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Central Disposal Site (CDS)

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Amendment Record

Management of AMAS Amendments

The AMAS series of standards are subject to formal review on a yearly basis; however this does not preclude amendments being made within the year for reasons of operational safety and efficiency or for editorial purposes. As amendments are made to this AMAS they will be given a number, and the date and general details of the amendment shown in the table below.

As formal reviews of each AMAS are completed new editions may be issued. Amendments up to the date of the new edition will be incorporated into the new edition and the amendment record table cleared. Recording of amendments will then start again until a further review is carried out.

Amendment Number	Amendment Date	Amendment to Section #	Amendment Details

Central Disposal Site

20.1 Introduction

20.1.1 A Central Disposal Site (CDS) is established in an area for the destruction of safe to move ordnance items and may be utilized by one or more user group.

20.1.2 The purpose of this chapter is to outline requirements necessary for the establishment and correct use of central disposal sites.

20.2 Scope

20.2.1 The chapter stipulates the approving body, conditions, considerations, limits, priorities and principles for the establishment and use of central disposal sites and other disposal sites.

20.3 Selection and Situating of a CDS

20.3.1 A CDS should be selected in consultation between user groups, the MACCA/AMAC, respective Government departments, local authorities, police and surrounding villagers. There are some specific rules governing selection and users are not to commence operations unless written and signed approval is given by the MACCA/AMAC.

20.3.2 The minimum sized CDS shall have a safety distance of not less than 1,000m.

20.3.3 Careful consideration should be given to the situating of the CDS, and the following points shall be adhered to.

20.3.4 The land on which the CDS is to be used shall not be in use by the public and shall have no grazing or agricultural value.

20.3.5 The area shall be clear of inhabited buildings and personnel for at least 1,000m in all directions from the demolition site.

20.3.6 Access to the area should be controllable, with the use of warning signs, observation points and sentries.

20.3.7 A suitable protected firing point should be located a minimum of 300m from the demolition site and situated where maximum visibility to the whole area is available. A protected firing point is not necessary if a remote controlled firing device is being utilized.

20.3.8 Suitable parking and access routes should be available for delivery of the UXO.

20.3.9 Liaison shall be conducted with local authorities and Government, Police and surrounding villagers.

20.3.10 The location should offer limited or restricted access by local population and situated at a distance from local villages, main roads and farming land.

20.3.11 Probable noise levels, ground shock and blast damage to dwellings, security of the site, presence of nomadic tribes and any other local influences must be strongly considered.

20.4 Approval Of Disposal Sites And Standing Orders

20.4.1 Formal approval and licensing of a disposal site and its associated standing orders is the responsibility of the MACCA. A disposal site shall not be used unless approval and licensing has been provided by MACCA/AMAC. Approval and licensing shall be based on the following considerations:

a) References to publications - All standing orders are in effect the local interpretation of regulations issued by the higher authority (AMAS). Standing orders should not be a reproduction of large slabs of information that are contained in parent publications. Rather they should concentrate on detailing how the regulations are to be applied under local conditions.

b) Maps and grid references - Maps shall be sent to the MACCA Operations Department with the draft standing orders for approval. One map shall include the grid reference, name and location of the site and a second larger scale sketch map of the disposal site showing its layout.

c) Locations of sentries - Sentries have to be cited so that they control all access routes into the disposal site and so that they are posted outside the danger area.

d) Marking of the site - Disposal sites shall be marked with notice boards cited so that they are visible on all possible approaches. In situations where it is impossible to place notice boards on all possible approaches, then sentries covering these areas will be deemed sufficient.

e) Location of the firing point – The firing point unless protected, shall be located outside the danger area. However, where possible the firing point should also be positioned where the Team Leader is able to hear partial detonations.

f) Communications - Good communications shall be in place between all parties involved in the disposal prior to any demolitions taking place.

