

AMAS 19

Second Edition
August 2007

Demolition of Mines and UXO

MACCA
House#95, Street Jeem,
Wazir Akbar Khan Avenue
Kabul, Afghanistan
E-mail: mapa@MACCA.org

CONTENTS

AMENDMENT RECORD.....	3
MANAGEMENT OF AMAS AMENDMENTS.....	3
DEMOLITIONS OF MINES AND UXO	4
19.1 INTRODUCTION.....	4
19.2 SCOPE.....	4
19.3 COORDINATION AND CONTROL.....	4
19.4 CONDUCT OF DEMOLITIONS	5
19.5 SENTRIES.....	5
19.6 CHARGES PLACEMENT	5
19.7 SAFETY	6
19.8 LARGE SCALE OPEN BURNING AND OPEN DETONATION (OBOD)	7
ANNEX A - UXO DANGER AREAS FOR VARIOUS PROTECTIVE WORKS	8
ANNEX B - TABLE 2 EXPLOSIVE CHARGE PLACEMENT.....	10

Warning

The Afghanistan Mine Action Standards (AMAS) are subject to regular revision. This document supersedes all versions of the AMAS published prior to the cover date. Users should contact MACCA (mapa@MACCA.org) to obtain the latest approved version of AMAS.

Copyrights Notice

The Afghanistan Mine Action Standards (AMAS) document is produced by MACCA on behalf of the government of Afghanistan. Neither this document nor any extract from it, may be reproduced, or transmitted in any form, or by any means, without explicitly citing the source, edition number and date (i.e. AMAS/MACCA – Edition II – July 2007). For any other eventuality please consult with MACCA.

This document is not to be sold.

Programme Director
United Nations Mine Action Centre
Kabul - Afghanistan
Email: mapa@MACCA.org

Demolitions of Mines and UXO

19.1 Introduction

19.2.1 As a general rule all buried and armed mines incorporating cocked striker mechanisms are to be destroyed in-situ. However an exception to this rule will be the case where mines are mechanically sifted or sieved from bunds and earth mounds. In this case they may be remotely moved a short distance with the use of an accredited mine grab or claw to a demolition pit and then destroyed. All other mines may be manually neutralized providing that they are neutralized in accordance with accredited and approved SOP's (mine specific), and are physically checked for booby traps prior to removal (pulling drill for anti-tank mines). Destruction of located mines/UXO will be carried out at the end of each day or at a prearranged time daily. Mines should not be stored or transported overnight before their destruction. All mines should be destroyed on the day that they are found unless a specific safety hazard (or lack/limited amount of explosives) prevents this. Any mines or UXO located and not destroyed on the day are to be marked and the MACCA/AMAC notified as to the reason why it cannot be destroyed that day.

19.2.2 Surface laid mines incorporating a MUV type fuze may, if necessary, be moved a short distance to aid safe demolition. This is providing that the mine is deemed safe to move by a qualified site Supervisor/TL and that the fuze must be sleeved and pinned. On no account are buried mines incorporating an MUV or cocked striker type fuze to be manually excavated and moved for demolition.

19.2.3 Live fuzes incorporating a cocked striker mechanism, which have become separated from a mine, are generally to be destroyed in-situ. However, if deemed safe to move by a site Supervisor/TL to do so, they may be moved short distances providing that they are sleeved and pinned or they are moved with an accredited removal tool/grab.

19.2 Scope

19.2.1 This AMAS contains the guidance and policies for the demolition of mines and UXO during demining operations in Afghanistan.

19.3 Coordination and Control

19.3.1 Prior to any demolitions or task involving the firing of an explosive charge, the respective AMAC shall be informed of the location and time of demolition, quantity and type of explosive/munitions.

19.3.2 All mine/UXO clearance Supervisor/TL must have an approved qualification in demolitions for the mines/UXO being destroyed. The Supervisor/TL is ultimately responsible for the co-ordination and control of all demolition activities. This is to include the activities listed below, both in the field and at training demolition ranges.

- a) Selection and clearance of the demolition area.
- b) Handling of explosives.
- c) Testing of safety fuse and electrical cable.
- d) Preparation and placement of all explosive charges.
- e) Maintaining standards in accordance with safety regulations (including the co-ordination and control of sentries).

- f) In addition to the requirements (if applicable) of AMAS Chapter 20, Central Disposal Site, the clearance organization conducting demolitions is to warn the required local authorities, local military establishments, police stations and surrounding residences of the demolition.
- g) Control of the firing.
- h) Clearance of the demolition area after detonation of charges.
- i) Completion of reports.

