

# HUMANITARIAN MINE ACTION GENERIC Standard Operating Procedures SOPs



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## **Disclaimer**

The Author makes these Generic SOPs available on condition that those using them accept all liability for errors or omissions. No part of the SOPs should be adopted before studying them closely and making changes to suit the needs of the demining group and the particular programme. The twelve Chapters are linked with cross references and share a common terminology. When making terminology changes, users should ensure that all other Chapters are adjusted appropriately.

The Author has been an active member of the International Mine Action Standards (IMAS) Review Board since it started and believes that these SOPs are IMAS compliant both in spirit and in detail at the time of writing.

Any similarity between parts of these Generic SOPs and the SOPs of specific organisations should be interpreted as a compliment. No parts have been copied, but good ideas have been adopted and assimilated.

## **Dedication**

This document is dedicated to all those who have been injured in demining, and to the memory of my deceased friends Mark Tebbutt, Keith Byng and Christopher Marazani.

## **Acknowledgements**

The Author acknowledges input from the following individuals who have contributed with original ideas, critical comment or by sharing their extensive experience. While these individuals have had a positive influence on the content, any failings within these Generic SOPs are the responsibility of the Author alone.

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## Introduction

These Generic SOPs have not been written for academics, researchers, or any of the many levels of office management that have come to dominate Humanitarian Mine Action (HMA). That level of need is well served by the publications of GICHD and others. These SOPs have been written for field managers and should provide a practical baseline from which they can develop their own improved SOPs.

When I began these SOPs I was intending to write a practical handbook as an extension of the *Metal Detector Handbook for Humanitarian Demining* that I wrote with Dieter Guelle five years ago. But after I had finished the SOPs I found that adding lofty Chapter introductions would add little of value. So, my planned Handbook has become this set of Generic SOPs.

These are not conventional SOPs. During my work I have studied many SOPs covering all the main players in HMA and I have never seen anything quite like these. There is more detail, more reasoning, and more helpful information that I have seen anywhere else. During my work I have also written SOPs for NGO and commercial groups. While I was doing this I realised that field-users liked detail but managers are often afraid of it. Managers seem to believe that because detail could be wrong, it should be avoided. As a result, I have sometimes written SOPs that said almost nothing and were completed without visiting the field or understanding how the group worked. In other cases, I have written step-by-step SOPs alongside field staff, and those SOPs have then been used as training aids.

I understand the fear of being “wrong” but believe that SOPs should always be detailed. Because it is impossible to be “right” all the time, in all circumstances, SOPs should allow some flexibility in interpretation. When the SOP becomes a constraint rather than an aid, it should be revised. The people using the SOP should always be involved in the revision.

If you have SOPs covering other procedures or tools that you are willing to share, please send them for inclusion in a Second Edition. Send to [avs\(at\)nolandmines.com](mailto:avs(at)nolandmines.com)



## AMENDMENT RECORD

This page provides a record of revisions and appendices added to these SOPs after the publication date shown on the cover page.

Any amendments to this SOP must be approved by the *[Demining group name]* Director of Operations before being included in the record below. For details of how to implement an amendment, see Chapter 1, Part 6. The *[Demining group name]* Director of Operations will ensure that the users of these SOPs are informed about amendments promptly.

It is the responsibility of those using these SOPs to ensure that the amendment record below is kept up to date and that amendments or additions are inserted in appropriate places.

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## ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used throughout these SOPs.

AP-Mine	Anti-Personnel Mine
AT-Mine	Anti-Tank Mine
AXO	Abandoned eXplosive Ordnance
BAC	Battle Area Clearance
BACS	Battle Area Clearance Subsurface
CASEVAC	Casualty Evacuation
CHA	Confirmed Hazardous Area
EOD	Explosive Ordnance Disposal
ERW	Explosive Remnants of War
GPS	Global Positioning System
HF	High Frequency
HMA	Humanitarian Mine Action
HQ	Headquarters
IMAS	International Mine Action Standards
IMSMA	Information Management System for Mine Action
LR	Land Release
LIS	Landmine Impact Survey
NKT	No Known Threat
NGO	Non Governmental Organisation
NMAA	National Mine Action Authority
NS	National Standards
PAR	Post-clearance Area Reduction
PPE	Personal Protective Equipment
QA	Quality Assurance (conducted during work)
QC	Quality Control (conducted when work is completed)
REDS	Rake Excavation and Detection System
SHA	Suspected Hazardous Area
SOPs	Standard Operating Procedures
TRA	Task Risk Assessment
UXO	UneXploded Ordnance
VHF	Very High Frequency

## DEFINITIONS

The following definitions are used throughout these SOPs.