20.5 Site Standing Orders

20.5.1 The organization responsible for the control of the disposal site is to develop and disseminate 'Site Standing Orders'. The 'Site Standing Orders' are to be provided to organizations using the site prior to the commencement of disposal operations and are to include:

a) The types of disposal operations that may be conducted at the site and the limitations on these operations.

b) The layout of the site including all Control Points and, where necessary, the location of separate areas for conventional demolitions, burning and other specialized disposal operations.

c) The command and control arrangements for the site including the location and manning of sentry points.

d) The safety requirements of the site including authorized access routes to the site, the route to the nearest suitable medical facility, the positioning of warning signs or symbols and the provision of fire-fighting equipment.

e) Where applicable, any requirements and procedures to be followed for the issue of 'Notice to Airmen (NOTAM)'.

f) The communications requirements for the site.

g) The environmental requirements for operations conducted at the site.

h) The requirements for liaison with local authorities and communities before and after disposal activities are conducted.

i) The requirements for post-disposal clearance and maintenance of the site.

j) Any requirements for the maintenance of records of the items disposed of at the site.

20.6 Priorities and Principles

20.6.1 The destruction of munitions and explosives is a potentially hazardous task. The risks are minimised if the correct procedures are followed. If they are not, the possibility of a serious accident becomes very high.

20.7 Priorities

20.7.1 The priorities that shall always be observed are:

a) Safety - of both personnel and property is paramount. If a method is not safe it shall not be used.

b) Security – of both the items destroyed and the serviceable explosives used to destroy them.

c) Accounting - links with security. Any losses of explosives shall be promptly identified, investigated and reported.

d) Speed of Work - shall never be achieved at the expense of the first three priorities.

20.8 Principles

20.8.1 There are many different detailed disposal procedures but certain principles apply to all disposal tasks:

a) Know the ammunition - Know in detail both the item being destroyed and the explosives used to destroy it. Unless the design characteristics of both are known, it will not be possible to determine a safe and effective means of disposal.

b) Plan the task carefully - Do not leave the planning until arrival at the disposal site. Work out the programme and procedures in detail well in advance.

c) Create a safe working environment - Create and maintain a working environment that is safe for the disposal party, other personnel, local population, property, livestock, vehicles and equipment.

d) Give and obey directions precisely - The disposal site is no place for ambiguity or misunderstanding. Directives must be clearly understood by all personnel.

e) Observe all the safety precautions and use only the approved methods. Do not take short cuts, they kill.

f) Clear the disposal area prior to departure - No disposal task is complete until the demolition danger area has been cleared of all hazards and contamination. Included in this is also the clearance of all rubbish and litter.

20.9 Properties Of Disposal Sites

20.9.1 To overcome the above hazards, disposal grounds require the following properties:

a) Isolation - is the most important requirement for the safety and protection of persons, property, livestock and structures.

b) Deep soil – reasonably free of rocks and stones.

c) Secondary fire hazards – disposal sites shall not be located over pipelines, over power cables or near fuel storage areas.

d) Electro-Magnetic Fields (EMF) - major demolitions are normally initiated electrical means which are vulnerable to external EMF. Disposal sites shall not be situated near radar installations, radio transmitters or high-voltage power lines.

e) High ground - reduces the effects of blast and ground shock and is also relatively well drained. However, high ground also tends to increase fragment range.

20.10 Demolition Pit Requirements

20.10.1 The CDS Demolition Pit requirements are as follows:

a) When possible cite the ditch in a natural depression and in soft ground.

b) The pit should as much as possible be free from stones and any other material that could create flying fragments and debris during demolitions.

c) The pit should initially be dug approximately 1mx1mx1m. It will get progressively larger with each demolition.

d) The soil excavated from the pit should be mounded around the top outer edges and compacted in order to deflect blast and improve fragment containment.

20.11 Usage of Demolition Pits

20.11.1 The following rules are to be adhered to when using the CDS:

a) Users should utilize existing demolition pits when it is practical to do so.

b) Before and after each use, the pit must be checked for any unexploded ordnance.

c) Maximum effort must be made to avoid the risk of items being thrown out of the demolition pit during demolitions.

d) Any intended destruction of White Phosphorus (WP) is to be detailed to the MACCA/AMAC on the booking request form.

e) WP may be destroyed in a dedicated pit which should be located 50m east of the central pit.

f) No pit is to be used for at least 24 hours following a detonation, unless the ground is thoroughly soaked with water.

g) Safe routes into the pits are to be established and all working areas in pits are to be safe and stable.

h) Measures are to be taken to ensure that personnel do not walk or stand over undercuts into the sides of pits.

