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Guide for the use of mine detection dogs

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Foreword

International standards for humanitarian mine clearance programmes were first proposed by working groups at an international technical conference in Denmark, in July 1996. Criteria were prescribed for all aspects of mine clearance, standards were recommended and a new universal definition of 'clearance' was agreed. In late 1996, the principles proposed in Denmark were developed by a UN-led working group and the International Standards for Humanitarian Mine Clearance Operations were developed. A first edition was issued by the UN Mine Action Service (UNMAS) in March 1997.

The scope of these original standards has since been expanded to include the other components of mine action, and to reflect changes to operational procedures, practices and norms. The standards were re-developed and renamed as *International Mine Action Standards* (IMAS).

The United Nations has a general responsibility for enabling and encouraging the effective management of mine action programmes, including the development and maintenance of standards. UNMAS, therefore, is the office within the United Nations responsible for the development and maintenance of IMAS. IMAS are produced with the assistance of the Geneva International Centre for Humanitarian Demining.

The work of preparing, reviewing and revising IMAS is conducted by technical committees, with the support of international, governmental and non-governmental organisations. The latest version of each standard, together with information on the work of the technical committees, can be found at <http://www.mineactionstandards.org/>. Individual IMAS are reviewed at least every three years to reflect developing mine action norms and practices and to incorporate changes to international regulations and requirements.

Introduction

It was not until the late 1980s that a greater awareness of the global landmine problem generated an international effort to remove landmines worldwide. From 1990, an increased number of international organisations have become involved in humanitarian demining, with an increasing use of dogs for mine and ERW, including unexploded sub-munitions detection.

Mine Detection Dogs (MDD) can be efficient and cost effective for mine action operations when used under the right conditions. MDD can provide a solution to the problems of locating minimum metal mines and working in ground with a high metallic content. However, the increased use of MDD has created new challenges. There are still contradictory views about the detection capabilities of MDD and some concerns are still raised about the quality and credibility of MDD operations. Despite the doubt, MDD are used, by many, in many situations, and land is being released as a result of their actions.

The first edition of *International Standards for Humanitarian Mine Clearance Operations*, which was issued by UNMAS in March 1997, did not address MDD operations since it was felt at the time that this 'technology' was too poorly understood, and very few demining organisations had implemented MDD operations. The development of international standards for MDD was therefore not seen as an urgent requirement.

In September 1999, the first global conference on the use of MDD was held in Ljubljana, Slovenia. At this conference, the MDD user community expressed their need for international standards for MDD operations as part of the framework of UN standards. The GICHD was therefore requested by the UN to develop them.

The development process for the first edition of the standards involved two specialists in the GICHD, backed by technical committees, with support of international, governmental and non-governmental organisations. Most of the major MDD organisations were represented in an advisory group.

In addition, several programmes using MDD were visited during the development process, to gain their views, concerns and practices. These visits allowed the incorporation of field experience, and added greatly to the understanding of the needs of the MDD operators in the field.

IMAS 09.40 is a guide to the application of the IMAS 09.4 series of standards on the general use of MDD. It is the introductory document that addresses most aspects of MDD operations. There are four additional IMAS in this series, which discuss specific issues related to MDD.

Guide for the use of Mine Detection Dogs (MDD)

1. Scope

IMAS 09.40 is a guide to the application of the IMAS 09.4 series of standards on the general use of MDD. It is the introductory document of the IMAS 09.4 series of standards, which addresses most aspects of MDD operations and, unlike many of the general IMAS, should be viewed as both technical standards and guidelines. There are five IMAS in this series, including this document. They are:

- a) IMAS 09.40 Guide for the use of mine detection dogs.
- b) IMAS 09.41 Operational procedures for mine detection dogs.
- c) IMAS 09.42 Operational testing of mine detection dogs and handlers.
- d) IMAS 09.43 Remote Explosive Scent Tracing (REST).
- e) IMAS 09.44 Guide to medical and general health care of dogs.

The MDD series of IMAS provide a framework for the planning and implementation of MDD operations within mine action programmes, and lays down the responsibilities of national authorities, demining organisations and donors supporting mine action.

Whilst national standards may apply restrictions and specifications beyond what is required by international standards, they should be based on the principles and specifications provided in the international standards.

The IMAS 09.4 series of standards do not attempt to act as or duplicate SOPs. Each demining organisation should develop its own SOPs based on national and international standards.

2. Terms, definitions and abbreviations

A complete glossary of all the terms, definitions and abbreviations used in the IMAS series of standards is given in IMAS 04.10.

In the IMAS series of standards, the words 'shall', 'should' and 'may' are used to indicate the intended degree of compliance. This use is consistent with the language used in ISO standards and guidelines:

- a) 'shall' is used to indicate requirements, methods or specifications which are to be applied in order to conform to the standard;
- b) 'should' is used to indicate the preferred requirements, methods or specifications; and
- c) 'may' is used to indicate a possible method or course of action.

