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Explosive Ordnance Disposal

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Contents

AMENDMENT RECORD	4
MANAGEMENT OF AMAS AMENDMENTS.....	4
17.1 INTRODUCTION	5
17.2 SCOPE	5
17.3 SCOPE OF EOD	5
17.4 AUTHORITY FOR EOD.....	5
17.5 DEMINING WORKSITE SUPERVISORS	6
17.6 AXO AND STOCKPILE DESTRUCTION OPERATIONS	6
17.7 AUTHORITY FOR DISPOSAL OF SPECIALIZED ITEMS	6
17.8 RESPONSIBILITIES FOR SUPERVISORS OF DISPOSAL TASKS	7
17.9 MOVEMENT OF ORDNANCE	7
17.10 RENDER-SAFE AND LOW-ORDER TECHNIQUES	7
17.11 MEANS OF INITIATION	8
17.12 PROTECTIVE WORKS	8
17.13 PERSONAL PROTECTIVE EQUIPMENT	8
17.14 STANDARD OPERATING PROCEDURES	8
17.15 QUALITY ASSURANCE	9
17.16 REPORTING OF ORDNANCE	9
ANNEX A - AUTHORITY LEVELS FOR EOD.....	10
ANNEX B - MINIMUM SAFETY DISTANCES FOR DISPOSAL OF UXO – SINGLE ITEMS	11

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Explosive Ordnance Disposal

17.1 Introduction

17.1.1 The safe and efficient removal and disposal of ordnance (encompassing mines, UXO and other Explosive Remnants of War (ERW)) is an integral part of mine action in Afghanistan; however, the scope of the problem is such that deminers alone cannot safely and effectively deal with the problem. As such, the UN Mine Action Centre for Afghanistan (MACCA), as the authority for mine action within the country, is charged with the responsibility for the identification and development of procedural, management and safety requirements for all Explosive Ordnance Disposal (EOD) tasks conducted as part of mine action.

17.2 Scope

17.2.1 This chapter describes the policies and procedures that are to be followed for all EOD operations within Afghanistan.

17.3 Scope of EOD

17.3.1 EOD operations involve the detection, identification, field evaluation, render safe, recovery and disposal of all types of ordnance from any country and from any time period. While EOD performs these tasks on all types of ordnance (including mines), it is separate and distinct from demining operations. EOD also specifically covers:

- a) The disposal of ordnance on demining worksites and away from these worksites.
- b) The disposal of stocks of Abandoned Explosive Ordnance (AXO).
- c) Stockpile destruction Open Burning and Open Detonation (OBOD) operations.

17.4 Authority for EOD

Levels of EOD Qualification

17.4.1 There are four levels of EOD qualification within mine action in Afghanistan. Each level requires practical EOD experience before being able to be trained at the next higher level. The four levels of EOD qualification are:

- a) Level 1. A Level 1 EOD qualification enables a technician to locate, uncover, identify and, under supervision, destroy mines in-situ. The Level 1 EOD Technician is only authorized to destroy those mine types for which he has received specific disposal training.
- b) Level 2. A Level 2 EOD qualification enables a technician to undertake the in-situ disposal of single small UXO, such as sub munitions, grenades and mortar ammunition up to 84mm diameter. This includes High Explosive, Anti-Tank (HEAT) munitions, but excludes White Phosphorus (WP). A minimum of two years of EOD Level 1 experience (after graduating from an accredited EOD Level 1 course) is required before attending an EOD Level 2 course.

