Proceedings for the UNMAS/GICHD Technical Workshop

15 – 17 February 2006

Geneva, Switzerland

Introduction

15 Countries were represented along with 6 x NGOs and 4 X Commercial companies; a full list of attendees is at Annex A.

Participants had been asked to provide information through a questionnaire, Annex B, prior to attending the meeting. A summary of the responses can be found at Annex C.

The agenda was structured to enable discussions that related to operational sequence and touched all common technical components of programme work. The agenda was followed successfully during the workshop; a copy can be found at Annex D.

This report will summarise the range of discussions that took place in the order of the agenda, and draw out requirements and recommendations where relevant. The format of the workshop was generally the same for each session with a short period of introduction and presentation to open the scope of the topic, followed by active discussion. The workshop progressed in an open and informal style with participants having ample opportunity to make interventions and were encouraged to do so.

This was a good forum and for some participants the meeting was rated as the 'most useful' mine action meeting that they had been to.
The aim of the meeting was to identify new requirements and to share information. Both aims were met as we discuss in this report. Consistent 'requirement' themes included:

- PPE, and whether adequate protection could be provided from lighter equipment.
- Road and route clearance and the speed of clearance.
- A continued requirement for better detection discrimination.
- Specific requirements for working in deep soft sandy soils and other specific but difficult conditions such as forests and underwater.

Day 1

Welcome Address to Workshop

Ambassador Stephen Nellen, Director GICHD, gave a welcome address which set the tone for the workshop. He emphasized the role that technology could play in "making mine action safer, cheaper, faster, and more effective, or in other words, to increase its productivity". He noted that the topic of "technical user needs" had not been given specific focus for a number of years. He emphasized that the main purpose of the workshop was to share experience, ideas, and requirements to find technical solutions that will assist in improving effectiveness and efficiency of mine action operations.

This was followed by introductory presentations by the Co-Chairs to further explain the rationale and logic behind the reasons for, and process of, the Meeting.

Metal Detectors:

Introduction.

Al Carruthers (GICHD) introduced the session.
From the questionnaire respondents indicated that some 7800 hand held metal detectors (MD) were in use by their programmes or organisations, which was extrapolated to suggest that the number of hand held metal detectors in use in mine action would be in the order of 12-14000. Six manufactures are the main suppliers, CEIA, MineLab, Vallon, Ebinger, Schiebel and Foerster. Several programmes had undertaken metal detector trials, six programmes were planning to conduct trials in the near future.

From the discussions:

- 'Brand loyalty' is relevant to the choice of detectors in the programmes.
- The extensive trials that have been done do enable programmes to select a shortlist of detectors that can then be trialled before a decision is made to purchase.
- There is little knowledge of the CWA 14747 T&E of Metal Detectors and most were not aware of standard tests that could/should be used in trials. This would permit better comparison between detectors.
- The importance of identifying soil characteristics as a major factor in the selection of a detector was discussed and agreed.
- There is no recognized procedure in place for the collection and dispatch of soil samples for testing electromagnetic characteristics. Ideally this information could be collected during the mine action assessment or technical survey, by soil

tests conducted in country, or by a visitor to the programme or the operational site.

- Given the reasonably small mine action "market", there might be some saving made during procurement if orders from several programs were done at the same time.

- Problems concerning the management and use of rechargeable batteries were aired and solutions shared. This issue remains a problem.

- Users should make more use of technical support available from manufacturers.

- Not many attendees knew about the Metal Detector Handbook but when asked they declared a need for some 700 copies! This may explain a lack of understanding about MDs. The participants were asked to identify their requirements for copies of the Metal Detector Handbook, and this was forwarded to the Joint Research Centre, Ispra/Dieter Guelle. A number of participants also indicated that they could provide reasonably priced translation services for translation of the book into other languages.(Secretarial Note: Within two weeks of receiving this list, Mr. Guelle had arranged for a reprint of the book and had started distribution to those who had requested copies.)

- Ideally, a single type of detector is required, within a programme or organisation, as this provides simplicity in logistics and training. However, there are frequently external influences that force a variety of MDs onto a programme.

