Sudan National Mine Action Standards – SNMAS 06.03

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Explosive Ordnance Disposal (EOD)

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Contents

1. Introduction 2
2. Scope 2
3. Reference 2
4. Terms and Definitions 2
5. Scope of EOD Operations in Sudan 3
5.1 General Principles 3
5.2 EOD Qualifications 3
5.3 Certification 4
5.4 Quality and Audit of the Qualifications 4
5.5 Neutralisation and Disarming of EO 5
5.6 Demolition of EO 5
5.7 Disposal Site 5
5.8 Transportation of Mines and ERW 6
5.9 Quality Management (QM) 6
6. Reporting of EO 6
7. Notice to Air Movement (NOTAM) 7
7.1 Submission of NOTAM 7
7.2 Emergency NOTAMS 8
8. Responsibilities 8
8.1 Sudan National Mine Action Centre (NMAC) 8
8.2 Demining Organizations 9
8.3 EOD training Organizations 9

1. Introduction

Explosive Ordnance Disposal (EOD) involves the disposal of Explosive Ordnance (EO) which includes landmines and Explosive Remnants of War (ERW), but as part of demining operations, the main focus is on the disposal of ERW. The majority of ERW found during demining operations are small items of Unexploded Ordnance (UXO), such as sub-munitions, grenades and mortar ammunitions. However, ERW can also include larger items such as artillery ammunition, guided missiles, air-dropped bombs, caches of Abandoned Explosive Ordnance (AXO), post-explosion clearance of ammunition storage areas and booby traps. The wide variety of size and complexity of ERW requires special attention to be afforded to the management of EOD and the qualifications required to deal with the varying devices.

The aim of this standard is to provide specifications and guidance for the management of EOD as part of mine action in Sudan. It covers general principles and management responsibilities for EOD. It does not provide specific technical guidance for the disposal of particular EO, which should be covered in mine action organizations Standard Operating Procedures (SOPs) and Training Management Packages (TMPs)

The safe and efficient removal and disposal of EO is an integral part of mine action in Sudan and ensuring safety and efficiency in all mine action activities including EOD, requires establishing an appropriate management system, operational procedures, suitable qualification and proper oversight, reporting and recording, and Quality Management (QM) aspects within Sudan Mine Action Programme (SMAP). NMAC as coordination and regulating body for mine action in Sudan is charged with responsibility of setting the requirements formanagement system, operational procedures, training and qualification, safety, information management and quality management for EOD operations in Sudan.

2. Scope

This SNMAS covers standard guidelines and requirements for management and undertaking EOD operations in Sudan. All mine action organizations working in Sudan shall develop their own SOPs for EOD operations in line with requirements of this standard. This SNMAS also covers the requirements for NOTAM.

3. Reference

The main references for this SNMAS are IMAS 09.30 and IMAS 04.10.

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; IMAS 04.10 is inclusive and broader in principle, covering all mine action terms and definition that are used globally including Sudan. However, the terms related to EOD are covered in this SNMAS.

The term “Explosive Ordnance Disposal (EOD)” refers to the detection, identification, evaluation, render safe, recovery and disposal of EO.

The term “Explosive Remnants of War (ERW)” refers to Unexploded Ordnance (UXO) and Abandoned Explosive Ordnance (AXO), excluding landmines.

The term "Explosive Ordnance" refers to 'all munitions containing explosives including landmine, cluster munitions, unexploded ordnance, abandoned ordnance, booby traps, other explosive devices which defined by CCW APII and Improvised Explosive Devices[1].

5. Scope of EOD Operations in Sudan

5.1 General Principles

EOD operations involve the detection, identification, assessment, render safe and disposal of all types of EO that are used and discovered in Sudan. 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 explosive ordnance on demining worksites as a routine part of demining operations upon discovery of ERW;

b) The dispose of ERW discovered outside hazardous areas; this may be a single or spot ERW or a large number inside a specific area;

c) The disposal of stocks of Abandoned Explosive Ordnance (AXO);

d) The disposal of EO which has become hazardous by deterioration, damage or attempted destruction;

e) Undertaking stockpile destruction, Open Burning and Open Demolition (OBOD) operations;

f) EOD operators shall deal only with those EO and situation for which they have been trained and authorized. All other cases shall be referred to the next higher level of expertise;

g) The effective management of EOD operations includes establishment and maintenance of a capability to conduct EOD in a safe and effective manner. This involves a formal risk assessment of the ERW hazards and the development of a safe and effective EOD capability.

