

Sudan National Mine Action Standards – SNMAS 08.01

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Demining Worksite Setting Up

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1. Introduction

The nature of the ground will determine the layout of any worksite, however a consistent arrangement with correct marking will increase the safety of those involved in land release operations. The standardisation of all demining marking systems is paramount to be considered by all demining teams, enforced by mine action organizations and ensured by NMAC.

2. Scope

This SNMAS covers the minimum requirements for demining worksite setting up, preparation and worksite safety.

3. Reference

The main reference for this SNMAS is IMAS 10.20.

4. Terms and Definitions

A complete glossary of all mine action terms and definitions is given in IMAS 04.10, which should be referred to; this IMAS is inclusive and broader in principle, covering all mine action terms and definition that are used globally including in Sudan. However, the terms related to Worksite Set Up are covered in this SNMAS.

The term 'workplace' refers to all places where employees need to be or to go by reason of their work and which are under the direct or indirect control of the employer.

The term 'demining organization' refers to any organization (government, NGO or commercial entity) responsible for implementing demining projects or tasks.

The term 'demining worksite' refers to any workplace where **demining** activities are being undertaken. Demining worksites include workplaces where **technical survey, clearance** and **EOD** activities are undertaken including centralized disposal sites used for the destruction of mines and ERW, (including unexploded sub-munitions), identified and removed during clearance operations.

5. Worksite Setting Up Requirements

The provision of a safe working environment includes the design and layout of a demining worksite by:

- 1) Fencing and marking of hazardous areas;
- 2) Controlling the movement of deminers, visitors and the local population;
- 3) Establishing and enforcing safety distances;
- 4) Providing effective medical cover and casualty evacuation procedures.

The following features are essential requirements for all mine and Explosive Remnants of War demining worksites:

5.1. Control of Entry to Demining Worksites

Demining often proves to be an attractive event for the local population, especially children. Procedures shall be developed for controlling the entry of unauthorized persons into the area.

5.2. Control Point

Control Point is a command post from which a team leader or supervisor should control the operation. The control point may also be used as administration and briefing area where visitors arrive. Ideally, it should be on level, well-drained land, have vehicle access and preferably some natural shade. It shall not be closer than 100 metres from the mine/ERW worksite.

5.3. Access lanes

All access lanes to the worksite shall be clearly marked as clear of hazards. They should not be less than two metres wide.

5.4. Vehicle Parking Areas

This shall be close to the Control Point and large enough to accommodate the team's and visitor's vehicles. It shall be situated a minimum of one hundred metres from the baseline of hazardous area. The distance can be reduced provided that protective barrier exists between the parking area and the hazardous area. All vehicles should be positioned in the park, so they do not have to manoeuvre to depart in the event of an emergency. Separate areas may also be required for loading and unloading of demining machines.

5.5. Control Areas

Effective control of the worksite will be achieved by establishing and clearly marking a number of areas for safety and administration that may include the following:

5.5.1 Stores and Equipment Area

This is an area where all equipment can be securely stored while the team is at work and shall be part of the Control Area.

5.5.2 Medical Area

Medical Area is a static medical point, always within the control area. The medical area shall always be occupied during mine/ERW clearance operations by a qualified medic. The area should be flat, dry, and shaded. The area may be combined with the equipment stores area but should be easily accessible from the hazardous area and clearly marked.

5.5.3 Helicopter Landing Site (HLS)

In the event that helicopter evacuation is available; the HLS shall be established prior to demining operations commencing on site, the following applies:

- a) The HLS should be located within five minutes vehicle travel time from the worksite and shall not be within 100m of any hazardous area.
- b) The dimensions of the HLS should not be less than 20m x 20m, with an optimal size of 50m x 30m. Ground slope is not to exceed 6 degrees.
- c) Areas of very dusty ground should be avoided.
- d) The HLS shall be marked with an easily visible marker, in the shape of an 'H', of a minimum size of 2m x 5m, firmly secured to the ground.