- The majority endorsed the value of centralized testing of MDs and publicized results. This reduces the requirement for the users to conduct their tests. Access to test information from the comparative Systematic Test and Evaluation of Metal Detectors (STEMD) tests being undertaken by JRC was encouraged. Two interim reports on the STEMD project have been issued and participants were informed that these are available on the ITEP web site. (www.itep.ws)

- One programme raised the issue of guaranteed quality of technical training advisors sent to help them; (they found that their technical advisor had not understood the equipment correctly). This is a matter of "recruitment policy" in the case of UN or other technical advisors and for the manufacturers in ensuring the technical competence of their own trainers.

Recommendations:

- In conjunction with ITEP, produce a simple methodology and implement a procedure whereby mine-affected countries can submit soil samples for determining the degree of soil difficulty that exists in a country. This would significantly aid the selection of suitable metal detectors.

- In conjunction with ITEP and the CEN, it is recommended that the CWA 14747 be simplified, especially for the trials that are conducted in mine affected countries. Another recommendation is the production of a guidebook for the planning and conduct of trials for users

Requirements:

- General desire for still lighter detectors that are physically better balanced. Better ergonomics can still be incorporated into detectors through use of other materials, etc.

- A primary requirement is still the provision of a detector with better discrimination to reduce the false alarm rate.

- Cheap accelerometers incorporated into detectors to provide the operator with information regarding optimum sweep speed and whether or not he has missed an area in his search drill.

- Improved battery life is desirable.

- Given recent technical advances, a review should be made into the most suitable method used to alert the operator of a target. More information could be given to the operator which might be made more "pleasing" to the ear, and the use of additional feedback such as tactile stimulation might be considered.

- The potential use of detection signals beyond the audio threshold should be re-examined to see if greater information and discrimination potential was possible, this should be balanced with certainty of alarm and limiting operator decision points to a 'reasonable' level. There is evidence that there is a substantial amount of signal information that is being filtered or suppressed in many of the detectors being used today.

- A very clear requirement is the need for a wide area explosives detector with high reliability and low false alarm rate due to the rejection of non-explosive items, i.e. the desire is to find explosive rather than metal.

Dual Sensors

Al Carruthers introduced a presentation from Ian Dibstal from the UK research organization QINETIQ . A copy of the presentation is attached. The ERA(UK)/Vallon(Germany) MineHound detector and the USA HSTAMIDS were exhibited to the workshop with support from Dave Daniels of ERA and Kevin Johnson of Cyterra.

From the discussions:

- The projected costs of the HSTAMIDS-Humanitarian Demining version are likely to be in the order of USD 10-12,000. Projected costs for MineHound were not available but could be available from Vallon.
- HSTAMIDS is available today, if requested, under US export license controls.
- MineHound is expected to be in production by the third quarter of 2006.
- The projection for improved discrimination over metal detectors was in the range of a factor of 3 to a factor of 5. CMAC reported recording figures of mines found and metal found with roughly 300,000 mines compared to 300,000,000 fragments or a ratio of 1000 fragments excavated for every mine that was found.
- ITEP are producing a standard for T& E for dual sensors.
- Operational use and QA/QC procedures still need to be developed for dual sensor detectors.

Recommendations

- That the mine action community monitor the progress of the dual sensor technologies and share information to enable operational assessment and cost / benefit assessments to be made.
- The mine action community should now start to do some "what if" calculations to prepare for the actual availability of dual sensors. This will not only assist production estimates but will allow greater efficiency in the introduction of this new technology. The comments from the participants that are involved in the comprehensive trials of HSTAMIDS in Cambodia, Thailand and Afghanistan would be especially valuable in the drafting of procedures for the use of the new dual sensor detector technology.

Requirements:

- More detailed information on dual sensor performance should be made available in public fora.
- Efforts to reduce the weight, cost and power consumption of dual sensors should continue in the normal process of development.

Manual Demining

Havard Bach (GICHD) introduced the session with an overview of aspects from the recent GICHD Study into Manual Demining. He demonstrated that alternative manual clearance methodologies could be considered and went on to explain the "Crab" and "Hybrid" methods that were described in the GICHD Manual Mine Clearance Study.

