NMAS 09.40

Guide for the Use of Mine Detection Dogs (MDD)

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Lebanon Mine Action Center-LMAC

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Foreword

The National Mine Action Standards (NMAS) of Lebanon were first developed in the form of Technical Standards and Guidelines (TSG). After the Lebanon Mine Action Policy was released in 2007, these TSG were edited into the first edition of the NMAS in 2010 and were written to concurrently comply with the first edition of the International Mine Action Standards (IMAS). Since then, the scope of the IMAS has been expanded to include more components of mine action and amended to mirror the most recent changes to standards as required in today's operations. These changes, as well as changes in the local context of Lebanon, have necessitated a review and update of the NMAS.

As detailed in the National Mine Action Policy of 2007, the Lebanon Mine Action Center (LMAC) has the responsibility to execute and coordinate the Lebanon Mine Action Program (LMAP) on behalf of the Lebanon Mine Action Authority (LMAA), including the development and amendment of standards. Such standards shall be developed in a participatory approach that shall involve international, governmental, and nongovernmental organizations.

The NMAS shall be reviewed as needed to reflect amendments in the IMAS as well as incorporate changes to international obligations and local requirements. Such revisions shall be regularly made available on the LMAC's website www.lebmac.org or can be obtained through contacting the LMAC via the email info@lebmac.org.

Acronyms

EDD	Explosive Detection Dog (also known as 'Mine Detection Dog', MDD)
ERW	Explosive Remnants of War
HTHA	High Threat Hazard Area
HMA	Humanitarian Mine Action
HTHA	High Threat Hazardous Area
IA	Implementing Agency
IMAS	International Mine Action Standards
IMSMA	Information Management System for Mine Action
LMAA	Lebanon Mine Action Authority
LMAC	Lebanon Mine Action Center
LMAP	Lebanon Mine Action Programme
LTHA	Low Threat Hazardous Areas
MDD	Mine Detection Dog (also known as 'Explosive Detection Dog', EDD)
MFA	Mine Field Area
NMAS	National Mine Action Standards
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
QM	Quality Management
SOP	Standard Operating Procedure
TSG	Technical Standards and Guidelines

Introduction

Over the past three decades Mine Detection Dogs, MDD, (that may also be known as Explosive Detection Dogs, EDD) have been used to support demining operations in many countries. Despite concerns raised about the reliability and cost of MDD, experience has shown that they can be used efficiently in demining operations in the right circumstances. Research continues into ways to increase the utility of MDD by combining their search capacity with other tools and procedures.

The reliability of MDD search can vary as a function of such factors as the training method, the inherent qualities of the dog, and the prevailing environmental factors in the search area, but as long as the influence of these factors is recognized and controlled, MDD may be a valuable asset. The term 'MDD Clearance' is a misnomer because an MDD cannot clear anything. The MDD can be a detection asset just as a metal-detector can be a detection asset, except that it has different advantages and limitations. The reliable performance of a machine can be objectively assessed in a way that it is not possible to assess the detection performance of an animal that may be influenced by many uncontrollable factors. Also, the ability of an MDD to reliably pinpoint the position of a hidden hazard is questionable and so MDD are used to detect the presence of an explosive hazard in an area, rather than to pinpoint the precise position of each hazard. Clearance is much more that the 'detection' of an explosive hazard. When a dog indicates, the hazard must be pin-pointed, exposed and destroyed by manual deminers before it has been cleared. So MDD in HMA are a manual demining detection asset rather than a means of clearing ground.

Any Implementing Agency (IA) in Lebanon that wishes to use an MDD search capacity must ensure that MDD handlers are well-trained and able to work efficiently with their dog(s) in procedures that have been accredited by the LMAC. The IA must also takes pains to ensure that each MDD's health is good as a means of maintaining the credibility and reliability of MDD as a search asset.

Mine Detection Dogs (MDD)

1. Scope

This NMAS provides standards for the use of Mine Detection Dogs (MDD) within Humanitarian Mine Action (HMA) in Lebanon. It is designed to ensure that all MDD assisted activities are executed and carried out safely and to the highest possible quality. The acronym EDD (Explosive Detection Dog) may be used instead of MDD. 'Explosive detection' may describe what a dog can do better than 'mine detection', but Mine Detection Dog has become a term with which people are familiar so its use is retained in this document.

