ITEP – Workshop
(International Test and Evaluation Program for Humanitarian Demining)

Reliability Tests for Demining

December, 16-17, 2003 at the
Federal Institute for Materials Research and Testing (BAM)
Unter den Eichen 87, 12205 Berlin, Germany

Conference Fee:
• free for participants from mine affected countries
• 400 € for other participants (reduction for companies smaller than 10 persons possible)
• 800 € for exhibitors
• 10 € for Students

for application mail to tanja.bludau@bam.de and kurt.osterloh@bam.de

Registration Deadline: November 21, 2003
The authors are kindly requested to bring their conference presentation and the paper for the proceedings with them on a CD.
The registration form can be downloaded from http://www.bam.de/aktuell/veranstaltungen/pdf/itep-regform-02-1.pdf.

Updated Flyer: http://www.bam.de/aktuell/veranstaltungen/pdf/demining.pdf

Conference venue:
Bundesanstalt für Materialforschung und –prüfung (BAM), Berlin,
Unter den Eichen 87, 12205 Berlin, Germany, House 5 “Ludwig Erhard Saal”
For hotels see the list at http://www.bam.de/hotels.htm.
How to find BAM see at http://www.bam.de/english/about_bam/how_to_find_bam/headquarters.htm.

The Landmine Threat
There are more than 100 landmine and/or unexploded ordnance (UXO) affected countries in the world. Approximately 20 of these are heavily-affected, including Angola, Afghanistan, Croatia, Egypt, and Cambodia.

More than a dozen countries produce landmines, including Cuba, Egypt, Singapore, and Vietnam; and almost 20 countries or rebel groups use landmines, including some countries that produce them.

As estimated 45-50 million landmines infest at least 12 million sq. km of land around the world. These landmines:
- Kill or maim a reported 10,000 people annually;
- Create millions of refugees and internally displaced persons (IDPs);
- Prevent hundreds of thousands of sq. km of agricultural land being used;
- Deny thousands of km of roads for travel;
- Create food scarcities, causing malnutrition and starvation;
- Interrupt health care, increasing sickness and disease;
- Inflict long-term psychological traumas on landmine survivors;
- Hinder economic development;
- Undermine political stability.

(from http://www.state.gov/g/dip/ac/hs/21182.htm)

The land mine clearing process must be faster and at the same time safer for the operators, reliable enough for the end user who might be farmers or even playing children. The false alarm rate needs to be decreased to make it more efficient. Science can help to overcome the mine threat faster and safer.

There exist already twenty different methods for land mine detection but only four of them are actually used in the field: the metal detector, the prodder, the dog and the mechanical clearance machines. And even for these no international valid reliability / test & evaluation standard exist yet. The pioneer document is the CEN BT 126 CWA 14747:2003 for test and evaluation of metal detectors for which final design these ITEP trials are devoted.

The workshop
... is on the one hand very specifically aimed to reveal and evaluate the results of three big ITEP field trials with metal detectors we made based on statistical rules and adapted from traditions in NDT(Performance Demonstration). On the other hand we thought our experiences and new knowledge we gained could be generalized and should be offered to the demining community. Anyway we will propose an addendum to the CEN BT 126 CWA 14747:2003 document "Test & Evaluation of Metal Detectors" which will be transferred to IMAS later on.

Also we encountered some basic problems about metal detector performance, soil influence, ground compensation human factors for which conclusion for research and practical activities would be a natural consequence. That is why we like to discuss the problems in a proper environment of responsible persons.

The workshop is composed of oral sessions where the strategies of coordinating organizations will be presented and the conception and results of the trials as well as the mentioned conclusions. In addition, the most important part will be the "hands on" break out sessions where we will present/discuss the practical procedures with all parties involved and interested in especially the metal detector manufacturers. You are kindly invited to bring your devices/experiences/opinions to this breakout sessions and a mini exhibition.

The summary of the break out sessions will serve us as a red line to formulate the addendum to the CWA 14747:2003.

The program is still open for further ideas and contributions!