From the discussions:

- Not all had seen the GICHD manual study report. A feeling was that reports may go to organizational head offices and then not be distributed down within the organizations. Improvements in the distribution of information should be sought.
- Although some programmes sometimes still use two men on one lane, for specific and sometimes temporary reasons, it was generally agreed that the one man one lane was the most efficient method of operating. Main arguments in favour of one man one lane were: more responsibility and more effectiveness. The main arguments put forward for use of the two man, one lane drill was in areas of extensive vegetation and where they felt that better supervision was possible when using the two man drill. No other new or better method was offered or discussed.
- Yemen suggested that for a specific kind of mine the safety distance between operators could be reduced from 25m to 10 m. Yemen also said that with less distance you could use more deminers. IMAS will include guidelines on how to do better threat analysis. The national mine action authorities can already reduce the safety distance from that suggested in IMAS but they must take into account the risk and safety considerations that are applicable to their particular situation.
- Rakes, which are cheap, were promoted in many circumstances. Rakes are already used by MgM in Angola, by DDG in Somalia, and numerous organizations in Sri Lanka**.** The use of rakes is limited to those regions with suitable soil conditions and where the net explosive quantity of the individual mines is quite small.
- Several organizations spoke about the usefulness of using cheap and readily available hand magnets in manual clearance. Organizations were encouraged to conduct their own trials and report on the benefits of using the magnets in their clearance procedure.
- Standardized manual clearance tool kits were being used by many organizations. UN MACA/Afghanistan provided a description on the tool kit that they had developed and it is enclosed in the contributed papers section of these proceedings. Several other organizations reported that they had developed their own kits and it was reported that a commercially available kit was available but it was relatively expensive (180 Euros).
- That the mine action community monitors the progress of the dual sensor technologies and shares information to enable operational assessment and cost / benefit assessments to be made.

PPE

Phil Bean (GICHD) introduced the session with reference to IMAS 10.30 Personal Protective Equipment and a selective quote relating to protection levels from clause 4.3 a) "tests for protection related to NATO STANAG ballistic body armour ratings and do not realistically replicate mine effects". He went on to introduce the 2006 CEN CWA process focused on T&E for PPE which could lead to more appropriate protection equipments.

He introduced the current IMAS Review Board debate relating to the use short visor / eye protection as a realistic minimum compared to full face visors that were often too heavy and worn incorrectly. Of the last 50 accidents reviewed only 4 % could be possibly attributed to bad tools or procedures - 96% of them were attributable to bad drills and/or lack of supervision.

From the discussion:

- Many agreed that realistic PPE trials had not been possible and that defining protection requirements specific to mine action would help this process.
- The long visors are too heavy and alternative solutions are needed. The workshop discussed the cooperative research between ROFI and the sports industry looking towards fitting protection in a similar way to ice hockey and paint ball players. It was mentioned that insurance companies may not pay when visors were not used correctly. Some expressed preference for minimum eye protection as a standard.
- Manufactures should be involved in analysis of how well PPE had performed in the event of an accident.
- The use of protective boots / and access platform boots were discussed with a view for use in emergency and maybe during survey operations. Sri Lanka and India make protective boots, but they only work with small AP mines and giving a pair to every deminer could be a difficult management decision. Inflatable boots are typically too expensive for personal issue (800 US$) but HI had used them.
- That organizations preparing to conduct PPE trials should let UNMAS/GICHD know the trial details to assist in information sharing.
- Many expressed concern over the comfort and practicality of using PPE (especially visors and protective aprons).
- The use of shields rather than aprons was discussed as well as the possibility of incorporating the visor onto the vest.
- Appliqué protective films, fitted as anti scratch or anti fog, are hard to remove and replace and better solvents or processes are necessary. Both sides of the visor must be provided with the protective material.
- Modelling blast / fragmentation effects to protection levels should be possible.
- Part of the discussion related to hand protection and hand tools, and while many programmes produced their own tools, the ROFI tool kit was praised (cost in the order of Euro180). It was recommended to those who had not used them, as an alternative to ‘re-inventing local alternatives’.
- Managers must confirm the service life of equipment in different environments to enable procurement and replacement before any degradation of protection levels.
- DDG was interested in hand protectors. They had tested various versions but people in the field didn’t like them. UNMACA said they have a kind of hand protector within their toolbox .(Refer to the description in their paper on the MACA manual clearance tool kit)
- Havard Bach added that garden gloves provide better protection than nothing and that they are very cheap.

Requirements:

- Definitive protection levels are required.
- Manufacturers should be reminded of the serious and immediate requirement to provide better protection from lighter and more comfortable PPE. Comfort is a major issue.
- Alternatives to the current range of full face visors should be investigated as a matter of urgency. There is a need for some kind of system that will allow deminers to see better and be more comfortable and yet still be protected over the full facial area.
- Trials information must be shared.
- Manufacturers should be made aware of the performance of their PPE in the event of an accident.