2. References

A list of normative and informative references is provided in Annex A. Normative references provide cross-referencing to other standards referred to in this NMAS, and which form an integral part of the provisions of this standard. Informative references provide a list of documents that may be consulted for a clearer understanding of this standard.

3. Key terms and definitions

The following terms and definitions are used in this standard:

- *Box:* a rectangular area usually sized 10m x 10m, searched by mine detection dogs during their license training.
- *Demining organization:* an organization, national or international, accredited by the LMAC to conduct humanitarian demining activities in Lebanon. Demining organizations may also be referred to as *Employers* or *Implementing Agencies* (IAs).
- *Demining team:* a team of professionals approved and accredited to conduct one or more demining activities, such as technical survey, non-technical survey, area clearance operations, BAC, and EOD spot tasks.
- *Mine Detection Dog (MDD):* a dog trained and deployed to detect the scent of mines and Explosive Remnants of War (ERW). Also called an *Explosives Detection Dog* (EDD).

In addition to the above terms, NMAS 04.10 provides a glossary of terms and definitions used across all standards.

As in the IMAS, the terms 'shall', 'should' and 'may' are used across all standards to indicate the required degree of compliance. For any organization working in Lebanon, the use of 'shall' indicates a compulsory requirement. The term 'should' indicates the national

preference which may be varied with LMAC approval. The term 'may' indicates a suggestion that is not obligatory.

4. General provisions

The use of Mine Detection Dogs (MDD) can be an effective aid to mine/ERW clearance, especially for verification and area reduction. Demining of areas with a high metallic content and/or containing minimal metal mines may benefit from the use of MDD search before manual mine/ERW search and clearance.

MDD search may be used to establish that there are no explosive hazards in an area during Technical Survey so allowing suspected hazardous areas to be eliminated much faster than by using entirely manual demining procedures. MDD search can be conducted quickly in areas with low mine/ERW density, and so MDD may be best suited for use in boundary detection. Manual demining teams can then be deployed to deal with reduced areas that are known to contain mines/ERW.

It is a requirement that all MDD deployed into Lebanon undergo an acclimatization period before they are deployed in any hazardous area. The acclimatization period shall be of at least one month’s duration and should be used to conduct continuation training with the dog and handler, introducing the dog to the explosive hazards, the local weather, vegetation, ground conditions and the surrounding environment.

MDD may be used to determine whether there are explosive hazards in an area but should not be used to pinpoint the precise location of each hazard. When MDD are used as a primary search tool, each area shall be searched by a minimum of two different licensed dogs accredited individually and any MDD indications shall be investigated using approved manual demining procedures.

All MDD deployed to Lebanon will be subject to evaluation and accreditation before being permitted to be used for operational search. For further, detailed information regarding the accreditation of MDD operations, please refer to NMAS 07.30 Guide for the Accreditation of Mine Action Organizations and Operations.

When approved by the LMAC, MDD may also be used by IAs as an internal QC search asset to increase confidence that land searched using other methods is free from explosive hazards before it is presented for release. However, when explosive hazards have been found and destroyed at the task, the resulting contamination with explosive residue should be expected to limit the practicality of the use of MDD search as QC.

5. Health and medical factors

5.1 Health and capability check

The ability of a dog to search reliably depends on variables such as its health and well-being and may vary on a weekly, daily, or even hourly basis: a dog may find a hazard easily on one day and miss the same hazard on another day. Recognizing this, all IAs using MDD shall assess the dogs on a daily basis before the dogs are allowed to start searching at a task. The handler shall also withdraw a dog from search whenever there is any suspicion that it may not be fully concentrating.

The daily assessment shall include a check on the MDD's health and well-being, and a detection test to give the dog handler and the project management confidence that the dog is working reliably. The daily test also acts as a "warm-up" that prepares the dog for work and 'tunes' it in to the target substance. This daily assessment shall be part of each IA's internal Quality Assurance (QA) routine. The test shall be devised so that it reliably shows when a dog is not working reliably or may be unwell.