Workshop Committee
Christina Müller, BAM Berlin, Ute Böttger, DLR Berlin, Kurt Osterloh, BAM Berlin
Alfred Sieber, JRC Ispra, Oster Guillel ITEP, Uwe Ewert BAM Berlin,
Vjara Krastel, University of Zagreb
E-mail to: christina.mueller@bam.de for technical content

Make Demining Safer and More Efficient!
- Discussion of Results of 3 Field Trials within the ITEP Project 2.1.1.2
  "Reliability Model for Test and Evaluation of Metal Detectors" in Germany and Croatia
- Conception of Performance Demonstration and Modular Reliability – Transfer from NDT to Demining
- Plan of Experiments and Statistical Evaluation of Reliability Tests for Metal Detectors
- Lessons learned from International MAC’s
- Conclusion for Research and Future Development

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**Preliminary Agenda**

**Tuesday, DECEMBER 16, 2003, ITEP – Trial – Strategy and Results**

**9:30**  
**Opening and Welcome**  
*Chairperson: Uwe Ewert*

**9:30**  
**Registration**

**9:30**  
**Manfred Henncke**, President of BAM

**9:45**  
**NN, Ministry of Research,**

**10:00**  
**Dieter Guelle, ITEP – Secretary**

**10:15**  
**Manfred Merk, Ministry of Defence/ITEP Excom**

**10:30**  
**Coffee-Break**

**11:00**  
**Plenary Session**

*Chairperson: Christina Müller*

**11:00**  
**The Worldwide Landmine Threat and the German Humanitarian Mine Action Contribution**

_Dietlef Schlöder, Federal Foreign Office, Berlin, Germany_

**11:30**  
**The UN-MAS Strategy in International Mine Action**

_Noel Mulliner, United Nations Mine Action Service_

**12:00**  
**The European Initiative CEN BT 126 for Standardization in Humanitarian Demining**

_Oberwart about Current and Future Activities_

_Jan-Ole-Robertz, SWOKC, Convener of CEN BT 126_

**12:30**  
**From IPPCT to CEN**

_The History of the CEN Workshop Agreement on Test and Evaluation of Metal Detectors_

_Alos Sieber, JRC Ispra, European Commission_

**13:00**  
**Lunch**

**14:00**  
**Session: The ITEP Project**

*Chairperson: Thomas Böllinghaus*

**14:00**  
**Introduction: Engagement of BAM in Reliability Tests**

_Thomas Böllinghaus: BAM Vice-President_

**14:10**  
**Overview: The Project “Modular Reliability Model for Test and Evaluation of Metal Detectors”, Transfer of Reliability Assessment Knowledge from NDT, The Project-Actions Christina Müller, BAM Berlin, Germany_

**14:30**  
**Parameter Measurements of Detectors**

_Adam Lewis, Thomas Bloodworth JRC, Ispra, Italy_

**14:45**  
**Soil Measurements**

_Dieter Guelle, ITEP, Adam Lewis JRC Ispra, Italy_

**15:00**  
**Detailed Investigations of the Statistical Test Results and Correlation to Parameters**

_Mate Gaal, BAM Berlin / University of Zagreb_

**15:15**  
**Statistical Design of Demining Experiments and Analysis by Logistic Regression**

_Peter Wilrich, FU Berlin, Germany_

**15:30**  
**Lower than expected mine detector trial results? Some possible explanatory variables**

_Robert Keeley, Imperial College London, UK_

**15:45**  
**Coffee-Break**

**16:00**  
**Sessions: The User Point of View**

**16:00**  
**Lessons learned and Problems to be solved in Test & Evaluation for Mine Action in Croatia**

_Nikola Pavlović, CROMAC, Croatia_

**16:20**  
**Lessons learned and Problems to be solved in Test & Evaluation for Mine Action in Afghanistan**

_Ghulam Rahman, UN Mine Action Programme, Afghanistan_

**16:40**  
**Lessons learned and Problems to be solved in Test & Evaluation for Mine Action in Kosovo**

_Steve Saunders, UNMCR, Kosovo_

**17:00**  
**Lessons learned and Problems to be solved in Test & Evaluation for Mine Action in Mozambique**

_Felisberto Nuvunga, INDM, Mozambique_

**17:20**  
**Council for Scientific & Industrial Research Pretoria, South, Africa – The knowledge from South Africa**

_Ezra Jele, South Africa_

**17:40**  
**The position of the Donor Community**

_N.N._

**20:00**  
**Social Event**

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**Wednesday, DECEMBER 17, 2003, Conclusions and Need for Future**

