

AMAS 06.07

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Demolition of Mines and ERW

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Demolition of Mines and ERW

1. Introduction

Traditionally in mine action the demolition of explosive ordnance (EO) including mines and explosive remnants of war (ERW) is undertaken as part of the wider mandate for explosive ordnance disposal (EOD) operations. In this chapter the focus is on the disposal of the majority of ERW found during demining operations which are mines and small items of ERW and EO such as sub-munitions, grenades and mortar ammunition.

Note: The wide variety of size and complexity of ERW requires special attention to be given to the management of EOD and the qualifications required to deal with these varying devices are detailed in AMAS 06.03 Explosive Ordnance Disposal.

2. Scope

This AMAS covers the standard guidance for the demolition of mines and ERW during demining operations in Afghanistan.

3. Coordination

In the present political climate within Afghanistan it is essential that the coordination of "live demolition" activities is undertaken with a number of agencies including the Government of the Islamic Republic of Afghanistan, Afghan National Security Forces, International Military and other agencies including the United Nations. Prior to any demolitions or task involving the firing of an explosive charge, the respective AMAC shall be informed in advance by the clearance organisation, of the location and time of demolition, quantity and type of explosive/munitions being utilised in the demolition.

4. Qualifications

The demolition of mines and ERW shall only be undertaken by personnel who hold the appropriate level of qualification and these qualifications shall be required to have been achieved through successfully completing an appropriate training course, approved by MACCA, conducted by an accredited organization operating in Afghanistan or qualifications gained elsewhere that have been recognized by the MACCA and are in accordance with the requirements of AMAS Chapter 04.01, Training & Qualifications.

5. Responsibility of the Demining Organisation

All demining organisations performing the destruction of mines/ERW shall appoint an individual, normally a supervisor/Team Leader (TL) who shall be ultimately responsible for the co-ordination and control of all demolition activities at the demining worksite. The duties and responsibilities of the Supervisor and TL are detailed in Annex A to this chapter.

6. Daily Destruction of Mines/EO

Destruction of mines/ERW (including fuses) located during daily clearance operations should be carried out at the end of each working day unless a specific safety hazard or lack of available explosives prevents this. Mines/ERW therefore should not normally be stored or transported overnight before their destruction. Any mines or ERW located and not destroyed on the day shall be marked and the AMAC immediately notified as to the reason why it cannot be destroyed that day and what precautions are being taken.

7. Destruction in-situ

As a general rule all buried and armed live mines and fuses incorporating cocked striker mechanisms shall be destroyed in-situ, however an exception to this rule may be made in the following cases;

- a) 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 method (i.e. mine grab or claw) to a demolition pit and then destroyed.
- b) Live fuses incorporating a cocked striker mechanism, which have become separated from a mine. If deemed safe to move by the Supervisor/TL to do so, then they may be moved short distances providing that they are sleeved and pinned or they are moved with an accredited method.

8. Neutralisation of Mines/ERW

All mines other than mines with cocked striker mechanisms may be manually neutralized providing that they are neutralized in accordance with accredited and approved SOP's (mine specific), and are physically checked for anti handling devices prior to removal (i.e. by employing a pulling drill for anti-tank mines).

9. Movement of Mines/ERW

Surface laid mines/ERW incorporating a MUV type fuse may, if necessary for safety reasons, be moved a short distance to aid their safe demolition. This shall only be providing that the mine/ERW is deemed safe to move by the Supervisor/TL and that the fuse shall be sleeved and pinned. On no account shall buried mines/ERW incorporating an MUV or cocked striker type fuse be manually excavated and moved for demolition.

10. Placement of Charges

If a mine/ERW is buried, then only the absolute minimum amount of soil shall be excavated and removed to create access to the mine/ERW for identification and disposal purposes. The demolition explosive charge shall be placed as close as possible, without physically touching the mine/ERW.

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

The Supervisor/TL shall ensure that shock-wave transmission is directed to the main explosive charge of the mine/ERW. The charge shall also be placed so as to guarantee that the blast and fragmentation are directed away from vulnerable areas such as buildings and installations. Whenever possible, tamping should be used to assist the effects of detonation.

11. Electrical Initiation

In order to achieve precise control, electrical initiation should always be the primary method of firing explosive demolitions. Non-electrical initiation of mines/ERW may be used if electrical initiation is not available.

12. Use of Sentries

Sentries are critical to the safety of demolitions and shall be positioned to visually cover all entry points of the cordon, sufficiently clear of the demolition site and outside of the danger area.

Sentries shall be carefully briefed about their specific duties, in particular about warning systems and messages to be used and stand-down instructions. They shall be equipped with communications that has been tested and has the ability to successfully communicate with the Supervisor/TL and each other. The radio frequency of the radios shall not be capable of influencing the electrical firing circuit of the demolition.

13. Demolition Site Safety

The need to reduce risk and provide a safe working environment when dealing with the destruction of mines/ERW with explosives is fundamental to mine action. The provisions for demolition site safety including safety distances for some generic ordnance are detailed in Annex B to this chapter.

