NATIONAL TECHNICAL STANDARDS AND GUIDELINES SOUTH SUDAN

PART 1
DEMINING

Edition 2, Version 4
Date: 03 October 2024

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Additional Standards and Guidelines:

Part 2 Explosive Ordnance Risk Education (EORE)

AMENDMENTS

Amendments to this document shall be published periodically. An accurate record of amendments shall be maintaine

Amendment Number	Amendment date	Amendment to Section	Amendment Details
1	31 October 2019	All sections	
2	31 October 2020	All sections	
3	31 October 2021	All sections	
4	06 September 2022	All sections	
5	26 June 2023	All Sections	
6	03 October 2024	All Sections	Annual revisions and updates

Any comments, suggestions or proposed amendments to this document should be addressed to NMAA/UNMAS-UNMISS.

1. FOREWORD

Reference: International Mine Action Standards,

http://www.mineactionstandards.org/

The National Technical Standard & Guidelines (NTSG) for humanitarian mine action operations[1]in South Sudan are essential to enable the National Mine Action Authority to plan and assess humanitarian mine action operations being conducted by mine action organisations[2] within the South Sudan Mine Action Program. The mine action organisation may be involved in one or more of the following humanitarian mine action activities in South Sudan:

Explosive Ordnance Risk Education (EORE)

Landmine Impact Survey (LIS)

Non-Technical Survey Assessments (NTS)

Technical Survey (TS)

Manual Mine Clearance (MMC)

Road/Route Survey, Verification and/or Clearance Operations

Mechanical Operations

Mine Detection Dog (MDD) Operations.

Explosive Ordnance Disposal (EOD)

Battle Area Clearance (BAC)

Humanitarian Mine Action Operations involving two or more activities, i.e.. NTS, MMC, BAC, MDD, Mechanical. This is referred to as' Integrated Operations'.

These NTSGs are split into four parts:

Part 1:- Demining

Part 2: EORE

The aim of these Technical Standards is to provide mine action organisations with references for the conduct and management of humanitarian demining activities. They have been produced using experience gained locally and incorporating lessons and best practices learned in other worldwide theatres.

This document is not intended to replace or replicate Standard Operating Procedures (SOPs) nor does it absolve mine action organisations from the responsibility to produce their own SOPs. Conversely these NTSGs are intended to be used as an aid in developing SOPs, by

[1]The term ‘humanitarian mine action’ is used to describe/refer to the planning, implementation and conduct of all mine action projects and associated activities within South Sudan.

[2]The term 'mine action organisation' is used to refer to any organisation, government, NGO, military or commercial entity, prime or sub-contractor, consultant or agent involved in any humanitarian mine action activities in South Sudan.

detailing the minimum standard and accepted practices/methods of conducting humanitarian mine action activities as part of the South Sudan MAP.

Variation in procedures and methods of operation are to be expected amongst the different mine action organisations. These provide an example of the accepted practices by the NMAA & UNMAS (UNMAS-UNMISS) and provide a basis for comparison during the desk and operational accreditation process.

Organisations which do not conform to the standards outlined in this document shall not be accredited to work within the South Sudan MAP. Additionally, accredited mine action organisation's which do not continuously comply and adhere with the terms of their accreditation i.e. continue to apply the standards and details of accredited SOPs, may have their accreditation suspended or removed.

The following terms used throughout this document to convey the intended degree of compliance:

'Shall' is used to indicate a requirement, methods or specifications that are to be applied in order to conform to the standard.

'Should' is used to indicate the preferred requirement, methods or specifications.

'May' is used to indicate a possible method or course of action.

This document is designed to be a "living" document. The procedures and practices shall be continually reviewed in order to ensure they remain relevant to the current mine/EO situation as well as advances in technology.

In parts this document meets and exceeds those minimum standards set out in the International Mine Action Standards (IMAS), which should be read in conjunction with this publication.

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2. INTRODUCTION

In accordance to 'Security Resolution 1590; the United Nations Mine Action Service South Sudan (UNMAS-UNMISS), has been appointed by the National Mine Action Office (NMAA) South Sudan, who represent the Government of the Republic of South Sudan (GRSS), to coordinate and facilitate all humanitarian mine action activities in South Sudan. This includes establishment of the National Technical Standards and Guidelines (NTSG) for humanitarian Mine Action activities, accreditation of mine action organisations and the quality assurance for tasks completed by such organisations.