- e) The directions of aircraft approach and departure to and from the landing site shall be free from trees and other vertical obstructions.
- f) The HLS shall be clear of all vegetation to 0.1m above ground level and all boulders and other loose debris should be removed

Demining organisations establishing HLS should contact the entity providing the air casualty evacuation services; to confirm that the HLS established is suitable for helicopter evacuation. The demining organisation shall also provide NMAC SO and the casualty evacuation organisation with details of the worksite number, HLS coordinates and a brief description of the HLS and marking being used. The HLS shall not to be used as a vehicles parking or administration area

5.6. Explosives Area

The explosives shall be stored in a secure and marked explosives storage area a minimum of fifty metres away from all other control areas. The explosive area should be sited between the control area and the hazardous area; for security. Explosives and accessories shall be kept separated in an area that is dry and protected from rain and sun. If located in the same area, then explosives and accessories shall be separated by a sandbagged wall.

5.7. Rest Areas

Rest areas should be established and clearly marked for use by deminers during their break time. These areas shall be established a minimum of twenty-five metres from the mine/ERW area, depending upon the types of mines/ERW identified. Sufficient space should be allowed for resting, preparation of equipment, and painting of marking material. The rest area shall be dry and shaded.

5.8. Demolition Area

Demolition area is the location cleared for the disposal of mine and ERW with explosive demolition. The demolition area must be at a safe distance from the worksite in order to avoid any fragmentation falling into cleared areas where quality control or sampling is planned.

5.9. Sentry Points

If, during the demining operations, control of the entry to hazardous area cannot be maintained through using markings, signs, physical barriers or observation, then sentries shall be used. The sentry points shall be selected, and sentries positioned to cover all possible approaches to stop people from entering the hazardous area or to warn the supervisor if people attempt to approach. Sentry points shall be outside the hazardous area but under a suitable cover. The sentry shall have radio communications with the site supervisor and team command group.

5.10. Detectors Test Area

Each demining worksite shall have a testing area in order to ascertain the detectors and locators' serviceability and ability to detect signals to the required clearance depth, prior to the deminers start working with. The testing area shall be made up of two 1m x 1m areas, each measuring x 0.5m deep. The first area shall be totally metal free, whereas the second area shall also be metal free except for the relevant test item (specific site threat), placed at the required clearance depth.

Following the normal setting up and calibration the detectors and locators shall be initially passed over the metal free area where no audible signal should be heard or seen and then over the area with the test item has been buried where an audible or visual signal should be heard or seen.

See Annex A to this SNMAS for pictorial description of site setting out.

6. Metal Collection Pit

All metal removed from the worksite shall be placed within the metal collection pit. The pit should be dug approximately one metre square and 50 centimetres deep at a suitable location behind the clearance lane.

7. Mine/ERW Debris Pit

All mine/ERW debris removed from the worksite shall be placed within a mine/ERW debris pit. The items remain in the pit until certified as Free from Explosive (FFE) content by qualified EOD personnel. A one-metre square, 50 cm deep pit should be located away from the hazardous area.

All FFE items shall be taken from the site and secured at a central collection point or designated place. EOD level 3 qualified staff shall then certify that the items are FFE. Back-loading instructions will be distributed once sufficient quantities are ready for disposal at an approved landfill site.

8. Latrine

A specific area shall be established for a latrine at each clearance site. This is fundamental for hygiene and will also prevent people inadvertently straying into hazardous areas. Latrines should be in the vicinity of the rest area and at least a minimum of 100 metres from the hazardous area. The number of personnel on the site should determine the number of latrines required per site.

9. Site Reference Points and Control Markers

- a) Reference Point: RP is a permanent fixed feature or building, outside the mine/ERW contaminated area, from which all measurements to the benchmark are made.
- b) Benchmark: BM is a clearly identifiable fixed marker on the start line, from which all mine/ERW measurements are taken.
- c) Start Point: Start Point is the point where a deminer begins mine/ ERW clearance. The Start Point is the location where each clearance teams starts work in their clearance lane.
- d) Baseline: Baseline is a fixed line referred to from the starting point. This line is the dividing line between the mine/ERW area and the safe area. The Baseline shall never move.
- e) Start Line: The start line from where mine/ERW clearance begins. As the clearance progresses into the minefield this line may be moved forward into the area which has been cleared of mines.
- f) Clearance Lane: Clearance Lane is the lane where a deminer is physically working, also known as the working lane.
- g) Cleared Lane: Cleared Lane is a lane that has been cleared of all mines/ ERW and may be normally free of all metal contamination.
- h) Intermediate Line: Intermediate line is a line forward of the Start Line where cleared lanes finish and new clearance lanes begins. Intermediate Lines should be numbered successively, progressing forward, away from the Start Line. See Annex A to SNMAS 05.03 for Marking of Hazardous Area.