19.4 Conduct of Demolitions

19.4.1 Demolitions are to be planned and conducted in the following sequence:

- a) Identify target.
- b) Plan cordons, brief sentries and warn local people and authorities.
- c) Prepare demolition charge.
- d) Establish a safety cordon around the danger area.
- e) Place charges.
- f) Warn sentries and local people that a demolition is about to occur.
- g) Observe area.
- h) Initiate demolition if "all clear".
- i) All personnel are instructed to look up and observe for falling fragments or debris as a result of the demolitions.
- j) Check demolition safely completed.
- k) Lift cordon.

19.5 Sentries

19.5.1 Sentries are critical to the safety of demolitions, are to be positioned to at least visually cover all entry points of the cordon and set sufficiently clear of the demolition site and danger areas. Sentries are to be carefully briefed about their duties, in particular about warnings and stand-down instructions. They are to be equipped with communications to reach the Supervisor/TL and each other. Radios must not influence demolitions, and are to be tested before and after the sentries are posted.

19.6 Charges Placement

19.6.1 If mines/UXO are buried, only the minimum amount of soil should be removed to create access to the mine/UXO for identification and disposal purposes. The demolition explosive charge must be **placed as close as possible**, without touching the mine/UXO.

19.6.2 All explosive charges used for the destruction of mines/UXO in-situ are to be calculated to be of sufficient quantity to ensure complete destruction. The type, age and origin of explosives used may dictate the size of charge.

19.6.3 Ensure that shock-wave transmission is directed to the main explosive charge of the mine/UXO. The charge should also be placed so as to guarantee that the blast and fragmentation are directed away from vulnerable areas. Whenever possible tamping should be used to arrest the effects of detonation.

19.6.4 In order to achieve precise control, electrical initiation should always be the primary method of firing explosive demolitions. Electrical initiation of mines/UXO in a minefield is not always practical; however, every attempt should be made to safely use electrical initiation systems.

19.7 Safety

19.7.1 The following **minimum** safety rules are to be observed during demolitions.

- a) The minimum number of persons will be employed in the preparation of the charges; all other personnel will stay at the firing point or place of safety until the site Supervisor/TL instructs otherwise.
- b) Smoking within 30 m of explosive is forbidden. Designated smoking areas are to be nominated.
- c) The team Leader shall maintain physical control of all demolition firing sets e.g. Demolition Remote Firing Devices etc, at all times throughout the demolition procedure.
- d) A qualified person shall be appointed by the Supervisor/TL to be in charge of explosives and accessories at the site, he/she is to keep a record of explosive issued and explosive returned after demolition.
- e) In case of a misfire, wait ten minutes for electrical misfire and thirty minutes for non-electrical. After the appropriate time the site Supervisor/TL and a safety observer (who stays back from the demolition area, but within sight of the site Supervisor/TL), will approach the charge and place a fresh charge next to the charge that has not fired. The charge that has not fired must never be touched. Under no circumstances are firing circuits that have misfired, to be handled or used in subsequent demolitions.
- f) All storage and transportation of explosives is to be in accordance with AMAS Chapter 18, Storage, Transportation and Handling of Explosives.
- g) Detonators are to be treated with care and always kept separate from explosives (including detonating cord) until they are introduced into the planned firing circuit/demolition train. Detonators must not be left unattended at any time. This is to include before and after attachment to detonating cord or safety fuse and pending attachment or insertion into a charge. Neither detonators nor safety fuse will be buried under any circumstances.
- h) Detonating cord is to be treated as explosives.
- i) Electrical firing cable must be a minimum of 100m in length (with the exception of firing leads for remote firing devices), two-strand cable, with a resistance of 8 to 10 ohms. It is always to be tested for continuity and discontinuity before use.
- j) The minimum danger areas applicable to the mines/UXO being destroyed and the explosive charges used to destroy them are to be observed at all times. Sandbags may be used to reduce the effects and influence the direction of any shrapnel or fragmentation mines. Minimum safety distances shall always be carefully determined and adhered to.
- k) During demolitions, all personnel (within the hazard area) are to take cover and look upward for falling debris when the shot is fired.
- l) After demolitions, the site Supervisor/TL will go forward to check that all charges have fired correctly and to announce the all clear.

19.8 Large Scale Open Burning and Open Detonation (OBOD)

19.6.1 **For** large scale open burn and open detonation operations, the rules and regulation as detailed in AMAS Chapter 20, Central Disposal Operations shall be adhered to at all times, particular attention should be made to the revised way of calculating the **fragmentation and evacuation safety distances**. Clarification on any part of can be sought from the QA Section MACCA/AMAC.