The establishment of minimum standards for humanitarian mine action activities are to ensure the following:

To include the safety of people directly or indirectly involved in the work, the quality of the work (level of clearance), the medical evacuation procedures and common activities such as hazard area marking and reporting.

The identification of acceptable procedures shall provide guidelines for the conduct of mine action operations. These shall provide the basis for SOP to be developed by mine action organisations.

The evaluation and approval of SOP and training programs submitted by the mine action organisations will form the minimum standards which shall be fulfilled in order to receive accreditation to conduct mine action operations within South Sudan.

The preparation of an evaluation ground for Mine Detection Dogs (MDD) and criteria for the evaluation of the MDD.

Quality Assurance (QA) of humanitarian mine action activities,

The standards in this document have been written in conjunction with the International Mine Action Standards (IMAS). Where necessary these minimum standards have been enhanced to provide the most appropriate level of safety required for humanitarian mine action operations in South Sudan.

NATIONAL TECHNICAL STANDARDS AND GUIDELINES (NTSG)

The NTSG shall be adhered to by all mine action organisations.

This NTSG provides limited explanations for conducting specific humanitarian mine action activities in order to provide the minimum requirements for conducting recommended and proven clearance methods safely and effectively. In circumstances where an organisation intends to conduct specific procedures which are not detailed in the NTSG or IMAS, prior authorisation shall be sought and possibly granted by the NMAA/UNMAS-UNMISS. All mine action organisations shall be required to have their SOPs and Operational mine action activities accredited as detailed in Chapter19.

Any amendments to the NTSG shall only be authorised by the Chairperson of NMAA.

STANDARD OPERATING PROCEDURES (SOP)

All mine action organisations shall provide NMAA/UNMAS-UNMISS with a complete set of SOPs in English which covers all humanitarian mine activities which they wish to be accredited to conduct.

ACCREDITATION

To allow the NMAA/UNMAS-UNMISS to effectively monitor all humanitarian mine action activities conducted in South Sudan and to achieve an accepted standard of competence and operational best practices, all organisations shall be required to conform to the necessary accreditation requirements before and during humanitarian mine action activities in South Sudan.

NO-STOP CULTURE

It is important that all procedures are carried out safely. If, at any phase of an operation, any individual has cause to believe that an activity will fail, or will incur reasonable risk and particularly incur harm including reputation damage, that person should report to the NMAA or UNMAS-UNMISS.

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4. GLOSSARY

This Glossary is derived from the current edition of IMAS and provides a summary of the mine action terms, definitions and abbreviations used in mine action. If additional information is required, then please refer to IMAS.

All of the terms listed within this glossary may not have been used in this NTSG. They are however included should the requirement to include them in the drafting of mine action organisations SOPs or other documentation arise.

When a term listed in this glossary has been used within the NTSG it is not generally accompanied by the definition. For purposes of clarity and conformity this glossary should be referred to at these times.

All mine action organisations are requested to apply these principles during the compilation of SOPs, referring to an activity, task or other or when the need to refer to the relevant term is required.

Abandoned Explosive Ordnance (AXO)
explosive ordnance that has not been used during an armed conflict, that has been left behind or dumped by a party to an armed conflict, and which is no longer under control of the party that left it behind or dumped it. Abandoned explosive ordnance may or may not have been primed, fuzed, armed or otherwise prepared for use. (CCW protocol V)

acceptance
the formal acknowledgement by the **sponsor** or the sponsor's nominated representative that the **equipment** meets the stated requirements and is suitable for use in **mine action** programmes. An acceptance may be given with outstanding caveats.

access lane
marked passage leading through a **mined area** that has been cleared to provide **safe** movement to a required point or area.

accident
an undesired event which results in **harm**.
Modified from definition in OHSAS 18001:1999.

accreditation
the procedure by which a **mine action organisation** is formally recognised as competent and able to plan, manage and operationally conduct mine action activities safely, effectively and efficiently.

Note: For most mine action programmes, International organisations such as the United Nations Mine Action Service or regional bodies have introduced accreditation schemes.