The term 'National Mine Action Authority (NMAA)' refers to the government entity, often an inter-ministerial committee, in a mine-affected country charged with the responsibility for the regulation, management and coordination of mine action.

Note: In the absence of a NMAA, it may be necessary and appropriate for the UN, or some other recognised international body, to assume some or all of the responsibilities, and fulfil some or all the functions, of a MAC or, less frequently, an NMAA.

The term 'MDD organisation' in this IMAS refers to any organisation (government, NGO or commercial entity) responsible for implementing demining projects or tasks with the use of MDD. The MDD organisation may be a prime contractor, subcontractor, consultant or agent.

The term 'demining' refers to activities, which lead to the removal of mines and ERW, including unexploded sub-munitions hazards.

The term 'Mine Detection Dog' (MDD) refers to a dog specifically trained to detect the vapour from mines and ERW, which may be not only explosive vapours but vapour from the case material and other substances. MDD training and deployment are often significantly different from those given to other search dogs.

The term 'target object' is used to describe the object that the MDD is supposed to detect during live mine/ERW detection. The target object may be a mine or ERW, or part thereof, of a type typically found during live operations in the area.

The term 'target odour' is used to describe the scent from the target object.

The term 'test item' is used for any mines or ERW items that are laid in the test site for detection by the MDD.

3. Why dogs are used for mine and ERW detection

MDD are now a commonly used mine and ERW (including unexploded sub-munitions) detection technology. There are four major reasons for this:

- a) if implemented correctly, detection by MDD can be faster and more cost effective than manual demining using detection by metal detectors and excavation;
- b) MDD can detect mines and ERW with low-metal and no-metal content and mines and ERW in areas with high metal contamination or background, such as on railway lines;
- c) many demining organisations use a variety of demining and ERW clearance 'tools', such as mechanical pre-clearance, manual clearance, and detection by dogs, in a complementary role; and
- d) unlike most vapour sensors, dogs can be used to pinpoint mines and ERW against a background already contaminated by explosive.

4. How MDD can be used

4.1. General

MDD can be used in many different roles, however they are best at working in areas where there are low concentrations of mines and/or ERW. As such, they are well suited for activities such as:

- a) mine and ERW verification;
- b) area reduction and delineation of minefield boundaries;
- c) searching roads and road verges;
- d) clearance verification, including the rapid sampling of cleared land (Quality Control (QC)), which can be done after both manual and mechanical demining;
- e) searching pockets of land unreachable by mechanical demining equipment;
- f) searching railways and sites heavily contaminated with metal; and
- g) creation of safe lanes for clearance start points.

Of these the first three are the most common.

MDD can most effectively be used for mine and ERW verification during technical surveys. MDD are suitable for establishing that there are no mines/ERW, including unexploded sub-munitions in an area during technical surveys, allowing suspected hazardous areas to be released much faster than by manual demining. MDD can work quickly in areas with low mine and or ERW density and are thus well suited to the boundary detection role. Manual demining teams can then be deployed to deal with reduced areas known to contain mines/ERW.

A road is typically free from tripwires and vegetation and has a low density of mines/ERW. MDD are more suitable and cost effective for clearance of roads than manual mine/ERW clearance and are less environmentally destructive than mechanical demining.

4.2. Operational procedures

Operational procedures for the use of MDD are covered in more detail in IMAS 09.41. There is no uniform set of operational procedures that can be applied under all conditions. There are however common principles that can be applied to MDD operations. IMAS 09.41 provides relevant principles generally applicable to all MDD operations.

5. Operational testing of MDD and handlers

A central feature of the implementation of MDD standards must be the operational testing of MDD teams (dogs and handlers). Operational tests provide an assurance that a minimum standard has been achieved. Operational tests do not provide an assurance that the tested technology will work at all times and other QA procedures need to be established to ensure on-going compliance with standards. Specifications and guidelines for the operational testing of MDD and handlers can be found in IMAS 09.42.

In the past, the operational testing of MDD and accreditation of mine action organisations has been treated as an internal affair and not a matter for national authorities or donors. This view has changed; both for mine action organisations and MDD teams. Regular operational testing of MDD teams has been implemented in many programmes, and even where external operational testing is not required, some form of internal testing is normal.

It is essential that maintenance training and internal testing continue to be given at frequent intervals between operational tests (more than once every week), to maintain the quality standards achieved during the preparation for the test.

6. Remote Explosive Scent Tracing (REST)

Another method of detection by animals, known as Remote Explosive Scent Tracing (REST) is described in more detail in IMAS 09.43.

In a REST system, explosive vapour is captured onto filters, which are transported to locations where specifically trained sniffer animals check the filters for traces of the target odour. Each filter represents a sector of road or land, and the animal's response to a filter informs the demining agency where to focus their clearance activities.

REST is not a stand-alone system and should be used in conjunction with other sources of information. REST can be considered a survey tool that distinguishes between areas requiring further investigation, (termed suspect positive sectors) and areas that may not require further investigation (termed suspect negative sectors).