5.2 EOD Qualifications

EOD operations should be carried out in different levels, from the neutralisation of large bombs and missiles to the destruction of grenades and sub-munitions. EOD qualifications shall be appropriate to the hazard and the munitions most likely to be found in Sudan. The qualifications of EOD operators shall fulfil the requirements of ERW problem and be regulated by NMAC on behalf of the government of Sudan. The details about EOD qualifications are described below:

1) Level 1: A Level 1 (EOD) qualification enables the trained operator to locate, expose and to destroy in situ, single items of mines and specific ERW on which the individual has been trained. Therefore, Level One operators may be licensed to destroy only specific items of ordnance.

[1] Improvised Explosive Devices (IEDs) meeting the definition of mines, booby-traps or other devices fall under the scope of mine action, when their clearance is undertaken for humanitarian purposes and in areas where active hostilities have ceased. Reference IMAS 04.10

2) Level 2: In addition to the skills of a Level 1 (EOD) qualification, a Level 2 (EOD) qualification enables the trained operator to determine when it is safe to move and transport munitions and to conduct the simultaneous disposal of multiple items of ordnance using line mains or ring mains. This qualification extends only to those mines and specific ERW on which the individual has been trained.

3) Level 3: In addition to the skills of a Level 1 and 2 (EOD) qualifications a Level 3 (EOD) qualification enables the operator to conduct render-safe procedures and final disposal of a wide range of specific types of explosive ordnance on which the individual has been trained.

4) Level 3 +: In addition to the skills of a Level 1, 2 and 3 (EOD) qualification, which cover the skills that are routinely required in Mine Action, there may be a requirement for additional specialist skills. The Level 3+ (EOD) qualification is for specialist EOD operators who have been trained in areas that needed to address specific hazards. For more details about EOD Level 3+ competencies, refer to below link: https://www.mineactionstandards.org/standards/te-protocols/te-protocols-in-english/

Whenever there is a requirement for specialist skills not covered in the Level 3 qualification then it is the responsibility of NMAC with technical support of UNMAS to specify the additional EOD skills required for a particular task, and mine action organizations shall demonstrate that their Level 3+ operators have the higher-level training and experience appropriate for the task.

Some ERW fall within the guidelines for the above qualification levels but present a specific or additional hazard, including items containing White Phosphorous (WP), missiles, or the requirement for bulk demolitions. Special consideration shall be given to the need for additional training, or for specific exclusion from the category of competence.

Where particular items are frequently encountered, specific training in disposal of those items should be given to enable the operators to deal with them, rather than continually referring the problem to the next higher level of expertise, or deploy required qualified operators to complete the EOD task.It should be noted that sub-munitions may be particularly hazardous to deal with and shall only be dealt with by level 2 or above qualified personnel.

5.3 Certification

At every level of EOD competency, NMAC as ultimate certification body shall ensure that the training organisation explicitly list the disciplines on which the individual has been trained. At the most basic level this should include the specific munitions on which the individual has been trained to destroy or neutralise, and for more advanced levels should cover the generic competency subjects covered by the training.

To complement the certification the operators should maintain logs of their application of the training such that demonstrate their operational experience.

5.4 Quality and Audit of the Qualifications

NMAC shall develop performance criteria, appropriate assessment tools and procedures in order to assess the level and quality of competence of EOD operators. This shall include the requirements for:

a) Written tests as per the completion of EOD training;
b) Practical exercises and demonstration of EOD task;

c) Monitoring procedures for assessment of performance during EOD operations.

As referenced in part 5.2, item 4); NMAC shall ensure that EOD Competencies Standards T&EP 09.30/01/2014 is applied in Sudan to enhance the process of planning, undertaking and evaluating EOD operators' development and capacity building. This can also help to improve the assessment of training and competency of operators involved in EOD operations in Sudan.

5.5 Neutralisation and Disarming of EO

If required and practical, and if are not safe to more thedetected mines and ERW, they should be neutralised in situ. The decision whether to move a particular type of mine or ERW shall be based on an assessment by an appropriately qualified EOD operator. EO should be rendered safe or disarmed, if possible, prior to moving to a suitable location for disposal. Any EOD activity should be closely coordinated with NMAC operations and sub office in order to take required actions including community awareness and agreement.

Mine action organisations, with an integral EOD capability, shall prepare Standard Operating Procedures (SOPs) for neutralisation and disarming activities which are appropriate for the mine and ERW hazards likely to be encountered and encountered in Sudan, and which are consistent with accepted international EOD practice.

Upon discovering ERW items by a mine action organization that require specialized EOD capacity, while the organization lacking such a suitable integral EOD capability, then the mine action organization shall notify NMAC operations and sub office in order to assign appropriately certified EOD operators within the structure of an accredited organisation to undertake the operations. The mine action organization discovered the item shall mark, map and report the items.