10. Setting Out the Base Line

Where possible existing linear features such as roads paths and cultivated land should be utilised for setting out the base line. However, when a base line is required to be cleared, it shall be on the forward edge of a cleared/safe lane. This base line shall be a minimum of 2 metres wide.

11. Found Mine or ERW

When a mine/ERW is located, it shall be marked by placing a mine marker in front of it. If immediate destruction is not possible, the clearance lane shall be closed off and a new lane commenced from the start line. The mine/ERW shall be destroyed at the end of the day.

12. Minimum Safety Distances

12.1. Working Safety Distance

For assigning safety distance; the Field Risk Assessment (FRA) as per Annex A of SNMAS 05.03 shall be conducted to identify the level of risk. However, the table 1 shows minimum, recommended working distances between demining staff at a worksite.

If any of the following apply the distances shown under the heading increased risk in table 1 shall be applied as a minimum.

- a) Hazards in the area are unknown or in unpredictable conditions.
- b) There is reason to believe that hazards may be booby trapped or have anti lift devices fitted.
- c) The processes in use have not been proven in a similar context.
- d) The likelihood of an unintended detonation has been assessed as high.

When the FRA determines that ERW present the greatest hazard, working distances appropriate for the risk of unintended detonation of the ERW should be determined and applied. When there is no reason to believe that the procedures and tools in use could cause an unintended detonation of any hazard present, the working distance for the normal risk associated with the AP blast mine should be adopted. Greater distances should be used when a demining group own risk assessment determines that greater distances are desirable.

Mine type	Minimum distances between demining personnel (distance in meters)	
	Normal Risk	Increased Risk
AP blast HE up to 200gm	10	15
AP blast HE more than 200gm	15	20
AP fragmentation mines	20	25
AP bounding or directional fragmentation mines	25	30
AT mines	25	50

Specific notes to table 1:

- 1) Recommended minimum distances are for demining staff wearing SNMAS compliant PPE;
- 2) The FRA used to determine the minimum working distances shall be reviewed if any of the information used in the assessment changes;

- 3) If devices representing a greater hazard than expected are discovered, the appropriate working distances for the increased risk shall be adopted unless there is no reason to anticipate the presence of more of those devices;
- 4) These distances should not be applied during demolition or any other procedure during which mines are deliberately detonated, such as mechanical demining;
- 5) Generally, working distances do not apply to those supervising deminers while they work. It is a safety requirement that supervisors may approach any working deminer as part of their task. Supervisors should not approach closer than three meters while a deminer is working.

12.2. Demolition Safety Distance

Table 2 below shows the minimum safety distances for the explosive demolition of mines. Safety distances during explosive demolition are greater than working distances during clearance operations due to a deliberate intent to cause a detonation, and there is need for other demining work to be conducted while the demolition takes place.

Mine Type (A single mine and minimum demolition charges is presumed)	Minimum Safety Distance (Distance in meters)	
	Demolition Staff	Other Staff
AP blast, all types	25	60
AP fragmentation mines (all types).	60	100
AT mines	200	300

Specific notes to table 2:

- 1) Recommended minimum distances are for demolition staff wearing SNMAS compliant PPE. Other staff not wearing PPE should be out of line of sight from the demolition at the time of detonation.
- 2) The distances shown in table 2, are between the site of the detonation and the position of staff at the time of demolition.
- 3) The safety distances may be reduced if there is a safe place with adequate protection available in the area such as a bunker or behind a hillside or other barriers.
- 4) When using protective works while destroying mines by explosive demolition, the required.