20.12 LOADING THE DEMOLITION PIT

20.12.1 To ensure complete destruction of all items set up in the pit for demolition and to minimize blast and fragmentation affect from the demolition, the following points must be adhered to:

a) When forming stacks items shall be placed in the pit in layers starting with thick cased munitions, small arms munitions and small fragmentation items such as hand grenades in the lower layers. Thin cased high explosive items shall then be placed in the upper layers.

b) To establish and maintain an effective propagation wave and ensure a successful demolition, air voids must be minimized. Munitions must therefore be placed directly in contact with a donor charge or directly in contact with each other.

c) Stacks and their explosive chains are to be stable enough and sufficiently shielded so as not to be affected by detonations in other pits.

d) Once the donor charges have been placed, the stack may be covered with a plastic sheet and the pit backfilled and tamped with soil.

e) All munitions awaiting destruction must be stored outside the fragmentation distance, if they are not to be used for the serial being loaded.

f) A minimum number or personnel should be used when loading the demolition pit.

g) The pit shall never be more than half filled with UXO.

h) Detonators or initiation sets will not be buried under any circumstances.

20.13 Authority For Disposal

20.13.1 The responsibility for authorizing major disposals at a CDS is vested in the MACCA/AMAC. No major disposal shall take place without the prior approval of the MACCA/AMAC.

20.14 Methods Of Local Disposal – General

20.14.1 There are three methods of local destruction permitted:

a) Detonation – This is used with High Explosive (HE) filled munitions. Small quantities of other munitions - smoke, pyrotechnics, lachrymatory - may also be disposed of by inclusion in mixed stacks during large-scale demolitions. The quantities of such items included in a mixed stack have to be kept down to a small percentage of the overall stack.

b) Propellant and Contents Burning - This method is generally used with propellant (bagged or loose), smoke, pyrotechnic and lachrymatory stores but is suitable for certain plastic-bodied mines. It can also be used as an alternative to detonation for certain bare explosives such as Composite Explosives (CE), Tri-Nitro-Toluene (TNT), Nitro Glycerine (NG) based explosives and Gun Powder (GP).

c) Incineration - Is a specialised form of burning authorized for certain small mines with minimal explosive content, small arms ammunition and small, plastic bodied fuzes.

20.15 Hazards of Detonation

20.15.1 The hazards created by detonation are:

a) Flash and Heat – Flash and heat can cause injury to those in close proximity to a demolition. Flash and heat can also cause fires if combustibles such as dry grass are close by or peat is present in the soil.

b) Blast and Noise – Blast effects and noise from demolition can travel great distances, particularly if cloud cover is low or there is a thermal inversion above the CDS. Blast and noise can damage the ears in both humans and animals.

c) Ground Shock – Ground shock mainly affects structures. It can loosen foundations, break windows and severely damage light buildings. Rock strata (rock shelf) can sometimes transmit the effect for considerable distances.

d) Fragmentation – Fragmentation from items destroyed in a demolition is potentially lethal to humans and animals and can cause severe damage to equipment and structures. Also metal fragments from a demolition generate extremely high temperatures that can start fires.

e) Toxic Smoke- Some smoke and fumes from destroyed items can be toxic or irritating to the eyes, airways and skin.

20.16 Hazards Of Burning

20.16.1 The hazards created by burning explosives are:

a) Intense heat.

b) Intense light.

c) Toxic fumes.

20.16.2 It should always be anticipated that explosives may detonate during burning. Therefore burning of explosive items should be conducted in burn pits at least 1mx1mx1m and the same safety distances as for demolitions will be observed.

20.17 Additional Considerations And Preparation For Burn Pits

20.17.1 Additional considerations and preparation shall be employed when burning of explosive items is to be conducted are;

a) An isolated, sandy, barren area is the most suitable site.

b) No secondary fire hazards are to be present.

c) Sufficient water and fire fighting equipment must be available to extinguish secondary fires.

d) Wind strength and direction must be taken into consideration so that there is no likelihood of fire spreading or casualties created by fumes.

e) There must be no presence of peat in the soil which may lead to the ignition of a sub-terrainial fire.

f) Sites shall not be established inside high enclosed ground such as deep gullies and rock gorges as these types of location encourage rising hot air currents during burning that can carry burning debris considerable distances and potentially start other fires.

g) No pit is to be used for at least 24 hours following a burn, unless the ground is thoroughly soaked with water.