Neutralisation and disarming procedures should not be necessary for bulk or individual items of AXO as they are not, by definition, have been primed or have failed to explode. However, that AXO could have been exposed to extreme temperature and climate changes for a prolonged period of time, resulting in degraded stability of the ordnance, such AXO shall be death with a careful approach.

5.6 Demolition of EO

All mine action organisations working in Sudan shall develop SOPs for the effective and safe demolition and destruction of ERW relevant to the operating environment. The SOPs shall include the demolition of mines and ERW in-situ, or recovered and destroyed individually. EOD operations shall be carried out in a manner that minimises any impact on the environment (refer to SNMAS 07.04). Planning for and demolition of bulk AXO shall be conducted by suitably trained and qualified EOD operators. Special attention shall be paid to ensuring the containment of blast, ground shock and fragmentation effects resulting from the demolition of mines and ERW. Sites chosen for bulk demolition shall be located sufficiently far away from populated areas so as to represent no risks to the residents.

5.7 Disposal Site

A disposal site is an area authorized by NMAC for the controlled demolition of mines and ERW found during demining operations. Where both demolition ground and burning ground are required, they may be co-located on a disposal site. Disposal sites shall be sited to ensure that hazards associated with demolition operations are reduced to an acceptable level remaining cognisant of the requirement to protect the environment wherever possible. Selection of disposal sites shall be based

on consent of NMAC sub office, operations department, demining organization and local authority. See annex A to this SNMAS for details about Disposal Sites.

5.8 Transportation of Mines and ERW

In-situ disposal shall be the primary means of dealing with unsafe to move EO, unless factors such as proximity to communities, buildings, important facilities or the inability to achieve required safety distances prohibits in situ disposal. In-situ disposal negates the inherent risk to personnel during the movement of EO.

When it is required to move EO, it shall only be moved from the original location provided that the EO has been assessed and identified as safe-to-move by a qualified EOD Level 3 operator. All emplaced mines that are subject to be removed, shall first be removed through pulling as a precaution against booby trapping, prior to the movement. When EO must be destroyed in-situ and there is a risk to personal property, then protective works shall be used.

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 shall properly design and constructed so as to achieve the protection required.

5.9 Quality Management (QM)

Adherence to and considering of QM principles and requirements are essential for ensuring the safe, effective and efficient management, planning and undertaking of EOD activities in Sudan. All mine action organizations conducting EOD operations in Sudan, shall consider the requirements of SNMAS 07 series of standards; to meet the quality requirements of EOD activities, operations and outputs.

6. Reporting of EO

When mine action organizations are notified or reported about presence of EO, located outside their task, they shall assess the EO in coordination with NMAC sub office and report that to sub office covering following requirements:

1) Reporting date of EO, including reporting source;

2) Location of the EO including GPS coordinates, a sketch of the location should also be provided;

3) Type, quantity and status of EO (safe-to-move or unsafe-to-move), if known, a detailed description should also be provided along with photographs;

4) Required EOD capacity to deal with reported EO, and whether such capacity is available or not with the demining team in the area;

5) The impact of EO on local people and their proximity to populated areas and current risk, this should lead the team to set the priority for removal and clearance;

6) Contact details of local people or individuals that may help locating the EO; and

7) Any local or formal marking or warning signs of the EO.

7. Notice to Air Movement (NOTAM)

A notice of controlled demolition or disposing off EO shall be submitted to inform any Air Movement when the total of explosive charge exceeds 25kg including the explosive quantity of the donor charge. This NOTAM shall be applied to all control demolitions take place within 2 km of any airport or main HLS. All controlled demolition as part of EOD operations shall be formally coordinated by related mine action organization in the area with NMAC sub office and local authority. All mine action organizations shall consider below requirements:

1) When using and transporting explosives materials for demining operational purpose, on or off an NMAC approved Central Demolitions Site (CDS), with or without a NOTAM, mine action organizations shall inform the local military units through NMAC sub office.

2) Mine action organizations shall coordinate and inform area military units, governmental authority, and other mine action teams, with or without NOTAMin the area about any controlled demolitions including date, time and location of CDS, through NMAC sub office.

7.1 Submission of NOTAM

NOTAMs are required in order to inform and notify aviators and local aviation authority in advance of the use of explosives in the area. This will help aviators and EOD teams to avoid any adverse effects of demolition on air traffic and those areas are not over-flownat critical times. However the information should also be used to notify other interested parties including local government authority, military units, UN mission and humanitarian aid agencies.

All NOTAMs shall be submitted direct to the NMAC and NMAC shall disseminate it to area aviation and UNMAS, UNMAS shall notify UN agencies in the state especially WFP's Humanitarian Air Services and UNISFA and UNDSS. A NOTAM shall include the following details:

1) Location of demolition including GPS coordinates;

2) Amount of explosives to be used in Kg;

3) Planned date and time of demolition, if daily and routine demolitions are required, the mine action organization shall ensure the same time on daily basis and clearly mention that in consolidate NOTAM.

