Test and evaluation of demining machines

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Foreword

CEN Workshop Agreement for Demining Machines

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties on 20.04.2004, the constitution of which was supported by CEN following the public call for participation made on 03.06.2003.

After three years, CEN requires a review of the Workshop Agreement. Revisions to the original agreement have been made by consensus of the original workshop participants on 30.06.2009.

A list of the individuals and organizations which supported the technical consensus represented by this CEN Workshop Agreement is available to purchasers from the CEN Management Centre. These organizations were drawn from the following economic sectors (non governmental organizations, national authorities and producers and users of demining equipment).

This document supersedes CWA 15044:2004.

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Comments or suggestions from the users of this CEN Workshop Agreement are welcome and should be addressed to the CEN Management Centre.
1 Introduction

Test standardisation for demining machines will support the development of new demining tools and methods and make it easier to compare different existing tools and products. Standardisation will also significantly improve the efficiency of demining programs. The benefits of agreed-upon specifications are world-wide and urgently needed.

The CEN Workshop Agreement (CWA) which follows is the result of a Swedish EOD and Demining Center (SWEDEC) initiative, with participation from the Croatian Mine Action Center (CROMAC), Croatian Mine Action Center Center For Testing, Development and Training (CROMAC-CTDT Ltd) and the Geneva International Center For Humanitarian Demining (GICHD). This result culminated in European Commission funding of a workshop to develop a CWA for testing of mechanical demining machines. The CWA was developed under SWEDEC leadership and secretariat at SIS over four (4) workshop meetings in Sweden and Croatia. The development was supported by the following who provided knowledgeable experts in demining equipment testing: International Test and Evaluation Programme (ITEP), countries: (Canada, Germany, Sweden, United Kingdom, United States of America) and the ITEP Secretariat; two (2) governmental organisations (CROMAC, GICHD); two (2) government agencies ( Swedish Rescue Services Agency (SRSA), Swedish Defence Research Agency, (FOI); two (2) non-governmental organisations (Norwegian Peoples Aid, International Trust Fund For Demining and Mine Victims Assistance), three (3) equipment manufacturers (Scandinavian Demining Group, DD Special Vehicles Ltd, Dok Ing d.o.o.) and one (1) government laboratory (Bundesanstalt Für Materialprüfung). It was developed within a framework contract between CEN and EU DG AIDCO.

This CWA specifies a systematic and stepwise approach. The reason is from a technical point of view but most important are concerns about the security for personnel. The first task is to provide the terms of reference for comparing present testing techniques and instrumentation and for improving and optimising existing technologies (development or improvement of new mechanical methods, standardisation of test mines, etc.). This CWA is a critical step in the development of new technologies. Having a CWA in place that manufacturers follow would contribute to the credibility of a new product when it is introduced into the market.

This CWA will help users find the key technique or the key combination of techniques best suited to a given mine-clearance operation. The importance of the CWA has therefore been stressed in terms of a collaborative effort conducted between developers and end users. It is for this reason that both machine manufacturers and in-field operators were invited to participate in the discussions. The CWA covers the following:

- Performance testing.
- Survivability testing.
- Acceptance testing.
- Test targets.
2 Background

Test and evaluation specifications and test methodology for demining machines need to be developed for the following reasons:

— Although a lot of test and evaluation work is performed in the demining world today, in many instances, it is not what most of the demining community or developers need. To improve this situation it is necessary to provide a CWA whereby each piece of equipment would be tested under the same conditions, using criteria that can withstand technical scrutiny.

— The test and evaluation shall provide users and donors with useful and reliable data. This will permit users, donors, and others to assess the effectiveness and efficiency of particular equipment to improve operational effectiveness and safety in demining operations.

— Important spin-offs are expected from well-executed, standardised test and evaluation. Manufacturers will be aware that the requirement of the CWA must be met and will design and develop the equipment to meet those criteria. At a very early stage, poor candidates can be eliminated. Persons tasked with test and evaluation would be able to plan and execute the work much more efficiently if the protocols and CWA are clearly defined. Their results will gain greater acceptance and credibility when the protocols and CWA are carefully followed.

— Much of the test and evaluation being performed today is done on the basis of local experience and conditions. Some characteristics being tested have little bearing on the requirements of demining. In other cases, whole aspects of demining are left out because of a number of constraints for example testing is too expensive, takes too much time, lack a proper procedure, etc.

Many trials of the capabilities of mechanical demining equipment have been conducted in recent years, stimulated by the growing international effort to combat the threat posed by mines and unexploded ordnance to civilian populations. However, there is no standardised methodology for the conduct of such tests. The ability of one organisation to assess the findings of another’s test for their own purposes has been limited. This CWA will be a benchmark for testing.

3 Aim and objectives

The aim of this CWA is to create industry-accepted criteria for the testing, evaluation, and acceptance of mechanical demining equipment. This CWA is also intended for use as a tool for type testing of Demining Machines in serial production.

4 Scope

The scope of the CWA is to provide standardized methodology for testing and evaluation of Demining Machines. It gives technical criteria for the following.

— Performance test

A test to establish whether the machine and its tool is capable of performing the role for which it is intended under comparable and repeatable conditions and to evaluate the manufacturer’s specifications. See Annex A.

— Survivability test

A test of the effects of explosive forces on the machine and operators. The explosive force used will be based on the level of threat against which the machine is designed. See Annex B.