**Area Cancelled:** this is the *Area Cancelled* during a Task, or before starting a Task, without the area being subjected to any formal demining procedures.

**Area Cleared:** the *area Cleared* must have been subjected to one or more procedures that equal a thorough ground-Clearance system which leaves total confidence that no mine or ERW hazards remain to the required depth.

**Area Preparation:** *Area Preparation* involves the passage of a machine's tool over an area to remove vegetation and/or prepare the ground surface. The depth of ground processing may be very important.

**Area Reduction:** *Area Reduction* involves the processing of ground in a manner that gives confidence that the area contains no threat from mines or ERW. Area Reduction may not use full Clearance procedures but must never put staff at greater risk than clearance procedures.

**Area Released:** The sum of the area Cleared, area Reduced, area Verified and area Cancelled will equal the area Released.

**Area Verified:** An area Verified is an area with *No Known Threat* that has been processed in some manner to increase end-user confidence that Clearance is not required.

**BAC - Battle-Area-Clearance:** A visual search process that raises confidence that an area is free from ERW without applying full Clearance processes. BAC cannot be used where the Task Assessment determines that there may be any anti-personnel mines or pressure sensitive devices.

**BACS – Battle-Area-Clearance Subsurface:** A rapid search process involving the use of metal-detectors that raises confidence that an area is risk free from ERW without applying full Clearance processes. BACS cannot be used where the Task Assessment determines that there may be any anti-personnel mines or pressure sensitive devices.

**Capability Test:** A daily test of an MDD Set's ability to find a target in ground similar to that in which it will work.

**Clearance, Cleared-area, [mine-Clearance]:** An area can only be called "Clear" when it has been subjected to demining procedures that ensure the discovery and removal of ALL mines and ERW to a specified depth. That depth must be determined during the Task Assessment and must be varied if devices are discovered at unexpected depths as a Task progresses. If the depth processed using any one procedure is less than the requirement, additional procedures must be used to gain confidence that thorough Clearance to the required depth has been achieved before the area can be declared "Clear".

**Confidence building:** This describes one or more demining procedures that do not Clear ground to the standard required in the IMAS but have a cumulative effect such that the operators have confidence that Clearance is not required in the processed area. The minimum level of confidence required is that those who make the decision must be happy to walk the land that they have decided does not need to be Cleared.

**Confirmed Hazardous Area (CHA):** In the IMAS, this is an area where there is compelling evidence that there is a mine/ERW hazard. What constitutes "confirmation" may vary from country to country. Throughout these SOPs, the terms SHA and CHA are virtual synonyms because, when the Task is assigned for demining, it is presumed to have been "confirmed" as requiring the application of demining assets to the satisfaction of the NMAA.

**Demining accidents/incidents:** As defined in the IMAS, the distinction between demining "accidents" and "incidents" has caused confusion. In these SOPs, the terms are used to mean the same thing. A demining accident or incident is an unintended detonation at a Task. It is also any deliberate detonation that causes injury.

**Clearance Depth:** Unless otherwise directed by the NMAA or client, the minimum *Clearance Depth* is 13cm below the original ground level. This may be varied as long as the NMAA, client or end-users agree to the change.

**Defined Hazardous Area:** According to the IMAS, a defined hazardous area is an area that is mapped and that must be demined using proven Clearance procedures. DHA are theoretically parts of an SHA/CHA that is defined during the first phase of Clearance, which is Technical Survey. There

may be more than one DHA in one DHA/CHA. Fully defining the perimeter of a mined area is often not possible until after Clearance, so DHA may not be a useful pre-Clearance concept.

**Demining Task:** A Task where the processing of some or all of an area is required in order to prepare the ground for safe Release.

**Device(s):** The term “Devices” is used to cover mines and ordnance whether fuzed, fired or otherwise, and all explosive devices whether mass-produced or improvised. The acronym ERW is also used for all devices except mines.

**Explosive Remnants of War (ERW):** As defined in international treaties, the expression Explosive Remnants of War covers all explosive devices, fired or unfired, fuzed or unfuzed, apart from mines.