20.18 Limits on Explosive Quantities

20.18.1 Limits on explosive quantities are restricted by the following:

a) Fragmentation Zone. The fragmentation zone is the maximum radius and height that fragmentation is expected to travel from the largest demolition authorized for the demolition site. The minimum fragmentation zone or 1,000m whichever is the greater, determines the minimum radius of the designated Danger Area. All persons and equipment must be either outside of the Danger Area or under suitable protection. No detonations shall take place at locations within the disposal site if there is a risk of fragmentation travelling outside of the fragmentation zone.

b) The danger area for a disposal is to be determined from the safety distance requirement for the items to be destroyed. AMAS Chapter 17, Explosive Ordnance Disposal, Annex B details the minimum safe distance to be applied for the disposal of single mines and common UXO.

c) For multi-item disposal tasks, or for the disposal of items not included in AMAS Chapter 17, Explosive Ordnance Disposal, Annex B, the appropriate safety distance is to be determined by the supervisor in charge of the disposal task. Among the tools to assist in determining the appropriate safety distance are the AMAS Danger Area Support Tool and TN 10.20 2001, Estimation of Explosions. Both are available from the AMAA or may be downloaded at the website www.mineactionstandards.org.

d) It is possible to reduce the necessary safety distance if personnel are sheltered in Splinter-Proof Shelters (SPS). A SPS provides complete frontal and overhead protection to the occupants from the blast and fragmentation hazard produced by the disposal.

e) Ground Shock and Noise Effect. When establishing or using a disposal site maximum consideration must be given to the effects of ground shock and noise on the local population. Every effort shall be made to keep these effects to a minimum when conducting demolitions.

20.19 Layout of Disposal Sites

20.19.1 Each disposal site, including demining worksites in which in-situ mine or UXO disposal is to be conducted, are to contain key control points established in accordance with the requirements of AMAS Chapter 6, Site Preparation and Setting Out**.** These control points are to include:

a) Vehicle parking area.

b) Command Post (CP).

c) Stores/administration area.

d) First aid post.

e) Helicopter Landing Site (HLS), if appropriate.

f) Rest areas.

g) Safety areas.

h) Field explosive stores.

i) Toilets.

j) Firing point.

k) Sentry points.

l) Locations for warning signs.

20.20 Restriction Of Access To Disposal Sites

20.20.1 It is essential to ensure that people cannot inadvertently enter disposal sites. To ensure this, suitably briefed sentries are to be positioned on all likely access routes to the disposal site prior to placement of demolition charges. The placement of sentries is to conform to the following requirements:

a) Sentries are to be placed to control all likely access routes to the disposal site.

b) Sentries are to be placed outside the danger area. Where sentries cannot be placed outside of the danger area, they must be provided with suitable protection from the danger of fragmentation and blast. This protection is not to affect the sentry's ability to effectively fulfil their duties.

c) Sentries must be able to observe the whole danger area including gullies and dead ground.

d) Sentries are to be allocated individual areas of responsibility and these areas are to overlap to ensure complete coverage.

e) Sentries are to have radio communications with the firing point.

f) The supervisor of the disposal task is to regularly test communications with the sentries. If communications are lost, preparation for the demolition is to be suspended until communications are re-established.

20.21 Briefing Of Sentries

20.21.1 Prior to placing sentries, the supervisor of the disposal task is to thoroughly brief the sentries on their responsibilities and duties. As a minimum, the points to be covered during the briefing are:

a) The precise location of their sentry post and their individual area of responsibility.

b) The location of other sentries.

c) The requirement to remain alert at all times.

d) The procedure for communications checks and the call signs and signals to be used.

e) The alternate means of communications to be used if radio communications fail.

f) The action the sentry is to take in the event of misfires, accidents, loss of communications and unauthorised entry into the disposal area.

