed, tested, and evaluated under the U.S. Department of Defense (DoD) Humanitarian Demining Research and Development Program.

<http://www.humanitarian-demining.org/demining/default.asp>

ORDATA Online

ORDATA Online supports the U.S. Department of Defense by providing information to facilitate international UXO training, awareness and clearance operations.

<http://www.maic.jmu.edu/ordata>

Mine Information and Training Centre (MITC)

Sponsored by the Battlefield Engineering Wing at Minley in Surrey, UK, MITC provides a gateway that facilitates the flow of information between military and civilian organisations.

<http://www.army.mod.uk/royalengineers/org/mitc/index.htm>

Nordic Demining Research Forum (NDRF)

Aims to stimulate research and development activities to support improvement in demining efficiency and safety through promotion of co-operation between the operator, research and development, and industrial environments; stimulation of information exchange; and initiation of cross border and cross sector research and development activities between companies and institutions in the Nordic countries.

<http://www.ndrf.dk/>

International Campaign to Ban Landmines

Provides information on the Ottawa Treaty, as well as general information on landmines, campaigns and calendar information on mine action activities.

<http://www.icbl.org>

Sound Bites

The following section contains snippets of information for general interest. They are collected from different communications in the course of the working day. They are offered for what they are worth but the accuracy of the information cannot be guaranteed. If you, too, have short interesting bits of information just send them to the Editors and we will pass them on, submit to the lessons learnt database or discard as appropriate!

Japanese technologies:

31 October 2007 saw the end of a prolonged period of funded Research and Development (R&D) by the Japanese Government. This R&D has involved several projects within the laboratories and facilities of universities and similar institutions in Japan as well as partial funding of R&D with commercially available products. The latter involve demining machines the size of farm tractors and larger, and the academic research has been into detection and access technologies. The output of this R&D, at this stage, is a number of machines that are available for deployment, with a variety of attachments, and which have been tested in Afghanistan and Cambodia. From the academic research there is a potential dual sensor detector and a cheap access vehicle that can have a variety of small attachments including the dual sensor detector.

Further details of the equipment can be obtained from Noel Mulliner, UNMAS, but we will bring you more information as and when there are real products available for sale and deployment rather than just testing.

Fire or blast?

The debate rages on over whether flares and pyrotechnic torches etc are effective, efficient and cost effective. In one mine action programme, a commercially available device that burns explosive devices has just been ordered and is about to be deployed. In other countries, various alternatives to a slab of explosives are used when, and if, available and this normally means when donated. Opinions are still solicited as to the pros and cons of neutralisation devices and whether it is simply a matter of cost as to why they are not used more often.

New Face Protection

Many of you will have heard of the possible new option for face protection being offered by a Scandinavian manufacturer. This offers a much lighter and hopefully much greater level of protection than the familiar long face visor. At the same time, the EU Centre for Standardisation has been drafting a Workshop Agreement which defines the level of testing required for PPE. This CEN WA can be seen on the ITEP web site. The new masks have been tested against the new Workshop Agreement with the generous assistance of SWEDEC. The results however have not been made public yet as it realised that both the Workshop Agreement and the new mask have been tested, and so it is possible that the test procedure laid down in the Workshop Agreement may not be adequate. It is therefore intended to repeat the tests to both confirm the validity of the CEN Workshop Agreement as well as the new face mask. We will bring you the results of the tests as soon as we can.

Dual Sensors

It was planned to conduct a series of tests to determine the reliability of the new dual sensor detectors available in some way or another today. The detectors in question were: the US Humanitarian Stand-Off Mine Identification System (HSTAMIDS); the UK/Ger dual sensor detector – Minehound; the Japanese dual sensor Advanced Landmine Identification System (ALIS); as well as separated ground penetrating radars and metal detectors. For a number of reasons, this series of tests did not take place although the Japanese detector did travel to Croatia and was tested. As a result of those tests ALIS will now be used by CROMAC in the QA role for a trial period and will report later in 2008.