Day 2

Mine Detection on Roads

Eric Tollefsen (GICHD) introduced the session with a briefing on the Wide Area Detection System (WADS) a copy of the presentation is attached.

From the discussions:

- It appeared that mine densities for roads were very varied and ranged from 1 in 14/15 km in Angola, to 1 in 30km in Sudan, to much greater densities in parts of Cambodia. The summary is varied but generally the density of mines in roads is very low.
- Some claims were that up to 50km of road per day could be driven and verified. A reality check, taking in to account road widths, surface contours, and post processing, would be that 15km per day should be more realistic. However, dogs and manual deminers cannot keep up with verification or Quality Management which is the limiting factor.
- The limitations of metal detection only for road verification and the need for complimentary detection assets were also discussed.
- The group endorsed that there is still a requirement for an effective route proving/clearance device that can operate faster than dogs.
- A MineLab system called “single transmit, multiple receive” was highly recommended and claimed to be more effective that other wide area metal detecting arrays available today. More details from their website.
- Despite there being several methods available today to clear roads (metal detection, sifting, earth moving, biosensors, manual etc.), none effectively work on their own and managers must combine several methods to achieve satisfactory results.
- A compelling endorsement of using ‘road graders’ and dogs on dirt roads was provided, with MGM having many years (10 years) experience from using the same machines.

- Again the need for a wide area detection device to detect explosives was one of the strongest declared requirements.
- Results of trials with the US-developed NIITEK ground penetrating radar were shared. From the trials in Angola, the results were 100% detection over several test areas. This appeared to be the most effective road clearing radar most people had seen.
- Interest centred on machines with a low ratio of false alarms. It was reported that the WADS has very few false alarms. It was argued by MgM that most AVMs don't have metal cases, however, in some areas people know already the kind of AVMs they will find (metal or plastic).
- What all mines have in common is explosive. Explosive should be detected. ITEP said they have some test information on explosive detectors and that they can be very sensitive to moisture

Requirements:

- A device for wide area explosive detection that is not sensitive to moisture. The requirement is particularly relevant to the verification of roads and tracks.
- There is a need to test and evaluate the variety of wide array metal detectors that are being fielded.

REST

Havard Bach (GICHD) introduced the session with an introduction to risk management in a mine survey and clearance context. The session then covered a number of issues related to survey and use of different animals including Mine Detecting Dogs (MDD) and rats.

From the discussion

- The use of MDD in a survey role was discussed along with accreditation and test / QA challenges. The reliability of detection for dogs can be quite variable.
- Gas chromatographs (GC) are very expensive systems to analyze filters but are also very reliable. GCs are not as sensitive as a nose (dog or rat) in some scenarios.
- Rats are potentially cheaper to use than dogs.
- Minetech explained the use of working MDD at night, with floodlights to take advantage of better environmental conditions and thereby improving the efficiency of MDDs
- Mechem described their MEDDS programme working in Afghanistan, Sudan and a small project in the DRC.
- The challenges of verification, QA/QC of REST were introduced, and GICHD, APOPO, NPA will continue to work to try and confirm, or not, the operational utility and measurement of the system.
- Honey bees are being considered in Croatia and the US as possible detectors for mined areas. The US Montana University program will be tested in Canada at

CCMAT, Suffield in May/June 2006. It is already known that bees can be trained to locate explosives and the honey bees can be tracked. The question is how reliable is the detection and tracking of the bees for humanitarian demining situations.

-

Requirements:

- Less expensive, more rugged, and more sensitive gas chromatographs as substitutes for less reliable but more sensitive biodetectors such as dog or rats.
- Confirmation of the validity of the REST system for detecting suspect areas.

Technical Survey tools

By way of introduction Rune Engeset gave a presentation on a survey project utilising PDA devices that enable easier information management and route logging. A copy of the presentation is attached.

From the discussion:

- The compatible use of PDA and the NPA / Rude Engeset experience in conjunction with IMSMA version 4 were discussed and seen to be very positive. GICHD will look closely at the advantages of the integration and expansion of the concepts.
- There was great interest in the quality and quantity of the information that could be included in maps.
- The standardized use of symbols in all these survey tools was regarded as a sensible thing.
- Access to work originally funded by the US with MgM involving another PDA system to assist various other management functions was discussed and if considered appropriate could be revisited.