Annex A - UXO Danger Areas for Various Protective Works

Serial	Type of UXO	Danger Area Radius in Metres		
		Item on the surface adequately sandbagged	Item in undercut trench adequately sandbagged	Item on surface with no protective works
1	Hand Grenades HE Rifle Grenades HE	100	100	250
2	RPG series Grenades Hand thrown AT Grenades	250	200	500
3	Mortar Bombs 50 mm to 82 mm	100	100	500
4	Mortar Bombs 100 mm to 120 mm	250	200	1000
5	Mortar Bombs 160 mm to 240 mm	500	400	1250
6	Projectiles up to 100 mm	300	250	1000
7	Projectiles 100 mm to 180 mm	600	500	1250
8	Rockets up to 100 mm	250	200	1000
9	Rockets 100 mm to 240 mm	500	400	1250
10	Sub-Munitions	250	Never move	500
11	Missiles	EOD Team only		
12	Aerial Dropped Bombs	EOD Team only		

Table 1 -General Notes

It shall be emphasized that the details given in the table are not fully comprehensive and the distances shown are not intended to provide for every possible situation. The information therefore can be used only as a general guide by the EOD/BAC Team Leaders who must deal with each case on its merits and in the light of his technical knowledge and experience of UXO and explosives. IF IN DOUBT SEEK ASSISTANCE

The danger areas given in the table are those from which all personnel, animals and easily damaged moveable equipment should be removed.

Unless adequate protective cover is available, the firing point must be cited outside the danger area. In selecting cover, which must provide full protection to personnel against splinters and ricochets, due consideration must be given to the probable angle of descent

and size of fragments anticipated. Firing points positioned inside the danger area must always provide fully effective frontal and overhead cover.

Where the site of a demolition is within a building or enclosed area due regard must be given, when assessing the danger area, to the extent to which the sandbags will contain debris resulting from the demolition and to the thickness of nearby walls and the material from which they are constructed. In addition full consideration must be given to the presence and position of windows, as the danger from flying fragments of glass is a serious one.

Where the item to be destroyed is known in advance to be filled with White Phosphorus the wind direction must also be taken into account. The danger area to be cleared, although related directly to the type of object and the explosive charge used, should be elongated in a downwind direction as burning phosphorus and a significant amount of highly toxic smoke will be carried by the wind. Furthermore the serious incendiary effect produced by white phosphorus must not be overlooked in wooded areas or those of high fire risk.

Annex B - Table 2 Explosive Charge Placement

Item	Type of UXO	Position of Explosive Charge	Explosive
1	Hand Thrown Grenades HE or WP	Grenade body	
2	Rifle Grenades HE or WP	Base of head	
3.	Hand Thrown AT Grenades	Mid way on body to collapse Shaped charge	
4	RPG series AT Grenades	Mid way on body to collapse Shaped charge	
5	Mortar Bombs HE and WP	Bomb body adjacent to faze	
6	Projectile HE Nose fuzed Projectile HESH below 120 mm	(1) On the Ogive or (2) Forward of Driving Band	
7	Projectile HE Nose Fuzed Projectile HESH above 120 mm	(1) On the Ogive or (2) Forward of Driving Band	
8	Projectile HE Base Fuzed up to 120 mm	Forward of driving band	
9	Projectile HE Base Fuzed over 120 mm	Forward of driving band	
10	Projectile HEAT	Between Ogive and main body to collapse shaped charge	
11	Projectile APHE and SAPHE	On the boat tail or rear of main body	
12	Rockets AT	Between cone and main body to collapse shaped charge and in centre of rocket motor	
13	Rockets HE	One charge on	

Item	Type of UXO	Position of Explosive Charge	Explosive
		main body One charge on rocket motor	
14	Sub-Munitions AT	Forward on main body to collapse shaped charge	
15	Sub-Munitions HE and Fragmentation	On main body	
16	Pyrotechnic natures	On main body	
17	Fuzes	On main body	
18	Mines AP	On side of main body	
19	Mines AP Fragmentation	On side of main body	
20	Mines AT	On side of main body	

Table 2 - General Notes

- a) It is emphasized that the details given in the table are not fully comprehensive; neither do they refer to all UXO.
- b) The third column gives the position in which the charges should, whenever possible, be placed.
- c) When placing the explosive charge, it must be ensured that there is no risk of the object being disturbed during the process. Where the slightest risk of movement exists, the charge will be placed as close as possible to the position given in the table without touching the item.