Note: ISO 9000 usage is that an '**Accreditation' body** accredits the 'Certification or Registration' bodies that award ISO 9000 certificates to organisations. The usage in IMAS is completely different to this, and is based on the main definition above, which is well understood in the mine action community.

accreditation body

an organisation, normally an element of the **NMAA**, responsible for the management and implementation of the national **accreditation** system.

agreement
an alternative term for a contract. An agreement includes all the crucial elements of a **contract**.

Note: Definition when used in a legal sense.

all reasonable effort
describes what is considered a minimum acceptable level of effort to identify and document **contaminated areas** or to remove the presence or suspicion of **explosive ordnance**. All reasonable effort has been applied when the commitment of additional resources is considered to be unreasonable in relation to the results expected.

ammunition
see **munition**

anti-handling device
a device intended to protect a **mine** and which is part of, linked to, attached or placed under the mine and which activates when an attempt is made to tamper with or otherwise intentionally disturb the mine. [APMBC]

Anti-Personnel Mines (APM)
a **mine** designed to be exploded by the presence, proximity or contact of a person and that will incapacitate, injure or kill one or more persons [APMBC].

anti-tank/vehicle mine (ATM/AVM)
a **mine** designed to be exploded by the presence, proximity or contact of a vehicle.

Note: Mines designed to be detonated by the presence, proximity or contact of a vehicle as opposed to a person that are equipped with anti-handling devices, are not considered APM as a result of being so equipped.

Note: ATM/AVM include improvised explosive devices that fir the above definition.

area reduction
the process through which the initial area indicated as contaminated is reduced to a smaller area.
Area reduction may involve some limited **clearance**, such as the opening of access routes and the **destruction** of **mines** and **EO** which represent an immediate and unacceptable **risk**, but it shall mainly be as a consequence of collecting more reliable information on the extent of the **hazardous area**. Usually it shall be appropriate to mark the remaining hazardous area(s) with **permanent** or **temporary marking systems**.
Likewise, area reduction is sometimes done as part of the clearance operation.

armed
The state of a mine or explosive ordnance when all elements of the fuzing train are in line and capable of initiation/firing by applied energy.

audit
a timely process or system inspection to ensure that specifications conform to documented quality standards. An audit highlights discrepancies between the documented standards and the standards followed and might also show how well or how badly the documented standards support the processes currently followed.

battlefield
Refers to an area in which **EO** including **UXO** and **AXO** have been found. This may include former **battle areas**, defensive positions and sites where air delivered or artillery **munitions** have been left, fired or dropped.

Battle Area Clearance (BAC)
the systematic and controlled clearance of hazardous areas where they are known not to contain **mines**.

benchmark
*in the context of **humanitarian demining**, the term refers to …* a fixed point of reference used to locate a marked and recorded **hazard** or **hazardous area**. It should normally be located a short distance outside the hazardous area.

Note: A benchmark may not be necessary if the **reference point** is sufficiently close to the perimeter of the **hazardous area**.

bomblet
see **submunition**.

booby trap
an **explosive** or non-explosive device, or other material, deliberately placed to cause casualties when an apparently harmless object is disturbed or a normally safe act is performed. [AAP-6]

boundary lane
a **cleared lane** around the perimeter of a **hazardous area**.

box
a squared area that is developed for the purpose of being searched by **MDD**.

Note: A box normally measures 10m x 10m, but other sizes may be preferred.

briefing area
*in the context of **humanitarian demining** ….* a clearly identifiable area within the **control point** intended to be the first point of entry to a **mine action worksite**.

Note: The briefing area contains a plan of the **hazardous area** and its current level of clearance, at a scale large enough for briefing purposes, showing the location of control points (car park, first aid point, explosive storage areas, the areas where **mine clearance** work is progressing and distances), and where safety equipment is issued to **visitors**.

burning site
an area authorised for the destruction of **munitions** and **explosives** by burning.

cancelled area
cancelled land (m2)
A defined area concluded not to contain evidence of explosive ordnance contamination following the non-technical survey of a **SHA/CHA**.

clearance
in the context of ***mine action,*** the term refers to tasks or actions to ensure the removal and/or the destruction of all Explosive ordnance from a specified area to a specified depth or other agreed parameters as stipulated by the NMAA/Tasking Authority.

cleared area
cleared land (m2)
A defined area cleared through the removal and/or destruction of all specified **Explosive Ordnance** hazards to a **specified depth**.

cleared lane
safety lane
the generic term for any lane, other than a **boundary lane**, cleared by a survey or clearance team to the international standard for **cleared land**. This may include **access lanes** outside the **hazardous area** or cross/verification lanes inside a hazardous area.