Requirements: There were no specific requirements identified under this subject.

Machines - BrushCutters

The session was introduced by a presentation by Mr. Phumro Oum of CMAC, a copy is attached. The provision of 14 brush cutters, based on excavators, was declared the reason for a 100% increase in output in Cambodia in 2005. This is the clearest statement yet that the introduction of more machines can increase effectiveness and output.

From the discussions:

- Many tool attachments are readily available in different industries today and can be utilized for mine action. Much experience is also already available, and CROMAC, MgM and The HALO Trust for example, have a great deal of historic

experience in adapting commercial engineering equipment into effective demining machines.

Requirements

- There is a need for more of the machines that are already proven to be able to work effectively.
- Donors should be aware of the direct connection between machines and output.
- Specific dialogue between programmes, operators and donors should be established and coordinated to identify where and which equipments could make dramatic improvements to output. This requirement is wider than the category of brush cutters but the Cambodian example illustrates the potential for return.

Machines – Flails, Tillers, Rollers etc.

Eric Tollefson (GICHD) introduced the session.

From the discussions:

- Flails had received criticism but yet many are still being used in the field today. Their usefulness for area reduction was recognized.
- The addition of a simple flail cover, if not provided by the manufacturer, was considered an important aid in reducing dust and restraining "throw outs".
- Comments referring to the apparent successful use of MineWolf were both very instructive as well as important. However it is still considered to be an expensive item. The open tiller drum represents a significant improvement on the solid tiller drums of previous machines in terms of reducing the amount of damage caused by mine detonations.
- Magnets were considered an obvious addition to many machines, as well as hand tools, and all agreed that more work could be done on research into this subject.
- Many confirmed there was a use for rollers in the confirmation and confidence building role after clearance, as well as a means to identify where the mine belt was. However, there are few trial details to accurately determine their effectiveness in any role. One operator criticized the use of Caspirs with steel rollers.
- There is a gap in the machine tool box in that there is no Anti Tank Mine Roller that is effective today – not all, however, agreed that this requirement could realistically be filled.

Requirements:

- Research into the effectiveness of flail covers would be of value to many users.
- More research into the use of and types of magnets would be appreciated.
- More testing of the effectiveness of rollers is required.
- A desk top study into the possibilities of anti-tank rollers could answer the question of their value.

Neutralisation etc.

Phil Bean (GICHD) introduced the session with a discussion on the costs of explosives. Averages of USD 0.8 to 1 for detonators and per meter of detonating chord, USD 7 -16, per kilo for TNT, USD 20-25 per kilo for plastic explosives, were considered reasonable prices for comparison. He then gave an introductory presentation of an Explosive Harvesting Project in Cambodia and on Flares and Torches. Copies of the papers are attached. A target cost of no more than USD 4 per shot for neutralization was considered the maximum acceptable.

From the discussions:

- Many attendees confirmed the difficulty in obtaining explosives and that they were very expensive.
- Many attendees were interested in the Explosive Harvest Programme (EHP) currently being trialled in Cambodia. The Balkan region was identified as a possible follow on location.
- Attendees also confirmed that neutralization devices did have specific uses and that if they were provided at no cost they would be well received and used. However, most models are even more expensive than explosives.
- Pyrotechnic torches have been developed in the US and the UK and have had a mixed reception. Temperatures ranged from 1800 -2500 degrees centigrade, with the devices usually being classified HD 1.4G.
- A pyrotechnic torch, produced in the UK and called Dragon (commercially), can easily be produced locally and could be considered as a possible alternative to commercially purchased flares, explosives and other neutralization devices. It could also be considered as an alternative to the Explosive Harvest Programme. DFID may agree to fund the manufacturing facilities in some countries. However some commented that the dragon torch might be prohibited for environmental reasons – burning is not nationally permitted (Cromac, MgM) and also that is was expensive (UNIK). See ITEP website for evaluation reports of many of the common neutralization devices at http://www.itep.ws/reports/results1.php
- Similarly, a device that effectively provides cheaper detonations the more it is used was also referred to and details of the relevant website are at www.mineburner.com.
- The use of hydro abrasive water cutting was mentioned and the Afghan programme offered up a system that they did not use if other programmes had a use for it.
- All were reminded of the US DoD trials, conducted by Dr Patel in 2004, on various neutralisation devices and “safe” explosives – a copy of the Report is available on the US DoD website as well as the ITEP website.
- In summary, it was agreed that most neutralization devices were “nice to have” rather than essential. However, some countries may have to use them until a reliable source of explosives is found. (e.g. Burundi)