- c) Level 3. A Level 3 EOD qualification enables a technician to dispose of larger UXO, such as rocket, tank gun and artillery ammunition up to 240mm diameter, to include HEAT munitions. Under the direction of a Level 4 EOD technician, a Level 3 EOD Technician is authorized to render safe UXO for safe removal, pending their disposal. A minimum of three years of EOD Level 2 experience (after graduating from an accredited EOD Level 2 course) is required before attending an EOD Level 3 course.
- d) Level 4. A Level 4 EOD qualification is awarded to EOD Technicians that have been trained to destroy the remaining UXO hazards and render safe or low order ordnance with specialist EOD techniques. This includes the bulk disposal of AXO, stockpile munitions and rendered safe UXO. Level 4 EOD Technicians are not authorized to destroy munitions containing Depleted Uranium (DU), liquid propellant, chemical agents and Fuel Air Explosive (FAE) unless they have received MACCA recognized training that specifically deals with these items. A minimum of four years of EOD Level 3 experience (after graduating from an accredited EOD Level 3 course) is required before attending and EOD Level 4 course.

17.4.2 EOD procedures will only be undertaken by personnel who hold the appropriate level of qualification. Qualifications are required to have been achieved through successfully completing an appropriate training course conducted by either the MACCA Training Center or an accredited organization operating in Afghanistan. Qualifications gained elsewhere may be recognized by the MACCA in accordance with the requirements of AMAS Chapter 3, Training & Qualifications.

17.5 Demining Worksite Supervisors

17.5.1 Demining worksite supervisors that have graduated from an accredited Level 2 EOD course are authorized to undertake the in-situ destruction of single, small UXO (up to 85mm diameter), including HEAT munitions but excluding WP.

17.6 AXO and Stockpile Destruction Operations

17.6.1 AXO disposal and OBOD stockpile destruction operations are only to be undertaken with the written approval of the MACCA and under the direct supervision of a Level 4 EOD Technician. When AXO or OBOD stockpile destruction operations are conducted, they will be in accordance with AMAS Chapter 20, Central Disposal Site.

17.7 Authority for Disposal of Specialized Items

17.7.1 Organizations are to obtain the express written consent of the MACCA to undertake disposal, low order or render safe operations involving items suspected or known to contain:

- a) Depleted Uranium.
- b) Liquid Propellant.
- c) Chemical Agents.
- d) Fuel Air Explosive.

17.7.2 When such operations are approved by the MACCA, the operations will only be conducted by a Level 4 EOD Technician with the appropriate specialized training.

17.7.3 Organizations conducting such EOD operations are to read and familiarize themselves with the latest versions of TNMA-series documents. The TNMA are available from the MACCA or can be downloaded from the IMAS website at www.mineactionstandards.org.

17.8 Responsibilities for Supervisors of Disposal Tasks

17.8.1 The supervisor of a disposal task is to ensure:

- a) The task is adequately planned.
- b) When safe to move ordnance is to be disposed of, an appropriate disposal site is selected. See AMAS Chapter 20, Central Disposal Site for selection criteria and site layout.
- c) Medical support is available in accordance with the requirements of AMAS Chapter 30, Medical Support & Casualty Evacuation.
- d) Communications are established and maintained in accordance with AMAS Chapter 24, Communications.
- e) Explosives and ordnance are to be transported, stored and handled in accordance with AMAS Chapter 18, Storage, Transportation & Handling of Explosives.
- f) Fire fighting equipment, appropriate to the assessed fire risk, is available on site. This may include the provisions of bulk stocks of water for fire fighting purposes.
- g) Liaison is undertaken with local communities and authorities.
- h) Protective works are used, as required.
- i) All personnel involved in the disposal operation are appropriately qualified.
- j) Accurate disposal records are maintained.
- k) The disposal site and immediate environs are inspected after the demolition, declared safe from UXO and refurbished appropriately.

17.9 Movement of Ordnance

17.9.1 In-situ disposal will be the primary means of dealing with unsafe ordnance, unless factors such as proximity to communities, buildings, important facilities or the inability to achieve required safety distances prohibit its use. In-situ disposal negates the inherent risk to personnel during the movement of ordnance.