20.22 Demolition Procedures

20.22.2 Preparation of Charges: The following procedures relate to the preparation of charges:

a) Only qualified personnel are allowed to handle explosives.

b) A person qualified to handle explosives is to be appointed by the disposal task supervisor to be in charge of explosives and accessories at the site and to keep a record of explosive issued and explosive returned.

c) The minimum number of personnel is to be employed in the preparation and placement of charges.

d) All personnel not required for the disposal task are to remain in the designated safety area.

e) The supervisor is to retain control of the exploder key or other means of initiation from the time of commencing the preparation of charges until after the disposal site has been declared clear of hazards.

f) Detonators used for the initiation of charges are never to be buried.

g) If electrical firing systems are used, precautions are to be taken against RF hazards. Specifically:

h) Vehicles with radios fitted are not to approach within 50m of any part of an electrical firing circuit unless the radio is turned off.

i) Hand held radios and mobile telephones are not to be operated within 15m of any part of an electrical firing circuit.

j) Electrical firing circuits are to be sited away from high tension overhead cables.

k) Personnel must ground themselves before handling electric detonators.

l) Electrical firing cable must not be laid over other strands of cable.

m) All components of an electrical firing system (cable and electric detonators) are to be tested separately to ensure that they have continuity. For cables, tests are to be made of both continuity and discontinuity to ensure the cable is not short-circuited.

n) If non-electric firing systems are used the following procedures apply:

o) The length of safety fuse to be used is to be sufficient to allow personnel lighting the fuse sufficient time to move at a walking pace to either the firing point or outside of the danger area after lighting the charge.

p) Every coil or remnant of a coil of safety fuse to be used is to be inspected and tested prior to use.

q) The minimum length of safety fuse to be used is one meter.

20.23 Placement Of Charges

20.23.1 The following procedures relate to the placement of charges:

a) All explosive charges used for the destruction of ordnance are to be of sufficient quantity to ensure complete destruction of the ordnance. The exception is when low order (deflagration) techniques are used.

b) Charges for the disposal of ordnance are to be placed to ensure that the maximum destructive effect of the explosive is achieved.

c) Electric detonators are to be connected to the firing cable before being connected to any detonating cord or a main charge.

d) For disposal operations involving rocket motors or shaped charges, donor and/or explosive charges will be placed to ensure the motors are not initiated and the shape charge jets are not formed.

20.24 Pre-Firing Procedures

20.24.1 Pre-firing procedures are:

a) The danger area is to be cleared of all non-essential personnel, vehicles, equipment and livestock.

b) Sentries are warned that firing is about to be begin.

c) If electrical initiation systems are used, the complete firing circuit is to be tested for continuity.

d) Immediately before firing occurs the disposal supervisor is to radio the sentries to confirm the danger area is still clear and to warn them the firing of the charges is about to occur.

20.25 Misfire Procedures

20.25.1 In the event of a misfire, the supervisor is to observe the following wait time before moving from the firing point and approaching the demolition charge:

a) Electrical initiation: 10 minutes.

b) Non-electrical initiation: 30 minutes.

20.25.2 During the wait time, no person is to leave the safety area nor is any unauthorised person to be allowed access to the disposal area.

20.26 Post-Firing Procedures

20.26.1 Post-firing procedures are:

a) Any mandatory ‘wait time’ for the type of disposal operation being conducted is to elapse before any movement into the danger area is to occur.

b) The supervisor of the task is to personally check that all charges have fired as intended and there is no residual hazard in the area.

c) Any necessary post-demolition activities for the type of ordnance being disposed, e.g. raking of the ground to ensure no WP munitions are present, is to occur.

d) Once the supervisor has determined that the area does not contain any ordnance hazard, the ‘all clear’ is announced. No person is to leave the safety area or be allowed access to the disposal area until the supervisor has given this ‘all clear’. Once the team reaches the pit, they may rake it for any residual WP.

20.27 General Safety Requirements

20.27.1 The following general safety requirements are applicable to all disposal operations:

a) No disposal tasks are to be undertaken if there are electrical storms in the immediate area.

b) The supervisor is to ensure that required safety distances can be achieved for the particular disposal task.

c) There is to be no smoking or naked flames within 30m of explosives.

d) All work will cease if communications cease to function. Upon restoration of communications, work can be started again.

e) If a qualified medic, dedicated ambulance driver and appropriate medical equipment are not on site, then no work will be done until all three conditions are satisfied.