- (It was subsequently established that Switzerland has an unused budget for the provision of SM devices and attendees should make a claim if they require any.)
- The provision of good quality explosives was considered a useful way in which donors can positively contribute to mine action.
- Underwater demining was introduced with a question relating to whether the workshop thought we had a need for underwater demining standards. Iraq had potential clearance requirements for munitions that had been dumped in rivers and also in the 'Marsh Arab' areas in the south of the country. Croatia had some tasks in canals and rivers, Vietnam had tasks in lakes, Angola had tasks for pipe line clearance in coastal areas, DRC had requirements for clearance in rivers. More research would be needed but requirements for advice and standards appear to be justified.

Requirements:

- There is a need for a limited number of alternatives to explosives in nearly all programmes.
- Donors should consider donating explosives or neutralization devices as a very practical assistance project
- Continued tests on neutralisation devices would provide additional capability data for potential buyers/programmes.
- Devices and/or containers that are safe and economical for shipping is an ongoing requirement.

Medical

From Discussions:

- Medical equipment used on demining sites was generally thought to be satisfactory by everyone.
- Central medical facilities and efficient medical evacuation are a problem in some countries.
- The value of including CPR dummies in medical training packs was stressed.
- Malaria treatments were discussed and a Chinese herbal remedy called ARTEMISIN from the herb Artemisia was declared very effective. WHO and Medecins sans Frontieres (MSF) have published an "Inter-Agency Field Handbook on Malaria Control in Complex Emergencies" in 2006. The Artemisin-based combinations therapy (ACT) is mentioned in several parts of the Handbook and more specifically in Chapter 5 on Case management. The Handbook could be found in the WHO website: www.who.int/malaria/docs/ce_interagencyfhbook.pdf
- Similarly, a simple and fast test for malaria involving only a drop of blood from the finger was shared. Information on rapid diagnostic test kits for malaria can be found at http://www.malariasite.com/malaria/rdts.htm.
- Several participants mentioned the use of "quick clotting" products to control severe bleeding.

Requirements:

- More information on how to deal with the problems of malaria would be appreciated.

Day 3

Vehicles and Communications

Phil Bean introduced the session. Little had been highlighted in responses to the initial questionnaire.

From the discussion:

- Discussion on the value and limitations of ballistic blankets concluded that while not being totally effective, care had to be taken in their choice and all operators and drivers had to be trained on their capabilities.
- Information on where to find details of armouring kits would be useful and should be researched and shared.
- A case was made for the easy way Land Rovers can be up-armoured (and that once armoured they could be effective protection against anti-tank mines) but it was recognized that Land Rover spares were not nearly as easily obtainable as those for Japanese manufactured vehicles.
- Better information on the armouring of light vehicles was requested by many and much research and experience could be found from Southern Africa.
- The value of filling tyres with a third of water to help absorb blast was suggested. (This has been subsequently contradicted by a research and development establishment.)
- Several participants had experience of having been in vehicles that had been hit by mines so the discussion was valid!

Recommendations:

- More information on armouring of light vehicles is requested and if possible trial reports made available.
- Details of the UN policy on the use of ballistic blankets should be made available to all.
- The need for all managers to train staff on the limitations of their vehicles and protection levels is essential to fully understand the threat and its mitigation.

Communications

- The advantages of Skype communications, which are free and use computer interfaces, were strongly encouraged.
- There are often numerous options available for communication but the availability and applicability can be highly variable. Several organizations benefited from

conducting a review of their communication requirements and alternative systems or providers.

Recommendations;

- All programmes should consider the use of SKYPE communications to cut costs.
- A periodic review of communication requirements and options can result in considerable savings to a programme.

T&E

Mr Alexander Keijzer (NL) introduced ITEP and showed how they contributed to Test and Evalation (T&E) of mine action equipment. His presentation is attached.
Mr. Mark Buswell/MAG, Iraq gave a case history of accreditation of equipment at the National Programme level. A copy of his presentation is also attached.