The IA shall submit MDD SOPs to the LMAC for assessment and shall not use MDD in any task area until the LMAC has granted approval for the use of those SOPs. The SOPs shall include the following in terms of actions to be taken and record keeping:

- MDD handlers shall be responsible for reporting any medical or health problems with their dogs to their Supervisor and should refuse to work if they lack confidence in the dog's ability to search reliably;
- after each rest period, the handler shall make sure that the dog is fully fit and not suffering from any ailment that may affect its performance;
- the dogs should not be deployed when the ground or air temperature exceeds 36°C unless the handler has full confidence that their ability to search reliably has not been compromised;
- MDD shall not be used when the ground or air temperature reaches 40°C;
- at least five liters of water shall be available for each dog at the task site per day;
- each MDD team shall have a first aid kit for the dogs readily available;
- each dog shall be given frequent rests at intervals that may vary from dog to dog and that may be influenced by the working conditions;
- in areas with sharp vegetation, broken glass or razor wire on the ground, MDD should not be used unless provided with appropriate protective footwear;
- when the dog's motivation to work is uncertain, the dog shall be withdrawn; and
- suitable transport shall be available at each task site for the evacuation of any MDD that suffers injury or illness to a suitable health care center.

5.2 Medical considerations

Before the initial deployment of MDD a qualified veterinarian (approved by the LMAC) shall certify that the dog is in good health and fitness. X-ray pictures of hips, elbows, and back shall be attached to the veterinarian's written comments, showing the dog to be free of hip or elbow displacement problems. Copies of the veterinarian's findings shall be provided to the LMAC.

5.3 MDD kennels and feeding

Whilst dogs are in kennels, only certified handlers/kennel assistants should feed, move dogs, clean or enter the kennels. The dogs shall be thoroughly examined and monitored on a daily basis. The IA's regime for maintaining dog fitness and providing off-site training and motivation to the animals shall be fully detailed in the SOPs that they submit for the LMAC's approval.

6. Limitations when using MDD

The following constraints shall be reflected in the MDD SOPs that the IA submits to the LMAC for approval.

a) MDD shall not be used in areas heavily contaminated by explosives or in enclosed spaces, unless they have been specifically trained for such conditions.

b) MDD shall not be used in areas where tripwire activated hazards are anticipated.

c) Daily evaluation of dogs shall take place as well as continuous refresher or continuation training designed to reinforce appropriate behavior.

d) Handlers shall be supervised by task site supervisors on a continuous basis during work.

e) MDD should not be used if the wind speed is greater than 7 m/s at ground level.

f) MDD should not be used to search with a following wind because the target may not be recognized until the dog has passed the actual hazard. Ideally, MDD should be used to search with a side wind but they may also be used when there is a head wind. Strong wind speed may reduce the indication accuracy of a dog. The general principle is that increased wind speed requires an increased area to be investigated manually after a dog has indicated contamination.

g) MDD should not be used to search for vapor when the soil temperature is below or near freezing point because when the soil temperature is near freezing point, the scent will diminish, impeding detection.

h) MDD should not be used for vapor detection when the air temperature is colder than 7° Celsius. When the soil temperature is at its lowest and the air temperature

exceeds the soil temperature, dew may appear on the soil surface. If the soil is very dry prior to this condensation phase, the dew can displace the target substances from the dry soil, so enhancing vapor detection. If the soil is already wet prior to dew formation, the dew will not enhance vapor detection.

Rain washes target substances from the surface to deeper portions of the soil. A heavy rain over extended time will remove more of the target substance from the soil surface. Accordingly, MDD should not be used for vapor detection when it is raining until the soil surface has dried.

7. MDD training and search procedures

7.1 Training MDD and internal QA

MDD deployed into Lebanon may either be untrained on arrival or half trained, with the remaining of the training delivered in Lebanon. All previously trained MDD arriving in Lebanon shall have at least one month's acclimatization training with their handler before deployment to work.

Training minefields where dogs are to practice should be laid at different periods of time.

The dogs shall be evaluated on targets that are real examples of the hazards they will be expected to find. These may be mines or ERW. All targets should have been buried for at least 3 months before a test area is used and, ideally, the targets should have been at "rest" in the ground for longer periods of time.

The targets used for evaluating or training exercises shall be buried at different depths, in differing quantities and for differing periods of time.