Cluster Bomb Unit (CBU)
an expendable aircraft store composed of a dispenser and **sub-munitions**. [AAP-6]

a bomb containing and dispensing sub-munitions which may be **mines** (anti-personnel or anti-tank), penetration (runway cratering) bomblets, fragmentation bomblets etc.

cluster munition

Note: The following definition of cluster munition is for political purposes as defined in the CMM. From a technical point of view cluster munitions are included in the overall definition of **EO**.

Cluster munition refers to a conventional munition that is designed to dispense or release explosive sub-munitions each weighing less than 20 kilograms, and includes those explosive submunitions. (CCM).

It does not include the following:

a) a munition or submunition designed to dispense flares, smoke, pyrotechnics or chaff; or a munition designed exclusively for an air defence role;
b) a munition or sub munition designed to produce electrical or electrical effects
c) a munition that in order to avoid indiscriminate area effects and the risks posed by unexploded submunitions, has all of the following characteristics:
    (i) each munition contains fewer than 10 explosive submunitions;
    (ii) each explosive submunition weighs more than four kilograms;
    (iii) each explosive submunition is designed to detect and engage a single target;
    (iv) each explosive submunition is equipped with an electronic self-destruction mechanism;

(v) each explosive submunition is equipped with an electronic self-deactivating feature;

community liaison
See **community mine action liaison**
liaison with men and women in **explosive ordnance** affected communities to exchange information on the presence and **impact** of **mines** and, or **EO**, create a reporting link with the **mine action** programme and develop **risk education** strategies. Community liaison aims to ensure that the different community needs and priorities are central to the planning, implementation and **monitoring** of mine action operations.

Note: Community liaison is based on an exchange of information and involves men, women, boys and girls in the communities in the decision making process, (before, during and after **demining**), in order to establish priorities for mine action. In this way mine action programmes aim to be inclusive, community focused and ensure the maximum involvement of all sections of the community. This involvement includes joint planning, implementation, monitoring and **evaluation** of projects.

Note: Community liaison also works with communities to develop specific interim safety strategies promoting individual and community behavioural change. This is designed to reduce the impact of mines/EO on individuals and communities until such time as the **hazard** is removed.

Confirmed Hazardous Area (CHA)
refers to an area where the presence of explosive ordnance contamination has been confirmed on the basis of direct evidence of the presence of **Explosive Ordnance**.

contract
a formal legally binding agreement with specific terms between two or more entities in which there is a promise to do something in return for a valuable benefit known as a consideration.

contractor
any organisation (governmental, non-government or commercial entity) contracted to undertake a mine action activity. The organisation responsible for the conduct of the overall contract is referred to as the 'prime contractor'. Other organisations or parties the prime contractor engages to undertake components of the larger contract are referred to as 'sub-contractors'. Sub-contractors are responsible to the prime contractor and not to the principal.

control area or point
all points or areas used to control the movements of visitors and staff on a **demining worksite**.

cost-effectiveness
an assessment of the balance between a system's performance and its whole life costs.

critical non-conformity
the failure of a 1.0m^2 unit of land during **inspection** to meet the stated **clearance** requirements. IMAS identifies two types of critical non-conformities:
a) the discovery of **Explosive Ordnance**; and

b) other critical non conformities as defined by NMAA.

deflagration
a technical term describing combustion that usually propagates through thermal conductivity [(hot burning material heats the next layer of cold material and ignites it (AOP 38)]

Defined Hazardous Area (DHA)
refers to an area generally within a CHA that requires full clearance. A DHA is normally identified through thorough survey.

deminer
a man or woman qualified and employed to undertake **demining** activities on a **demining worksite**.

demining
humanitarian demining
activities which lead to the removal of **Explosive Ordnance hazards**, including **technical survey**, mapping, **clearance**, **marking**, post-clearance documentation, **community mine action liaison** and the **handover** of **cleared land**. Demining may be carried out by different types of organisations, such as NGOs, commercial companies, national **mine action** teams or military units. Demining may be emergency-based or developmental.