It is also intended to try to conduct a new series of tests in 2008 for the other detectors and the separated systems and discussions are now taking place in this regard. In the meantime, HSTAMIDS continues to be used in operations in Cambodia and interested parties should contact the US for further details. Assistance with this can be provided by the editors. The other systems are not yet available commercially with independent test results but contact with either of the manufacturers of the more developed systems may enable further field tests to be conducted. Again, assistance in this regard can be provided by the Editors.

LL needed

A Lesson Learnt data base is still maintained at the James Madison University Mine Action Information Centre website. Along with this Newsletter, this is an ideal way of sharing concepts, ideas, lessons and experience with others and you are strongly recommended to access this site and submit lessons as and when you experience them.

Accident reporting:

Although we all hope for a zero report on accidents, accidents do happen among our deminers. The idea of analysing accidents and issuing lessons learnt to others so that they can avoid similar accidents is unquestioned. However, the act of submitting information of accidents when they have happened to you, or your organisation, is more difficult to do. There is a database of accidents that have occurred to deminers and it has depth of information available. All reports submitted to the database are cleansed of names of individuals as well as organisations before the information is made public or available. In the unfortunate event of an accident happening in your organisation, you are strongly requested to submit the information for analysis and onward anonymous dissemination. Please submit accident reports and Boards of Inquiry to the Editors for entering into the database.

At the same time please note that most investigations into accidents analysed to date have concluded that a major contributory cause was a lack of adequate supervision and control. It is not necessarily the deminers who

need to learn from accidents but the supervisors should look inwardly at how they could avoid the same thing happening. Boredom makes a deminer less alert but the need for supervision even greater.

A Guide to Cluster Munitions

The Geneva International Centre for Humanitarian Demining has produced a first edition of *A Guide to Cluster Munitions*.

The Guide supports, from a neutral and technical perspective, the current discussions on this important topic. It is a detailed information source, which also considers the impact of cluster munitions – human, social and economic. Safe clearance and disposal methods, in accordance with the International Mine Action Standards (IMAS), are presented, taking into account the lessons learned in recent clearance operations.

The Guide's intended readers are States and their armed forces, as well as international and non-governmental organisations involved in clearance of cluster munitions or providing assistance to the victims. It is a useful resource for civil society and those involved in addressing the consequences of these weapons, as well as journalists, academics and newcomers to the issue.

Free copies of the Guide can be downloaded from: <http://www.gichd.org/gichd-publications/guide-to-cluster-munitions/>

Land Release: A guide for mine and ERW affected countries

Clearance operators and organisations in the field have found it difficult to distinguish clearly between those areas of land that pose a genuine high degree of landmine and ERW (explosive remnants of war) threat to local populations, and those that may have simply fallen into disuse. Local populations have often responded by undertaking village demining or simply re-occupying land.

To address this issue and to help organisations move more quickly towards effective land release policies, the Geneva International Centre for Humanitarian Demining (GICHD)

has published the very first guide available on the subject of land release for landmines and ERW affected countries. The Centre's work in this area is designed to stimulate mine and ERW programmes to consider more closely the different options for releasing land in a non-technical manner.

The Guide examines carefully the tools of general survey, technical survey and the more costly and technical clearance operations and provides mechanisms that allow re-classification, or release, of land by re-assessing old survey information or undertaking new general surveys. The Guide does not address the mechanisms that will apply when undertaking technical surveys. This forms part of a much wider and continuing initiative by the GICHD to develop new and more effective land release methodologies that entail all elements of the broader land release process.

Free copies of the Guide can be downloaded from: <http://www.gichd.org/gichd-publications/land-release/>

Free Magnetic Locators

The management of Schonsdedt bomb locators initiated a project in 2007 whereby anyone buying one of their pipe and cable locators triggered a gift, from the company to a mine action programme, of a magnetic locator. This has proved to be very successful with locators now in Kenya, Laos, Tajikistan and Somalia.

The initiative is now attracting donors who want to simply pay for the deployment of a Schonsdedt magnetic locator to a mine action programme where it is needed. If your programme has a need for such a locator and you would be interested in receiving one or more, if they are available, please contact one of the editors and we will pass on your request to the company. Or, visit the web site <http://www.schonstedt.com/> to learn more.

What a perfect gift at this time of the year!"