**High Threat Area:** A part of a Task where there is a confirmed presence of mines or ERW. The is also sometimes called a Confirmed Hazardous Area or CHA.

**Low Threat Area:** A part of the Task where there is a possible presence of mines or ERW. Areas surrounding *High Threat Areas* are often Low Threat Areas.

**MDD - Mine Detection Dog (also EDD – Explosive Detection Dog):** An MDD is a dog that has been trained to detect various target substances related to mines and ERW. The target substances include specific mines, certain types and quantities of explosives, surface and sub-surface ordnance, and fragments of mines and UXO.

**MDD Handler:** A person who has been trained and certified to work with MDD using the processes and procedures described in the MDD SOP. Handlers must also be experienced in the maintenance of their MDDs' health and hygiene.

**MDD Set:** An MDD and its MDD Handler. A Handler may have two MDD, each of which is a separate MDD Set. Both Handlers and MDD must be suitably trained and accredited for the duties they will perform.

**MDD Team:** An operational unit comprising one or more MDD Sets and a manual demining capacity.

**MDD Trainer:** An MDD Handler that is trained, authorised and certified to plan and implement training of MDDs and of MDD Handlers in accordance with approved methods.

**MDD Training:** In these SOPs, MDD training describes things done to improve or to maintain the MDD's working capabilities and standards. These SOPs do not cover the initial training of a dog so that it can become an MDD.

**No Known Threat (sometimes known as “No Known Risk”):** Any area that is not a part of a Task area presents *No Known Threat*. The term may also be applied to any part of a Task where there is no evidence of the presence of explosive hazards.

**National Mine Action Authority (NMAA):** The national organisation mandated by the national government to control and monitor mine action activities.

**Procedure:** Demining procedures are ways of processing the ground. Searching with metal-detectors or MDDs are demining procedures. Ground processing with demining machines are also demining procedures. One or more procedure can be applied to process the same ground to give confidence that the area can be Released. Not all procedures, or combinations of procedures, equal Clearance.

**Releasing land:** The procedures by which a Task can be released as either:

- a) *Cleared* to a known depth;
- b) *Reduced* by processes that result in confidence that Clearance is not necessary;
- c) *Verified* as having *No Known Threat*; or
- c) *Cancelled* as having *No Known Threat*, so having no reason to process the ground.

**Risk Management:** Task risk management is concerned to identify, apply and complete the demining procedures with no more than a *Tolerable risk*.

**Safety-distance:** The distance at which staff must be from a deliberate detonation in order to make the risk of severe injury tolerable. See also *Working-distances*.



**Suspected Hazardous Area:** at the start of a demining Task, the entire Task area is often known as a SHA. As the Task Assessment is conducted, and as work progresses, the status of parts of the area may change with parts becoming Confirmed Hazardous Areas (CHA) that should be processed using proven Clearance procedures. Public access to a SHA/CHA must be restricted.

**Task:** A Task that may be a Demining Task or a Technical Survey Task, or both.

**Task (Task site):** Any place where the ground is processed to find mines and ERW during any demining activity. The perimeter of the Task site must be accurately recorded on the Task map and on the ground. When a task is linear (as with routes), the perimeter may be marked and recorded as work progresses.

**Task Folder:** The NMAA (or other client) must provide a Task Folder containing all relevant survey data about the Task being undertaken. Information gathered in the Task Assessment will be added to the Task Folder to allow informed decisions about the resources that will be needed to conduct the Task efficiently. The Task Folder may include contractual agreements about the procedures that must be conducted at a Task.

**Task Release Plan:** The plan for all activity that will take place in a Task area. It includes maps of areas that will be Cleared, Reduced, Verified or Cancelled. The *Task Release Plan* is revised as work progresses and more becomes known about the Task area.

**Task Risk Assessment (TRA):** *Task Risk Assessment* takes account of all available information about the Task Area. It includes making a site assessment. As the Task progresses, more information becomes available, so *TRA* is an ongoing activity.

**Technical Survey Task:** A Task where Technical Survey procedures are used to determine parts of the area with *No Known Threat* and other *Confirmed Hazardous Areas*. Technical Survey should precede Clearance at all Tasks where a separate Technical Survey has not been conducted. Technical Survey must be conducted using procedures that do not put staff at any greater risk than they are during clearance. When staff walk the ground, as during MDD or manual demining procedures, proven Clearance procedures must be used to process the ground on which they walk.