4) Any changes to the date and time of demolition shall be properly communicated to all concerned;

5) Safety distances for explosive charges of demolition shall be included in NOTAM; as in meters for horizontal and feet for vertical safety distances. Vertical safety distances shall include 500 additional feet to the horizontal one. Maximum vertical safety distance allowed within 10km of an airport or main HLS is 1500 feet, unless prior approval is granted through the NOTAM system;

6) Demolition team's contact details including the name of the supervisor, radio call sign, calling channel and frequency;

7) Contact details of the operations in-charge of the mine action organizations including his/her telephone number and email address; and

8) Additional information to encompass reason for demolition.

All EO including UXO and landmine subject for disposal in CDS shall be weighed based on the weight of explosives contained inside EO. This figure included in the statement of net explosive quantity (NEQ) in kilograms.

A NOTAM shall always be submitted at least 7 days in advance of first planned demolition, whenever practical and possible. The only exception to this 7-day rule is when exceptional circumstances and the tasking process dictate to do so, in such cases emergency NOTAM shall be processed.

7.2 Emergency NOTAMS

When there is emergency task that requires controlled demolition, a NOTAM shall be raised and submitted to NMAC for further urgent processing. In such cases the means of initiation should be electrical,and the time of detonation shall be carefully controlled to ensure that the airspace is clear of aircraft. The following requirements shall be met:

1) Required safety precautions are taken whenever the explosive destruction of EO is carried out. The safety precautions include visual and aural inspection of the airspace above and around the demolition area to encompass the implemented safety distance.

2) If controlled demolition is taking place within 1 km of an airport, the organization shall contact the airport authority and control tower to ensure they are well aware of the demolition, its location and timing.

See annex B to this SNMAS for NOTAM contents.

8. Responsibilities

8.1 Sudan National Mine Action Centre (NMAC)

As part of management, coordination and regulating EOD aspects in Sudan, NMAC is responsible to:

1) Establish and maintain national standards for EOD;
2) Establish and maintain performance criteria and tools for quality and audit of the EOD operators;
3) Establish and maintain the capability to accredit EOD training organizations and monitor the training and certification process;
4) Establish and maintain the capability to accredit mine action organizations involved in EOD operations in Sudan.
5) Assess and allocate appropriate disposal sites to be used by mine action organizations conducting EOD operations in Sudan.

6) Develop guidelines and procedures for the safe and efficient use of disposal sites considering environmental protection;
7) Establish and maintain the capability to monitor the safety, efficiency and effectiveness, of EOD operations and develop measures to protect the environment especially the environmental impact of EOD operations and bulk demolitions.
8) Establish process for EOD incident reporting; and
9) Ensure that national capacity development process is established and required EOD capacity exists in Sudan.

8.2 Mine Action Organizations

Mine action organizations undertaking EOD operations in Sudan, shall:

1) Obtain from NMAC, accreditation for EOD operations;
2) Develop and maintain SOPs for EOD operations which comply with the requirements of this SNMAS and other standards relevant to EOD operations, including 05 series of SNMAS;
3) Ensure that their EOD operators are competent and suitably trained and qualified and present their certificates and CVs to NMAC during accreditation and monitoring processes;
4) Record and maintaining the EOD operators' logs of their operational experience;
5) Ensure proper application of their NMAC approved EOD SOPs in a consistent, effective and safe manner which include procedures to protect the environment;
6) Ensure EOD operations and controlled demolitions are well coordinated and communicated with all concerned stakeholders in the field;
7) Undertake regular internal QA monitoring and QC sampling of EOD activities and outputs;
8) Undertake post EOD impact assessment as required by NMAC and or contract agreement;
9) Ensure that the affected community is fully cognizant of all EOD activities including clearance requirements and implications, particularly related to the depth of clearance.

8.3 EOD training Organizations

Any national EOD training organizations shall:

1) Gain from NMAC, accreditation for EOD training;
2) Develop and maintain EOD training management packages and submit to NAMC for approval;
3) Develop and maintain procedures undertaking for EOD training which comply with national and international mine action standards;
4) Establish training facilities including theoretical and practical areas for the provision of EOD training;
5) Establish and maintain certification procedures so that training completion certificates explicitly list the disciplines on which the individuals have been trained and qualified as competent.

In addition, any international EOD training organization providing EOD training in Sudan shall present their documents and evidence of being accredited and recognized as EOD training institution, based on the requirements of international mine action standards (IMAS).