7. Occupational health and general dog care

A successful MDD operation relies on well-fed, well-trained, and well-treated dogs. Poor attention to the health of dogs, and their treatment when sick, may result in prolonged training periods and a limited operational output. Dogs may die as a result of poor health care, no vaccinations and neglected symptoms of disease. For these reasons the 09.4 series of standards includes IMAS 09.44 Guide to occupational health and general dog care.

8. Limitations on the use of MDD

MDD cannot be used successfully under all circumstances. In areas of dense or thorny vegetation, the search pattern of MDD may be restricted giving rise to un-searched areas. Also, vegetation may prevent the handler from controlling the search or observing MDD signals, although certain search patterns can reduce this problem.

It is not appropriate to use MDD in areas where there is a high concentration of mines or ERW as the number of indications could make these operations inefficient and there are safety implications. Under certain conditions MDD operations may also be inappropriate in high-density mined areas that have been processed mechanically.

Weather also has a significant effect on the use of MDD. Wet or cold conditions restrict the dispersal of the scents that MDD detect. In certain environments rain may spread target odours widely making it difficult for MDD to pinpoint mines, and consistent high winds can interfere with MDD operations by dispersing the vapour. Some retraining may be required if there is a sudden shift in working conditions, either due to unusual weather patterns, or because the MDD has been moved to another geographical area.

The reliability of individual MDD can vary, although it is not appropriate to immediately blame the MDD when problems emerge. The cause could be failures in the operational system, ineffective management, training errors, illness or fatigue, or environmental influences affecting the target odour.

The reliability of MDD can be improved by using two or more MDD to cover the same area. A minimum of two MDD is recommended in most situations.

When dogs are working in areas where there is a heavy background contamination, for instance from mines, ERW or scattered explosive, checks must be made to ensure that this contamination does not overshadow the target signal.

9. Responsibilities

9.1. The National Mine Action Authority (NMAA)

The NMAA, or an agency acting on its behalf, shall:

- a) establish a clear and sustainable national policy on the use of MDD within the mine action programme;
- b) develop and implement relevant national standards and other guidelines governing the testing and use of MDD within the mine action programme;
- c) develop and implement procedures for the Quality Management (QM) of MDD operations (including operational testing and accreditation of MDD organisations) within the mine action programme and ensure that personnel charged with MDD QM are suitably qualified and experienced for this task; and
- d) assist demining organisations employing MDD with the establishment of testing and training areas and other facilities to support MDD.

9.2. The demining organisation

The demining organisation carrying out MDD operations shall:

- a) establish SOPs for the use of MDD on demining operations. These SOPs are to be consistent with relevant national standards, or in the absence of national standards, with the IMAS 09.4 series of standards;
- b) gain accreditation by the NMAA or its agents;
- c) ensure that testing of MDD teams is carried out on a regular basis under operational conditions;
- d) ensure that the ability and performance of MDD and handlers are maintained at all times by maintenance training; and
- e) establish systems, procedures and facilities to ensure the occupational and general health care of MDD.

In the absence of a NMAA, the demining organisation should assume additional responsibilities. These include, but are not restricted to:

- f) assisting the host nation, during the establishment of a NMAA, in framing national standards for MDD operations; and
- g) establishing liaison with other demining organisations employing MDD to ensure a consistency in standards for MDD operations and to cooperate in the testing of MDD teams.

9.3. Donors and international organisations

Donors and international organisations should assist the NMAA, or an organisation acting on its behalf with:

- a) the establishment of a clear and sustainable national policy on the use of MDD within the mine action programme;
- b) the development and implementation of national standards and other guidelines governing the training, operational testing and use of MDD within the programme; and
- c) in the absence of a national authority, donors should assist and encourage demining organisations using MDD to establish and implement appropriate SOPs for the testing and use of MDD on demining operations.

Amendment record

Management of IMAS amendments

The IMAS series of standards are subject to formal review on a three-yearly basis, however this does not preclude amendments being made within these three-year periods for reasons of operational safety and efficiency or for editorial purposes.

As amendments are made to this IMAS they will be given a number, and the date and general details of the amendment shown in the table below. The amendment will also be shown on the cover page of the IMAS by the inclusion under the edition date of the phrase *'incorporating amendment number(s) 1 etc.*

As the formal reviews of each IMAS are completed new editions may be issued. Amendments up to the date of the new edition will be incorporated into the new edition and the amendment record table cleared. Recording of amendments will then start again until a further review is carried out.

The most recently amended IMAS will be the versions that are posted on the IMAS website at www.mineactionstandards.org.

Number	Date	Amendment Details
1	01 Mar 2010	1. Updated UNMAS address. 2. Updated definition of NMAA. 3. Minor changes throughout to insure land release, cluster munitions and gender issues.
2	01 Aug 2012	1. Reviewed for impact of IATG development. 2. Minor typographical amendments.