From the discussion:

- It was confirmed that the centralized testing of MDs was being conducted by JRC under the STEMD project. The trial report from Mozambique was considered to be most valuable and a thorough and honest evaluation of MDs in that area. The third test (South East Europe?) and trial report was eagerly awaited.
- The central testing of flails continues to be of value to the community and should be continually updated.
- Tests conducted into the effectiveness of PPE to assist in the reduction of weight and discomfort are urgently needed and would be greatly appreciated.
- International T&E can assist in the accreditation of equipment, at least at an organizational level, which could then be followed by operational accreditation in the field.
- Programmes and organisations should keep UNMAS / GICHD aware of forthcoming trials so that experiences can be shared and assistance provided if possible.

Requirements:

- The third area trial of STEMD should be conducted as soon as possible.
- Further flail trials would be of value.
- PPE tests are still required and should be directed towards lighter more comfortable PPE with adequate protection.
- Sharing of trial results must become the norm and should be made public through posting on the internet or on sites such as the ITEP website.

Information Management

There was no formal introduction to this session. Discussion ranged over a number of areas related to the management of information.

From the discussions:

- The importance of programmes and operators ensuring that they have adequate back up storage facilities or locations for their mine information in case of fire or explosions in the HQ locations was stressed. It was also necessary to systematically make back up copies of all information to be stored.
- Apart from the survey tools already described above, which allow data entry at the technical survey site, MgM mentioned work that had been done on similar PDA equipment that allowed the collection of many management controls at the field level. This work had been funded by the US DoD but had not been completed. If considered of value, the US DoD agreed this information could be available for the demining community. The compatibility with IMSMA 4 would have to be guaranteed.
- Alan Arnold (GICHD) answered questions and briefed the workshop on aspects of the IMSMA Version 4 project. The biggest concern was the availability of IMSMA for all operators including commercial demining organizations, especially if and when operating in a country without a specific NMAA or centralized IMSMA. The GICHD can be contacted to assist in trying to make it accessible to relevant programmes**.** Mr. Arnold suggested that requests for getting access to information in IMSMA should highlight humanitarian reasons.
- Satisfactory answers were provided and IMSMA Version 4 will provide an improved capability that will permit easier modification to meet users needs.
- The GICHD could also assist in integrating GIS systems into IMSMA, but maps and data should be provided to GICHD.

Workshop Summary

The attitude and the response from all the participants of the workshop were very positive. The timely completion of the questionnaire ensured that the agenda addressed those issues which were of the most importance to the users. The discussion was focused and the majority of the attendees offered their opinions, experiences and solutions to many of the problems tabled during the workshop. Clearly, there was an atmosphere of cooperation, mutual understanding of the issues, and a desire to provide assistance or guidance towards finding resolution to many of the technical issues. Many expressed satisfaction with the format of the workshop and all recommended that a similar workshop be held in two years time.

There were five themes that were heard throughout the workshop:

1. Many participants were satisfied with most of the technology being offered today. The real problem was to get enough of the appropriate technology into their program to make a difference. The economic reality within demining organizations is often the limiting factor on why more new technologies are not being introduced into programmes.
2. Many users tend to look only at the technology and underestimate the effort required to bring a new technology on line. Factors such as training, life cycle costs, modifications to an organizational structure and maintenance programme and rewriting of SOPs, must all be adequately planned and effectively implemented. This must be done before the benefit of high cost and complex technologies can be fully realized.
3. There is a growing realization that many programmes can benefit from new technologies such as the use of demining machines. Those programmes that are adaptable, well-managed, and have a clear plan will benefit the most from new techniques and new equipment.
4. Sharing of experiences and provision of expert advice will go a long way toward reducing the risk of the introduction of new methods and equipment into the field.
5. There is a lack of detailed information available to convince operators of the advantages of using machines and new technologies effectively. In addition there is an apparent lack of retention of what information is out there already. The solution is a continued effort to make information publicly available and easily readable.

Noel Mulliner UNMAS	Al Carruthers GICHD

List of Annexes:

A. List of Participants

B. Questionnaire to Participants

C. Summary of Questionnaire Responses

D. Agenda

E. Selected Web Sites - Sources of Information

List of Presentations:

1. Advances in Multisensor Mine Detectors – Ian Dibsdall
2. Wide Area Detection System – Erik Tolefsen
3. PDA Survey Devices – Rune Engeset
4. Cambodian Mine Action Program – Brush Cutting Machines – Phumro Oum
5. International Test and Evaluation Program (ITEP) – Alex Keijzer
6. Accreditation of Demining Machines – Mark Buswell.