20.28 Additional Safety Requirements

20.28.1 The following safety points should be adhered to at all items.

a) All personnel are to be under cover before a demolition is initiated. If cover is not available then they are to be outside the danger area and instructed to look up at the time of demolition.

b) All charges should be electrically initiated. Radios should not be used within 50m of the electric detonators.

c) If smoke or flames are seen at the CDS after a demolition, no approach is to be made until they have completely extinguished.

20.29 Accident Prevention and Procedures

20.29.1 The mandatory requirements in the case of an accident shall be:

a) The disposals party shall include at least one person trained and equipped to provide first aid and treat traumatic injuries (designated medic).

b) Unless they are provided with appropriate protection, the designated medic and their equipment shall stay readily available but outside of the danger area and ready to deal with casualties.

c) There shall be an established casualty evacuation procedure and standby medical cover has to be available.

D) There is to be a serviceable ambulance or vehicle fitted to transport and treat at least one stretcher borne casualty and a medic inside.

20.30 Accident Procedures

a) Stop disposals, make safe the prepared demolitions, carry out first aid and CASEVAC and call on back up medical aid.

b) Inform the MACCA/AMAC.

c) Note all details pertinent to the eventual investigation.

d) Mark and protect the accident scene.

e) Render safe and repack all munitions and explosives that have been unpacked and prepared for disposals - segregate awaiting investigation.

f) Note the name of the casualty, time of the accident and details of injuries shall be obtained from the medic prior to the departure of the evacuation vehicle.

g) Note the time of evacuation of the casualty.

h) Notify MACCA/AMAC of the destination for the evacuation vehicle and the estimated time of arrival at the destination.

20.31 Records and Reports

20.31.1 A permanent disposal diary shall be kept by the MACCA/AMAC for each licensed CDS. The demolitions diary shall be completed daily by users and signed by the Team Leader. Users are also to maintain records of both the unserviceable and serviceable munitions destroyed.

20.32 Closure of Permanent Disposal Sites

20.32.1 When an area ceases to be a permanent disposal site, it is to be refurbished in accordance with the requirements of the local communities, and if necessary, the land formally handed over. As a minimum, the refurbishment is to include the recovering and disposal of all large items of scrap; the filling in of any pits and craters made by the disposal operations; and the fencing of and marking of any areas where there may be residual non-explosive hazardous material left in the ground.

Annex A - Minimum Safety Distances

Danger Area Radius in Metres		
Category and Nature of Item	**Un-tamped item on the surface.**	**Tamped item on surface.**
HIGH EXPLOSIVE		
Fuzes	100	100
Grenade HE offensive	300	150
Grenade HE defensive	100	100
BLU 61, 63, Mk118	300	100
BLU 97/B	500	100
Shell HE 85mm and below	500	100
Shell HE 90mm - 125mm	800	250
Shell HE 130mm and above	1000	400
Mortar HE 82mm and below	500	250
Mortar HE 120mm	800	250
Rocket 88 mm and below	300	150
Rocket 100 mm and above	500	250
Bomb aircraft 100 lbs and below	1000	-
Bomb aircraft 500 lbs – 1000 lbs	1500	-
Bomb aircraft 2000 lbs and above	2000	-
Dispenser fully loaded	1500	-
Mine AP	100	100
Mine AP bounding	300	250
Mine AT	1000	500
WHITE PHOSPHOROUS		
Grenade WP	100	-
BLU 17	100	-
Mortar WP 82 mm and below	200	-
Mortar WP 120 mm	300	-
Shell WP125mm and below	300	-
Shell WP 130mm and above	400	-
Rocket WP 2.75 ‘, 3.5’	300	-
Rocket WP 5’	400	-
Igniter WP	300	-
PYROTECHNICS		

Grenade SMK	200	100
Mortar ILL /SMK	200	100
Shell ILL /SMK125mm and below	200	100
Shell ILL/SMK 130mm and above	300	150
Pyrotechnic natures	100	100
Bomb aircraft incendiary 4 lbs	100	100
Bomb aircraft incendiary 10 lbs	300	150