17.9.2 When it is required to move ordnance, it will only be moved from the original location if it has been assessed and identified as safe-to-move by a qualified EOD technician, in accordance with the authority levels included in Annex A and section 17.4.1. All emplaced mines must be removed remotely using a hook and line as a precaution against booby trapping, prior to movement.

17.9.3 When ordnance must be destroyed in-situ and there is a risk to property, then protective works shall be used.

17.10 Render-Safe and Low-Order Techniques

17.10.1 Ordnance UXO should normally be destroyed in situ by detonation. If it is not possible to destroy these items in situ, then it may be required to attempt render safe or low order techniques prior to moving it to a suitable central location for disposal.

17.10.2 Render safe and low order techniques should follow MACCA accredited and internationally recognized procedures for the ordnance and the situation encountered. The use of improvised render-safe or low-order techniques is prohibited without approval in writing by the MACCA, unless it is for research and development in a controlled environment.

17.10.3 Render-safe and low-order techniques are only to be carried out by a Level 4 EOD Technician or a Level 3 EOD Technician acting under the direction of a Level 4 EOD Technician.

17.10.4 Before any render-safe activities are performed on ordnance, the ordnance item and fuze(s) must be positively identified. Ordnance or fuzes that cannot be identified are to be reported to the MACCA and no further actions taken with the ordnance until it is positively identified.

17.10.5 When render-safe and low-order techniques are attempted, the safety distance requirements are the same as those as if the item was being disposed of using conventional high order disposal techniques.

17.11 Means of Initiation

17.11.1 Unless there is an electrical or Radio Frequency (RF) hazard in the disposal area, or other conditions prohibit its use, electrical initiation will be used to initiate all demolition charges due to the greater degree of control it provides.

17.11.2 This section does not apply to the training of EOD technicians, which necessitates the use of time fused demolitions.

17.12 Protective Works

17.12.1 Where protective works are required to ensure the protection of property or infrastructure or to prevent the contamination of work areas, the type of protective works used shall be appropriate for the task at hand. The protective works are to be properly designed and constructed so as to achieve the protection required.

17.13 Personal Protective Equipment

17.13.1 The appropriate level of PPE, in accordance with the requirements of AMAS Chapter 22, Personal Protective Equipment, is to be used for all EOD tasks, except where its use will compromise safety.

17.13.2 Due to the large size of the ordnance encountered, the quantity of ordnance and/or the activities that EOD conducts, demining PPE provides insufficient protection for the majority of EOD situations. However, demining PPE should be considered a minimum standard for all EOD operations.

17.14 Standard Operating Procedures

17.14.1 All organizations involved in EOD operations are to develop and utilize MACCA accredited Standard Operating Procedures (SOPs) specific to EOD operations. These SOPs should be specific and address not only what should be done, but also how it will be done.

17.15 Quality Assurance

17.15.1 Quality assurance for EOD is essential for the conduct of safe and efficient operations throughout Afghanistan. All organizations are required to conduct internal Quality Assurance (QA) checks on all their teams on a regular basis preferably once a month, but no later than once every two months. MACCA QA will routinely (typically once a month) conduct external QA evaluations of all EOD teams. QA checks are designed to diagnose any deficiencies in training or operations before they become a hazard.

17.16 Reporting of Ordnance

17.16.1 When mine action organizations have ordnance reported to them (located outside their task site) or they find these items as part of their normal operations, the details are to be reported to the relevant AMAC.

17.16.2 When reporting ordnance to the AMAC, details to be included are:

- a) Location of the item(s) by map reference or GPS reading. A sketch of the location should also be provided.
- b) Type and quantity of item(s). If known, the common name should be provided, if not a detailed description should be provided. If possible photographs should also be provided.
- c) The proximity to populated areas and current risk.
- d) Contact details of local personnel that may assist in locating the item(s).
- e) Any marking of the item(s) or warning signs.