Note: in **IMAS** standards and guides, explosive ordnance **clearance** is considered to be just one part of the demining process.

Note: in IMAS standards and guides, demining is considered to be one component of mine action.

Note: in IMAS standards and guides, the terms demining and humanitarian demining are interchangeable.

demining accident
an **accident** at a **demining workplace** involving an Explosive Ordnance **mine** or **EO hazard** (c. f. **mine accident**).

demining accident response plan
a documented plan developed for each **demining workplace** which details the procedures to be applied to move **victims** from a **demining accident** site to an appropriate treatment or surgical care facility.

Demining machine
*In the context of **mine action***, the term refers to …… a unit of mechanical equipment used in demining operations.

demining incident
an incident at a **demining workplace** involving an **Explosive Ordnance hazard** (c. f. **mine incident**).

mine action organisation
refers to any organisation (government, NGO, military or commercial entity) responsible for implementing demining projects or tasks. The demining organisation may be a prime contractor, subcontractor, consultant or agent.

demining sub-unit
an element of a **mine action organisation**, however named, which is operationally accredited to conduct one or more prescribed **demining** activities, such as **technical surveys**, manual **clearance**, **EOD** or the use of **ADS** teams.

demining worker
all employees, male and female, who work at a **demining worksite**.

demining worksite
any workplace where **demining** activities are being undertaken.

Note; Demining worksites include workplaces where survey, **clearance** and **EOD** activities are undertaken including centralised disposal sites used for the destruction of explosive ordnance identified and removed during clearance operations.

Note: Survey, in relation to a demining worksite includes general survey undertaken to identify mine, and or EO hazards and hazardous areas.

demolition (dml)
destruction of structures, facilities or material by use of fire, water, **explosives**, mechanical or other means (AAP 6).

demolition ground
an area authorised for the **destruction** of **munitions** and **explosives** by **detonation**.

destroy (destruction) in situ
blow in situ.
the **destruction** of any item of ordnance by **explosives** without moving the item from where it was found, normally by placing an **explosive** charge alongside.

destruction
the process of final conversion of **munitions** and **explosives** into an **inert** state whereby they can no longer function as designed.

detection
*in the context of **humanitarian demining**, the term refers to ….* the discovery by any means of the presence of **mines** or **EO**.

detonation
the rapid conversion of **explosives** into gaseous products by means of a shock wave passing through the explosive (c.f. deflagration**).** Typically, the velocity of such a shock wave is more than two orders of magnitude higher than a fast deflagration.

detonator
a device containing a sensitive **explosive** intended to produce a **detonation** wave. [AAP-6]

disarm
the act of making a **mine** or **explosive ordnance** safe by removing the **fuze** or igniter. The procedure normally removes one or more links from the firing chain.

dispenser
a container or device which is used to carry and release submunitions. (APP-)

disposal/destruction site
an area authorised for the destruction of **munitions** and **explosives** by **detonation** and/or burning.

donor
all sources of funding, including the government of mine affected states.

drill munition
an **inert** replica of a **munition** specifically manufactured for drill, display or instructional purposes.

efficiency
in the context of mine action evaluation, the term refers to …. a measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results (**outputs** and **outcomes**).

education
the imparting and acquiring over time of knowledge (awareness or possession of facts, ideas, truths or principles), attitude and practices through teaching and learning. [Oxford Concise English Dictionary]

environment
surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation.

environmental aspects
element of an organisation's activities or products or services that can interact with the **environment**

environmental factors
factors relating to the environment and that influence the transportation of odour from the **mine**, the **detection** of the target odour or the ability of people and dogs to work safety and effectively. (i.e. Wind, rain, temperature, humidity, altitude, sun and vegetation). (Definition for **ADS** use only).

environmental impact
any change to the **environment**, whether adverse of beneficial, wholly or partly resulting from an organisation's **environmental aspects**.