In order to maintain maximum performance and safety during operations, when MDD are deployed in the field, internal QA tests shall be conducted on a daily basis. For monitoring purposes, refer to Annex B for an example of an MDD Quality Assurance Evaluation Form.

The following internal QA checks shall be applied by the demining organization:

- regular evaluation of the dogs shall take place in the field environment where the dogs are deployed;
- a skilled medical examination of each dog shall be conducted before work;
- constant supervision of the dogs/handlers shall be maintained during work;
- MDD and their handlers shall receive a formal refresher/continuation training period every month followed by a formal performance evaluation; and
- an area to be declared 'cleared' shall always be searched at least twice, using different dogs, preferably approaching the search area from different angles.

The size of each training box is usually 10 m x 10 m. This size may vary depending on the operational search system used by the IA's MDD teams.

The following guidelines apply when preparing a training site with training boxes:

- The test field should have one or several clearly recognizable benchmarks. Distance and compass bearings should be taken from at least one corner marker for each box to a benchmark.
- Each box shall be recorded on a map with exact location references.
- All corners should be marked with a recognition pole, driven into the soil. At least one corner marker shall be accurately recorded on the box map.
- All training targets should have recognition pieces placed centrally under the training target. The recognition piece should be made of cut metal reinforcement rods or similar material and not exceed 15 grams. Additional recognition pieces should be buried at other locations inside the box to ensure that a dog does not indicate on the metal.
- The accurate location of all training targets and recognition pieces shall be recorded.
- One copy of the target record for each box shall be prepared and delivered to the LMAC Quality Management (QM) Section.

Please refer to Annex C for an example of an MDD Training and Evaluation form.

7.2 MDD search procedures

Each IA operating MDD in Lebanon shall submit MDD SOPs to the LMAC for approval. Approval must be granted before any MDD is deployed to a task.

While there are variations in search procedures that have been found effective, the following guidelines to search procedures must be followed:

a) Each area searched by MDD and declared free from explosive hazards shall have been searched by at least two MDD in a procedure that gives confidence that the second dog is not simply following the first.

b) In lane search, an overlap of at least 25 cm should be maintained on each side of the lane.

c) Every working day, the dog handler should carry out a control exercise to determine whether the dog is in good condition and capable of working before a dog is used to search in a task area.

d) Generally, an MDD should not work for more than 5 hours a day. They should have a ten to fifteen-minute break after every one hour worked.

e) An MDD should not work in a temperature that is below 7°C or that exceeds 36°C. During hot or arduous conditions, the dog handler may use his/her own discretion to stop the work.

f) MDD should not be used if the wind speed is greater than 7 m/s at ground level.

g) All marking shall clearly indicate areas to be searched, areas that have been searched, areas that are 'safe' and the positions of MDD indications.

h) In box search procedures, areas to be searched should be divided into squares sized 10 m x 10 m. When MDD conduct a search with one access/safe lane (e.g. road search) whilst working with long leash system 10m ahead, marking for the next 10m search should be placed with at least 1m overlap back into an already searched area (See figure 1).

i) The MDD should always start searching half a meter outside the target area.

j) When something suspicious is detected, the MTT should indicate the discovery by sitting or lying down close to the find. Barking and/or scratching shall not be acceptable.

k) When any MDD has indicated, an area of at least one square meter centered on the indication should be searched manually (See figure 2).

l) The IA's SOPs shall include a detailed indication marking system that satisfies LMAC that the follow-up manual search and clearance will be appropriately targeted.

m) Full details of the areas searched by MDD shall be included in an MDD Daily Work Report.