Annex A

Responsibilities of the Supervisor/Team Leader

Supervisor/Team Leader (TL)

A Supervisor/TL nominated by the demining organisation shall be ultimately responsible for the safe coordination and control of the demolition activity performed by their team. This coordination and control shall include the following activities;

- a) Selection and clearance of the demolition area.
- b) Liaison with local peoples in the area of the demolition.
- c) Securing the demolition firing device on his/her person.
- d) Handling of explosives.
- e) Testing of detonators, safety fuse and electrical cable(s).
- f) Preparation and placement of all explosive charges.
- g) Issuing of orders and placement of sentries.
- h) Control of the firing of the demolition.
- i) Clearance of the demolition area after the detonation of explosive charges.
- j) Completion of all necessary documentation and reports.
- k) If required, meeting the specific requirements of AMAS 06.08, Central Disposal Site,

Sequence of a Demolition Practice

The sequence of events for a demolition practice shall include but is not exclusive too;

- a) Identify the target(s) to be destroyed.
- b) Plan cordon's, brief sentries and warn local people and authorities.
- c) Prepare demolition charge(s).
- d) Test explosives and accessories.
- e) Establish a safety cordon around the danger area.
- f) Place charge(s).
- g) Warn sentries and local people that a demolition is about to occur.
- h) Observe area.
- i) Initiate demolition if "all clear".

- j) Instruct all personnel to “look up” and observe for falling fragments or debris immediately prior to firing of the demolition.
- k) If the demolition is successful then the Supervisor/TL shall move forward and visually check demolition has been successfully completed.
- l) If not successful then wait the appropriate time depending upon the means of initiation before moving forward to check the demolition and re-fire if appropriate.
- m) When a successful demolition has occurred, advise sentries and lift cordon around the demolition site.

Annex B Demolition Site Safety

Safety Rules

The following minimum safety rules shall be observed during demolitions.

- a) The minimum number of persons shall be employed in the preparation of explosive charges; all other personnel shall remain at the firing point or place of safety until the site Supervisor/TL instructs otherwise.
- b) Smoking shall not occur within 30 metres of any explosives. Designated smoking areas shall be nominated by the Supervisor/TL.
- c) The Supervisor/TL 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 suitably qualified person shall be appointed by the Supervisor/TL to be in charge of explosives and accessories at the site. He/she shall keep a record of all explosive issued and any explosive returned after demolition.
- e) In case of a misfire the Supervisor/TL shall wait ten minutes for an electrical misfire and thirty minutes for non-electrical misfire. 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), shall 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 shall firing circuits that have misfired be handled or used in subsequent demolitions.
- f) All storage and transportation of explosives shall be in accordance with AMAS 07.04, Storage, Transportation and Handling of Explosives.
- g) Detonators shall be treated with care and always kept separate from explosives until they are introduced into the planned firing circuit/demolition train. 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 shall be buried under any circumstances.
- h) Detonating cord shall be treated as explosives.
- i) Electrical firing cable shall be two-strand cable, with a resistance of 8 to 10 ohms and a minimum of 100m in length (with the exception of firing leads for remote firing devices). It shall always be tested for continuity and discontinuity before use.
- j) The minimum danger areas applicable to the mines/ERW being destroyed and the explosive charges used to destroy them shall be observed at all times. Danger areas for various protective works are detailed in the table at Appendix 1 to this Annex.
- k) The firing point shall be sited outside the danger area, unless adequate protective cover is available. In selecting cover, due consideration shall be given to the provision of full protection to personnel against splinters and ricochets therefore the probable angle of descent and size of fragments shall be anticipated. Firing points positioned inside the danger area shall always provide fully effective frontal and overhead cover.

**Appendix 1 to Annex B
Danger Areas for Various Protective Works**

Type of ERW	Danger Area Radius in Metres		
	Item on the Surface Adequately Sandbagged	Item in Undercut Trench Adequately Sandbagged	Item on Surface with no Protective Works
Hand Grenades HE and Rifle Grenades HE	100	100	250
RPG series Grenades and Hand thrown AT Grenades	250	200	500
Mortar Bombs 50mm to 82mm	100	100	500
Mortar Bombs 100mm to 120mm	250	200	1000
Mortar Bombs 160mm to 240mm	500	400	1250
Projectiles up to 100mm	300	250	1000
Projectiles 100mm to 180mm	600	500	1250
Rockets up to 100mm	250	200	1000
Rockets 100mm to 240mm	500	400	1250
Sub-Munitions	250	Never move	500

Note: The distances given in the table above are not fully comprehensive to every munition encountered in Afghanistan and are not intended to provide for every possible situation. The information therefore should only be used only as a general guide by the Supervisor/TL who shall deal with each case on its merits and in the light of his technical knowledge and experience of ERW and explosives. IF IN DOUBT SEEK ASSISTANCE