**Tolerable Risk:** The level of risk that is acceptable is the level that is “tolerable”. For example, on all land Cleared to a known depth, the Tolerable Risk is the risk that mines and ERW may remain beneath that depth.

**Working distances:** The distance from each other at which staff working in a hazardous area must be in order to make the risk of severe injury if another person detonates a device tolerable. Because no deliberate detonations occur and because accidental detonations are rare, *working distances* are shorter than *safety distances*.

## Should, Must & Shall

Throughout this document the distinction between the terms “should” and “shall” that is used in the IMAS is adopted.

When “*shall*” or “*must*” is used, everyone working to these SOPs must follow the procedure as they are written. No variation is permitted.

When “*should*” is used, everyone working to these SOPs must follow that procedure unless they have a reason to vary it that has been approved by the senior staff with operational responsibility. Variations must be recorded in writing in the Task Release Plan and the person(s) making the variation must be identified.

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## **DEFINITIONS; ACRONYMS; Should, Shall and Must**

Each Chapter has its own detailed table of contents at the start.

**CHAPTER 1:** *[Demining group name]*: This Chapter introduces *[Demining group name]*, describes its internal training courses, Quality Management philosophy and lists the responsibilities of all key staff. The SOP revision procedure is also covered.

**CHAPTER 2: SAFETY:** This Chapter introduces the integrated Risk Management approach, PPE requirements, and the management of Visitors at Task sites. It also details the calculation of working-distances and safety-distances, and describes both the communication requirements and the approved methods of communication.

**CHAPTER 3: RELEASING LAND:** This Chapter defines the criteria for releasing hazardous areas, or part of them, by Clearance, Reduction, Verification or Cancellation. It defines the Task Assessment, Technical Survey and Task Risk Assessment processes. The Task Release Plan and the final release of the land are also covered.

**CHAPTER 4: TASK SITE PREPARATION:** This Chapter covers the requirements for preparation at a Task site. It covers the CASEVAC exercise and details the safe-area features required at various kinds of Task.

**CHAPTER 5: MARKING SYSTEMS:** This Chapter covers a range of approved marking systems including pickets, painted stones and flags. The variations required for manual demining, MDD and demining machines are also described. The permanent survey marking required at all Task sites is described in detail.

**CHAPTER 6: MANUAL DEMINING OPERATIONS:** This Chapter describes all aspects of manual demining deployment, covering approved procedures from vegetation removal and the use of metal-detectors to area excavation in detail. BAC, BACS and MDD-support are covered, along with procedures to deal with obstructions in the Task area and the discovery of human remains. It also covers CASEVAC procedures during manual demining.

**CHAPTER 7: MECHANICAL DEMINING:** This Chapter describes general principles behind the use of demining machines and the various mechanical demining procedures commonly used. It describes the management of mechanical assets, then gives detailed procedural instructions for a range of machines. The Chapter also covers CASEVAC and machine recovery in the event of an incident involving a machine.

**CHAPTER 8: MINE DETECTION DOGS:** This Chapter provides detailed operating procedures for the deployment of MDD, covering search patterns, training requirements, accreditation, healthcare and the varied requirements of MDD Team management. The Chapter also covers MDD CASEVAC procedures.

**CHAPTER 9: INTEGRATED SYSTEMS:** This Chapter describes the integration of machines and MDD with manual demining operations, the variations to stand-alone procedures that are required, and the kind of Tasks that can be conducted using integrated systems.

**CHAPTER 10: DESTROYING MINES AND ERW:** This Chapter covers the destruction of mines and ERW by explosive demolition, destruction in fires and destruction using chemical burning. Directions for the storage, transportation and use of explosives is given along with render safe procedures for some mines.

**CHAPTER 11: MEDICAL SUPPORT:** This Chapter describes the minimum medical support requirements for field operations. It includes a list of compatible blood groups for safe transfusion and describes accident investigation procedures.

**CHAPTER 12: DOCUMENTATION:** This Chapter gives examples of many of the required documentation and reporting formats used.

**ANNEX A: MRE (Mine Risk Education):** This Annex includes a set of SOPs for a national MRE programme and a separate SOP for a demining group conducting MRE independently.