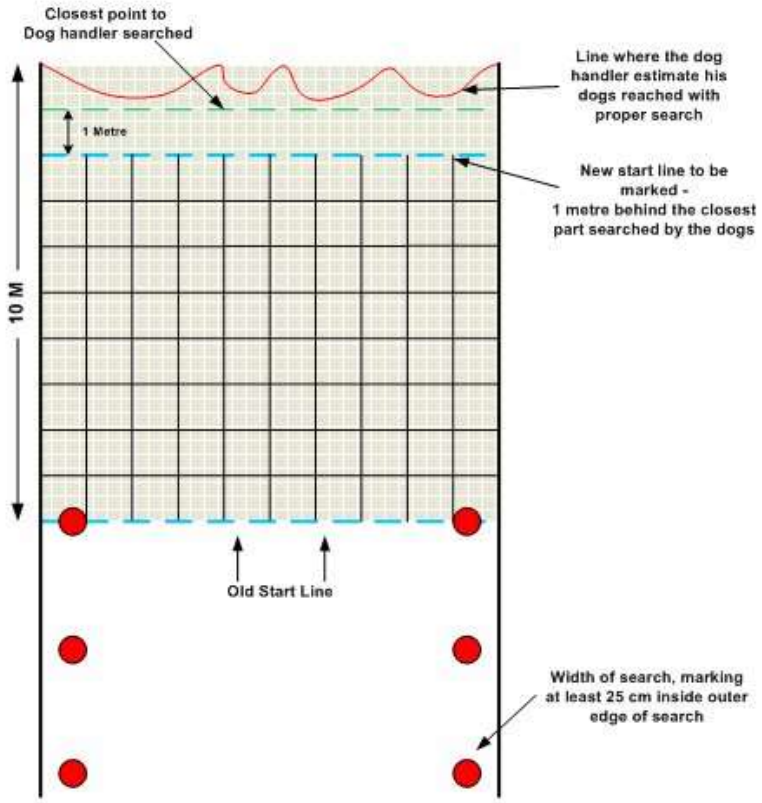

Figure 1: Example overlap when working on road search or areas with one safe lane forward and on the sides.

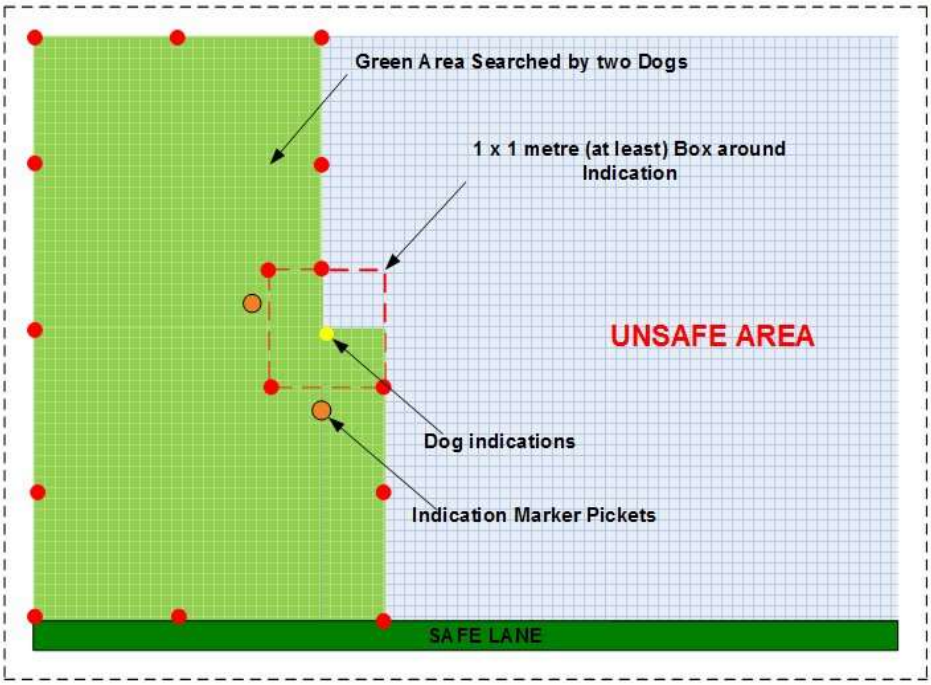

Figure 2: Indication

8. Tasking of MDD teams

MDD should not be tasked to search in high-density minefields except for QC operations after the area has been searched and cleared using other procedures, and when the ground is not contaminated with demolition debris.

Appropriately trained MDD may be tasked for the following operations:

- verification, survey or area reduction of suspected mined areas;
- search of low-density mined areas;
- search of suspected mined railroads and roads;
- search in areas where handheld mine detectors cannot be reliably used; and
- search of an evacuation lane from the nearest safe place to a casualty in case of an emergency response being necessary to provide medical care after a mine accident.