**9:00**  
**Breakout Sessions**

**9:00**  
**Outdoor Demonstration**

**9:30**  
**Breakout Session 1:**

*Setup of Test Lanes; Mines Selection*

_Ivan Steker, Gerd Hencke, Adam Lewis, Mate Gaal_

**10:00**  
**Breakout Session 2:**

*Soil Influence and Ground Compensation*

_Yoga Das, Dieter Guelle, Francesca Bory, Adam Lewis_

**10:30**  
**Breakout Session 3:**

*Human Factor*

_Christina Müller, Dieter Guelle, Davor Laura_

**11:00**  
**Breakout Session 4:**

*Rules for Plan of Experiments and Statistical Evaluation*

_Peter Wilrich, Mate Gaal, Christina Müller_

**11:30**  
**Coffee-Break**

**12:00**  
**Conclusions I:**

*Practical Rules*

*Chairperson: Christina Müller*

**12:00**  
**Summary of the Breakout Session 1:**

_Mate Gaal_

**12:10**  
**Summary of the Breakout Session 2:**

_Yoga Das_

**12:20**  
**Summary of the Breakout Session 3:**

_Christina Müller_

**12:30**  
**Summary of the Breakout Session 4:**

_Peter Wilrich_

**12:40**  
**Scope of a proposal for an Addendum to CEN CWA 14747:2003**

_I. Steinbock, BAM Berlin, Germany_

**13:00**  
**Conclusions II:**

*Practical Activities*

*Chairperson: Dieter Guelle, Noel Mulliner*

**13:00**  
**The Worldwide Landmine Threat and the German Humanitarian Mine Action Contribution**

_Havard Bach, GICHD, Switzerland_

**13:40**  
**The History of the CEN Workshop Agreement on Test and Evaluation of Metal Detectors**

_Alos Sieber, JRC Ispra, European Commission_

**14:00**  
**Manual Demining – Potential in Improvement. The new program of GICHD for Manual Demining**

_Havard Bach, GICHD, Switzerland_

**14:20**  
**Need for Improvement of the Human Factor**

_Vjera Krstelj, University of Zagreb, Croatia_

**14:40**  
**Need for a Worldwide Accident Data Base**

_Any Smith, DIDACTYLOS, UK_

**15:00**  
**Coffee-Break**

**15:15**  
**Conclusions III:**

*Need for Research*

*Chairperson: Dieter Guelle, Karl Rudolf Voss*

**15:15**  
**R & D for Metal Detectors for Electromagnetic Induction local 3D Imaging**

_Gerd-Henning Klein, DLR, Projektträger des BMWF, Germany_

**15:35**  
**Need for a Broad System Competence**

_Mate Gaal, BAM Berlin / University of Zagreb_

**15:50**  
**Need for a Systematic Approach in Evaluation and Development Based on Physics and Real Conditions**

_Ute Böttger, DLR, Germany_

**16:10**  
**Lower than expected mine detector trial results? Some possible explanatory variables**

_Ute Böttger, DLR, Germany_

**16:20**  
**Need for a European Roadmap**

_Marc Ascheny, RMA Belgium_

**16:40**  
**Could Civilian Security Benefit from Efforts in Humanitarian Mine Clearance?**

_Wolfgang Spyra, BTU Cottbus, Germany_

**16:50**  
**Lessons learned and Problems to be solved in Test & Evaluation for Mine Action in Afghanistan**

_Ghulam Rahman, UN Mine Action Programme, Afghanistan_

**17:10**  
**Coffee-Break**

**17:30**  
**Discussion of Workshop Conclusions**

**19:00**  
**Social Event**

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**Thursday, DECEMBER 18, 2003, Post-Conference-Program**

**9:30 – 14:30 (15:00)**  
**Visit to High Precision UXO / Mine Test Fields and Mine Museum in Neu Golm**

_BTU Cottbus/SENSYS_