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International Mine Action Standards: Future Development of PPE Standards

This article explains developments since the issue of *International Mine Action Standards (IMAS) 10.30* in order to illustrate the potential amendments to IMAS 10.30 over the next two years.

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The current issue of IMAS 10.30 for Personal Protective Equipment (PPE) was developed during 1999 and 2000 by a Working Group that reported to the IMAS User Focus Group. The report of this group was summarised in an article by Alistair McAslan and Keith Feigenbaum in Issue 4.2 (Summer 2000) of James Madison University's *Journal of Mine Action*.¹ This article will build on the previous journal entry to explain developments since the issue of IMAS 10.30 and the potential amendments to IMAS 10.30 over the next two years.

PPE is the final protective measure after all planning, training and procedural efforts have been taken to mitigate, or at least significantly reduce, the risk to the individual deminer. IMAS recommends that a formal risk reduction analysis should be conducted in accordance with the processes contained within International for Standardization Organisation (ISO) Guide 51. The standard recommends the various levels of protection necessary from blast and fragmentation, based on the work of the IMAS PPE Working Group. The only other PPE standards in existence at that time were those of North Atlantic Treaty Organization (NATO) Standardisation Agreement (StanAg) 2920.² It was accepted by the PPE Working Group that IMAS 10.30 was not an ideal standard, but was based on the best available information at the time.

Test and Evaluation Standards

IMAS 10.30 PPE states that a Technical Note for Mine Action (TNMA) will be developed in the future to lay down the test and evaluation protocols to be followed during the test regime of PPE. This aspiration is being actively pursued, but it quickly became apparent that the funding necessary for development of such test protocols by the humanitarian demining community alone would be prohibitively expensive.³ Therefore, synergy with other research projects was examined.

Centre European Normalisation Working Group 126

The Centre European Normalisation (CEN) is the European standards body that operates parallel to ISO. In 2002, the European Commission Mine Action Initiative issued a Programming Mandate (M/306) on the standardisation of mine action technologies for acceptance by CEN. This was accepted by CEN, who created Working Group 126 (WG 126) to examine the issues.⁴ Membership of CEN WG 126 is open to all interested parties; the CEN process is open and consultative. Regular attendees include Danminar, the Danish Demining Group (DDG), the Department for International Development (DFID), the European Union (EU), the Geneva International Centre for Humanitarian Demining

(GICHD), the Joint Research Centre (JRC), the Royal Military Academy Belgium, the Swedish Explosive Ordnance Disposal Demining Centre (SWEDEC) and the United Nations Mine Action Service (UNMAS).

CEN WG 126 has established a number of ad hoc groups to look at developing CEN Workshop Agreements⁵ (the lower tier of European Standard) in the following technical areas:

- Test and evaluation of metal detectors
 - Test and evaluation support of characterisation of soil
 - Test and evaluation of mechanically assisted demining equipment
 - Competency standards for humanitarian mine action
 - Test and evaluation of PPE
- Further work by CEN WG 126 established that there were existing groups within CEN with responsibility for industrial PPE:
- CEN Technical Committee 162: Protective Clothing
 - CEN Technical Committee 158: Head Protection
 - CEN Technical Committee 85: Eye Protection Equipment

CEN WG 126 has asked these Technical Committees to provide any relevant information they may have in the development of test and evaluation standards for mine action PPE.

Unfortunately, although the progress of the other CEN WG 126 activities is going well, with standards likely in 2003 for metal detectors and competency standards, advancements in PPE are likely to be slow. Demining is not a priority for the other Technical Committees, whose workload is concentrated in the industrial sector. The CEN WG 126 continues to try to resolve this delay. It is not all bad

news, however, as alternative work has been progressing at pace within NATO.

NATO Human Factors and Medicine 089/Technical Group 024 (NATO TG 024)

NATO TG 024 is responsible for the development of test methodologies for PPE against APMs. This work has been ongoing since early 2001 and is well-advanced. Coincidentally, it also includes some of the individuals who participated in the initial IMAS PPE Working Group, so they are well aware of the issues involved in humanitarian mine action. Membership of the group includes national research organisations, national test and evaluation organisations, commercial companies, and medical representatives.

The NATO TG 024 is primarily concerned with the impact of APMs on military personnel and how to protect them against the effects of blast, but there is obvious synergy with the humanitarian mine action community.

NATO has agreed to GICHD participation in the process, and a representative from GICHD attended the latest meeting in October 2002. Some of the areas examined by NATO TG 024 in detail include:

- Upper-Body PPE:
 - Agreement on Hybrid III mannequins
 - Agreement on explosive test charges
 - Calibration
- Head PPE:

- Development of head injury criteria
- Test and evaluation of mine boots:
 - Definitions based on key model characteristics (human cadavers, frangible and mechanical reusable models)
 - A new descriptive injury scale
 - Recommended test conditions (soil, charge weight, charge position and charge geometry)

NATO TG 024 has done extensive and detailed work and is confident that they will be in a position to recommend a test and evaluation methodology to NATO. Their mandate stops short of recommending a StanAg at this point, but allows them to recommend "test guidelines" as a first step towards standard test parameters across NATO nations. As a significant proportion of humanitarian mine action PPE is also produced in NATO countries, it would seem appropriate that a common standard be adopted to ease development and production costs.

The final meeting of NATO TG 024 is planned for May 2003, after which a final report will be published. This report will be unclassified in order to ensure a wide distribution. GICHD aims to introduce NATO's work during the CEN process in order to develop a complementary CEN Workshop Agreement and TNMAs.

Conclusions

The selection of a test and evaluation methodology by an interested organisation will depend on budgetary constraints and the scope of tests to be conducted, whether

tests are developmental in nature or for acquisition trials. The work by NATO and CEN provides an excellent opportunity to obtain information for appropriate detailed test and evaluation protocols that can be developed for some of the PPE currently used in humanitarian demining at little direct financial cost to the global mine action effort. ■

References

1. <http://maic.jmu.edu/journal/4.2/Focus/wgppel/wgppel.htm>.
2. Blast Protection (Frontal) from 250 g of TNT at 30 cm. Blast Protection (Facial/Eyes) from 240-g of TNT at 60 cm. Fragmentation Protection (body) to STANAG 2920 V50 Rating (Dry) for 1.102-g fragments at 450 m/s.
3. For example, to gather fragment data (mass, velocity and kinetic energy) on a particular type of mine would require around 10 repeated firings to ensure statistical validity. Each firing would require extensive use of data capture foils and strawboard packs at an estimated cost of \$25,000 (U.S.) per firing at an internationally accredited test establishment.
4. Terms of Reference are in Resolution BT C204/2000 (2001-01-31). Details available from Secretary CEN WG 126, Carl-Michel Ilving (cmi@ds.dk).
5. http://www.cenorm.be/standardization/tech_bodies/workshop/otherthanICT.htm.

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