Only dogs and handlers that have received task relevant training and performed convincingly shall be tasked to carry out the activity.

9. Planning for MDD use

A formal, written search plan including sketch maps should be produced before any MDD operation is conducted. The MDD search plan should be part of the task clearance plan and include planning of safe lanes, access lanes, and the location of search boxes and/or search lanes.

The following elements should be considered when planning MDD operations:

a) The explosive hazards anticipated in an area shall be assessed prior to the search. If they include hazards that the dog has not been trained to find, the MDD shall not be used to search that area without first being given 'continuation' training and having proven able to locate all of the anticipated hazards. Each MDD is only accredited to undertake regular search for explosive hazards that have featured in its training.

b) MDD use in an area where the ground has been flailed or otherwise processed shall be restricted to confirming the presence or absence of explosive hazards in the area. If the MDD make no indications and there were no detonations during the mechanical processing, there may be sufficient confidence to declare an area free from explosive hazards because it always was. If there were explosive hazards which the mechanical processing has detonated or disrupted, traces of explosive may be widely spread so the MDD may indicate too often for their search to be useful.

c) MDD should not be used if the presence of intact tripwires is suspected. The area may be processed by a vegetation cutting machine that cuts vegetation to the ground before the dogs are deployed to search.

d) The level of explosive contamination in a search area shall be assessed. Demolitions of explosive hazards in the area may scatter explosive residue and pieces of

destroyed mines/ERW. MDD shall not be used in areas with visible contamination of explosives, ERW, and the remains of detonated mines/ERW or in areas where the dog indicates regularly and no visible explosive hazards are found.

e) The number of dogs available for the task shall be decided with due consideration to the layout of the search area, taking into account (a) the required working distance between each dog/handler, (b) the working distance between the MDD team and the deminers, (c) the wind direction (and/or the changes in the wind direction), (d) the humidity of the soil, (e) the vegetation, and (f) the requirements for the supervision and general management of the operation.

f) The search area's wetness shall be considered. Certain spots within an area may be assessed as potentially impossible to search reliably immediately after rainfall due to puddles and muddy ground. In such circumstances, the MDD search plan should be flexible enough to allow the MDD to work in drier areas until the wet areas have dried out.

g) Safe lanes shall be prepared to provide safe access and safe start lines so that the dogs and handlers can reach search areas. Such lanes should be two meters wide. Safe lanes may be searched using metal detectors or area excavation, or with two appropriately trained MDD.

h) The whole search area should be visible to the dog handler. If the vegetation is such that the dog handler is unable to observe the dog at all times during the search, the search area shall be divided into smaller areas that allows the handler to retain line of sight to the dog at all times.

i) When an area has been searched twice and considered free from mines/ERW, the corner marking and any boundary tape may be removed. The exact locations of each area where specific dog/handler teams searched shall be recorded on the supervisor's daily worksheet and on the dog handler's daily worksheet.

j) All areas searched and declared hazard free by at least two different accredited MDD shall be considered free from explosive hazards.

k) The working distance between handlers should not be less than 20 meters to avoid MDD being distracted by each other. In areas where there are expected to be fragmentation mines/munitions (including cluster munitions) or anti-tank mines with sensitive fuze systems, the working distance should be 50 meters.

l) During search, MDD handlers shall wear appropriate Personal Protective Equipment (PPE) including, as a minimum, frontal body protection and 5mm polycarbonate eye protection.

At all times, planning shall take into consideration the IA's MDD SOPs that have been approved by the LMAC. The IA's SOPs shall detail the search methodology to be used.

10. MDD team members

Unless otherwise approved by the LMAC, any tasked MDD team should comprise the following, as a minimum:

- one Medic;
- two MDD Handlers;
- one Worksite Supervisor;
- two Drivers;
- at least two deminers/ searchers; and
- at least 2 MDD.

11. Considerations for the deployment of MDD

11.1 MDD deployment following mechanical ground processing

MDD may be used as a part of a "systems approach" where the dogs undertake secondary search or QC in areas already processed by demining machines. Such machines may include flails, tillers, sifters, rollers, soil millers etc.