Annex A - Authority Levels for EOD

Category of UXO EOD Technician Level	EOD Technician Level 1	EOD Technician Level 2 and Demining Supervisor	EOD Technician Level 3	EOD Technician Level 4
In-situ Destruction of Mines	Y ^{Note 1}	Y ^{Note 1}	Y	Y
In-situ Destruction of UXO up to 84mm diameter ^{Note 2}	N	Y	Y	Y
In-situ Destruction of UXO up to 240mm diameter ^{Note 2}	N	N	Y	Y
Destruction of UXO containing WP	N	N	Y ^{Note 3}	Y
Rendering Safe of UXO up to 240mm calibre	N	N	Y ^{Note 4}	Y
Rendering Safe and Destruction of Aircraft Bombs	N	N	N	Y
Bulk Disposal of UXO, AXO and stockpile munitions.	N	N	N	Y
Rendering Safe and Destruction of items containing liquid propellants ^{Note 5}	N	N	N	N
Rendering Safe and Destruction of items containing Depleted Uranium ^{Note 5}	N	N	N	N
Rendering Safe and Destruction of chemical munitions ^{Note 5}	N	N	N	N

Notes to table:

- Note 1 - Single item only
- Note 2 - Excludes WP, depleted uranium, and lachrymatory and chemical munitions
- Note 3 - Excludes aircraft bombs
- Note 4 - Under the direction of a Level 4 EOD Technician
- Note 5- Disposal of these items is only to be undertaken with written agreement of the MACCA.

Annex B - Minimum Safety Distances for Disposal of UXO – Single Items

Ammunition	Danger Area – Radius in Metres			Remarks
	Item on Surface Not Tamped	Item on Surface Tamped	Item in Undercut Tamped	
Fuzes (all types)	100	100	100	
Grenade HE (including Rifle Grenades)	300	100	100	
BLU 61, 63, M77 and Mk118	300	100	100	Or equivalent
BLU 77B, 97 and 755	500	100	100	Or equivalent
Shell HE 85mm and below	500	100	100	Incl. HEAT
Shell HE 90mm – 125mm	800	250	200	Incl. HEAT
Shell HE 130mm – 155mm	1000	400	250	
Mortar HE 82mm and below	500	250	150	
Mortar HE 120mm	800	250	200	Incl. 4.2 inch
Rocket 88mm and below	300	150	100	Incl. HEAT
Rocket above 100mm/below 220mm	500	250	150	Incl. HEAT
Rocket 220mm and above	800	500	400	
Bomb aircraft 50kg and below	800	-	400	Note 1
Bomb aircraft above 50kg/below 250kg	1000	-	500	Note 1
Bomb aircraft 250kg to 500kg	1500	-	800	Note 1
Bomb aircraft above 500kg	2000	-	1000	Note 1
Mine AP blast	100	100	100	
Mine AP bounding fragmentation	300	250	100	
Mine AT-Blast	500	250	200	
Mine AT-Shaped Charge	1800	1000	1000	
White Phosphorous Items				
Grenade WP	100	-	-	
BLU 17	100	-	-	
Mortar WP 82mm and below	200	-	-	
Mortar WP 120mm	300	-	-	Incl. 4.2 inch
Shell WP 125mm and below	300	-	-	
Shell WP 130mm and above	400	-	-	
Rocket WP 2.75 and 3.5 inch	300	-	-	
Rocket WP 5 inch	400	-	-	
Igniters WP	300	-	-	
Pyrotechnic Items				
Grenades Smk	200	100	100	Other than WP
Mortar Illum/Smk	200	100	100	Other than WP
Shell Illum/Smk 125mm and below	200	100	100	Other than WP
Shell Illum/Smk 130mm and above	300	150	100	Other than WP
Other Pyrotechnic UXO	100	100	100	
Bomb aircraft incendiary 2kg	100	100	100	
Bomb aircraft incendiary 5kg	300	150	100	

Note 1: To be classed 'undercut and tamped', an aircraft bomb must be buried such that it is covered by a depth of soil at least twice its diameter.