When a machine has disturbed the ground surface, the MDD teams shall not be used to search until at least 2 days after the mechanical demining has taken place, provided that it has rained at least one time during these days. Rainfall will wash away most of the undesired contamination of the surroundings caused by the machinery and this may make the MDD search more accurate and reliable. In periods with no rain, the soak time should be increased to a minimum of 7 days. In both instances, authorization to proceed shall be required from the LMAC. The LMAC QA/QC Officer shall define the amount of wait time before allowing MDD search in these areas on a site-by-site basis.

If the machine has been used to process an area with a relatively high density of mines/explosive hazards, MDD shall not be used because lumps of explosive and bits of explosive hazard casings are likely to be spread around the area. This may confuse the MDD and make the search unreliable.

If a machine has processed the area with no detonations, MDD may be used to determine whether there is any trace of explosive hazards but shall not be used as the only search method if they find any indications of hazards that the machine has disrupted. If they find no indications, the entire area may be searched by two MDD and, when they find no evidence of explosive hazards, declared free from explosive hazards without deploying any other search procedures.

11.2 MDD deployment following mechanical vegetation cutting

Many IAs using MDD have established the practice of cutting the vegetation mechanically before deploying MDD to search. This can allow the dog to move in the way they have been trained and ensure that the handler always retains an unobstructed view of his dog.

Target substances in the soil may be taken in by plant root systems as they take in water. When the water is released after the vegetation has been cut, the target substances may be

a significant distance from the explosive hazard, so the accuracy of any indication will be compromised. However, the density of the vapor may be greater so that the MDD can identify it more readily.

On extremely dry days, the target scent which is released from the soil may be significantly reduced. Flowers, vegetation and bushes, however, will continue to release humidity and so may emit the target scent. The result might be that although the dogs are incapable of picking up the target scent from the soil, they can pick up the same scent from sniffing/searching the air around plants.

Because the limited ability to pinpoint can be compromised by vegetation, MDD may be best used to reduce areas by confirming areas where there are no hazards rather than indicating areas where there are hazards.

When using mechanical assets for vegetation cutting in preparation for MDD search, a one meter overlap shall be used to ensure that there are no areas missed between the two demining assets. After an area has been manually searched and cleared, the machine preparing the adjacent area should overlap into the searched area by a minimum of one meter. Similarly, the MDD search should extend one meter into the area that has already been searched.

11.3 MDD deployment following cutting vegetation by hand

In areas with thick or dense vegetation where it is not possible to use mechanical assets due to the terrain or the threat, manual vegetation cutting may be used ahead of MDD search.

The vegetation should be cut by hand or, when no movement sensitive or tripwire initiated hazards are anticipated, a petrol strimmer that is used without disturbing the ground surface may be used (with the LMAC's approval). The width of cut shall only be as far as the deminer can reach into the suspect area in a safe manner. All loose vegetation should be removed from the area before the MDD search can begin.

The first MDD deployment should be back and forth and the second searching laterally along the strip where vegetation has been cut. The handler should command the first MDD to start searching half a meter from the freshly cut vegetation area. Care should be taken to ensure that the advance of the searched area always includes a minimum of 25 cm overlap.

11.4 MDD deployment in previously burned areas

MDD shall not be deployed to search areas where the vegetation has been burned until at least four days have elapsed since the burning.

11.5 MDD search of sifted soil

The following procedure should be used when using MDD to search Sifted Soil.

A hazard-free area suitable to spread out the sifted soil should be identified. The pile of soil collected to be searched should be excavated down to 50cm beneath ground level. The position/area of the former pile of soil should be marked off and searched by MDD (after a soak time of 2-7 days) or by other search assets. The potentially contaminated soil is spread out for MDD search in an area known to be free from explosive hazards.

If the MDD indicates during search, a minimum of one square meter centered on the indication shall be manually searched and cleared around the indication. If an MDD provides several indications in an area, the handler should then move a minimum of 5 meters sideways or to the next area before continuing with search work. The handler should mark out the unsearched area that should then be searched using manual search and clearance assets.

MDD shall not be used to search spread-out sifted material when evidence of explosive hazards (such as bits of explosive, fuzes, or parts of mine/munition casings) is found during the sifting process. When the spread-out sifted material does not contain evidence of explosive hazards, the MDD may be used to search the material provided that the spread-out material is not more than 20 cm thick.

The Task Completion Report shall include an annotation when an area outside the worksite is used for spreading out the sifted soil. A completion report on the “spread-out soil area” shall be completed and entered into the Information Management System for Mine Action (IMSMA).

12. Record keeping

It is important for the dog handlers, the trainers, the veterinary and the management of a IA to be able to follow the dog’s development on a daily basis. Accordingly, the IA shall ensure that a logbook is prepared for each dog. The purpose of the logbook is to provide the IA and the LMAC’s monitoring teams with a continuous written evaluation of the dog’s health, training status and search ability.

The logbook shall be stored for a minimum period of 12 months after the completion of demining tasks carried out by the MDD. The logbook shall be kept by the responsible manager and made available to the LMAC’s QA/QC teams on request.

The daily search conducted by each dog shall also be recorded using an MDD Daily Work Report. This record shall be made daily whenever the dogs are operationally deployed. An objective assessment of the dog’s performance should also be written onto the form after the search has been completed.

The dog handler, or the team leader in consultation with the dog handler, should record the information on the form. If the dog handler does not complete the form, the handler shall

be required to sign the form after each entry to confirm its accuracy. A copy of each MDD's Daily Work Reports shall be attached to the completion report.

An accurate map of the areas searched by MDD that indicates where each MDD team searched shall be made by the IA. The map shall also indicate which two MDD sets have searched the same area and should show each MDD's direction of search.

13. Roles and responsibilities

13.1 Role of the LMAC

The LMAC shall:

- test and accredit MDD teams when appropriate;
- evaluate the IA's MDD SOPs and , when appropriate, approve their use;
- monitor the testing and the use of MDD to search at HMA tasks;
- ensure that the IA has systems in place to ensure the health, ability, and performance of MDD and handlers;
- assist demining organizations employing MDD to establish testing and training areas;
- monitor the work of demining organizations in MDD to assure quality operations; and
- appropriately document all data and information related to MDD operations.

13.2 Role of IAs

In their capacity as demining organizations using MDD, IAs shall:

- submit appropriate and effective SOPs for MDD deployment to the LMAC and wait for their approval before using the MDD;
- acquire LMAC accreditation for all of their MDDs and handlers;
- comply with the national standards related to MDD and ensure appropriate and timely data gathering, documentation, and reporting;
- ensure that the health, ability, and performance of MDD and handlers are maintained at all times;
- conduct training for their MDD teams as outlined in this NMAS;
- conduct internal QA; and
- appropriately document all data and information related to MDD operations.

The documents listed below constitute normative references which form an integral part of the provisions of this standard.

- Current LMAC and IMSMA reporting formats (request copies from the LMAC);
- NMAS 04.10 Glossary of Mine Action Terms, Definitions, & Abbreviations;
- NMAS 07.20 Guide for Land release;
- NMAS 07.30 Guide for the Accreditation of Mine Action Organizations and Operations;
- NMAS 09.10 Clearance Requirements;
- NMAS 10.20 Demining Worksite Safety; and
- NMAS 10.40 Medical Support to Demining Operations.

In addition to the normative references listed above, the following informative references may be consulted:

- National Mine Action Policy 2007.

NMAS 09.40, Edition 2.1: Amendment Record

The NMAS are subject to a comprehensive or partial review by the Review Board periodically. Changes in the context as well as safety requirements and efficiency considerations may necessitate amendments to individual NMAS standards more frequently. If this occurs, such amendments shall be given a number, dated, and detailed in the table below. The amendment should also be indicated on the header under the NMAS edition number.

Whenever the formal review of the NMAS is completed, a new edition shall be issued. Amendments that have taken place before the review date shall be incorporated in the new edition and the amendment record table cleared. Consequently, the recording of amendments shall start again until the next review.

The most recent revisions of the NMAS shall be posted on the Lebanon Mine Action Center (LMAC) website on www.lebmac.org.

Number	Date	Amendment Details
1	March 2020	Various minor changes correcting typing errors and for clarification throughout.
2	March 2020	Removal of informative annexes that have been superseded.