Environmental Impact Assessment (EIA)
*in the context of **mine action** evaluation, the term refers to ….* the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant environmental effects of **mine action** activities prior to decisions being taken and commitments.

Environmental Management System (EMS)
part intentions and direction of an organisation related to its environment performance as formally expressed by top management

equipment
a physical, mechanical, electrical and/or electronic system which is used to enhance human activities, procedures and practices.

evaluation
in the context of ***equipment test*** *and* ***evaluation****, the term refers to ….* the analysis of a result or a series of results to establish the quantitative and qualitative **effectiveness** and worth of software, a component, equipment or system, within the environment in which it will operate.

An assessment, as systematic and objective as possible, of an ongoing or completed project, programme or policy, it's design, implementation and results. The aim of an evaluation is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, **impact** and **sustainability**. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision-making process of both recipients and donors.

Note: Definition from Principles for Evaluation of Development Assistance, Organisation for Economic Cooperation and Development, DAC, 1991.

In the context of programmes, the term refers to …. a process that attempts to determine as systematically and objectively as possible the merit or value of an intervention.

Note: The word 'objectively' indicates the need to achieve a balanced analysis, recognising bias and reconciling perspectives of different stakeholders (all those interested in, and affected by programmes, including beneficiaries as primary stakeholders) through use of different sources and methods.

Note: Evaluation is considered to be a strategic exercise.

Note: Definition when used in relation to programmes. (*UNICEF Policy and Programming Manual*)

excavation
procedures employed in the process of **demining** whereby ground is removed to detect or confirm the presence of sub surface **Explosive Ordnance**.

explosive materials
components or ancillary items used by **mine action organisations** which contain some **explosives**, or behave in an explosive manner, such as **detonators** and **primers**.

Explosive Ordnance (EO)
interpreted as encompassing **mine action's** response to the following munitions:
· Mines
· Cluster Munitions
· Unexploded Ordnance
· Abandoned Ordnance
· Booby traps
· Other devices (as defined by CCW APII)
· Improvised Explosive Devices*

Note: **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.

Explosive Ordnance Disposal (EOD)
the **detection**, identification, **evaluation**, **render safe**, recovery and **disposal** of EO. EOD may be undertaken:

a) as a routine part of **mine clearance** operations, upon discovery of the **EO**.

b) to dispose of EO discovered outside **hazardous areas**, (this may be a single EO, or a larger number inside a specific area); or

c) to dispose of **EO** which has become hazardous by deterioration, damage or attempted **destruction**.

Explosive Ordnance (EO)
Unexploded Ordnance (UXO) and Abandoned Explosive Ordnance (AXO). (CCW protocol V).

explosives
a substance or mixture of substances which, under external influences, is capable of rapidly releasing energy in the form of gases and heat. [AAP-6]

failure
an event in which any system, **equipment**, components or sub-components does not perform as previously specified.

Note: Failures may be classified as to cause, degree, relevance, dependence and responsibility.

fuze
a device which initiates an **explosive** train. [AAP-6]

gender analysis
the study of the differences in men's and women's roles as well as their different access to and control over resources. It is a tool for improving the understanding of how the differences between men and women influence their opportunities and problems and can identify the challenges to participation in development.

gender equality
the equal rights, responsibilities and opportunities of men and women and implies that the interests, priorities and needs of both are taken into consideration equally.

gender mainstreaming (or mainstreaming a gender perspective)
refers to the process of assessing the different implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making the concerns and experiences of both women and men an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. [UNMAT 2005]

gender sensitive see gender equality
A gender sensitive approach to **mine action** takes into consideration the different impact landmines have on men, women, boys and girls. The ultimate aim of

gender sensitive mine action is to conduct mine action in such a way that respects and is based on gender equality.

Geographical (or Geospatial) Information System(GIS)
an organised collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyse, and display all forms of geographically referenced information.

Note: GIS allows a user to graphically view multiple layers of data based on their geographic distribution and association. GIS incorporates powerful tools to analyse the relationships between various layers of information.

ground preparation
preparing of ground in a **confirmed** or **defined hazardous area** by mechanical means by reducing or removing obstacles to clearance e.g. tripwires, vegetation, metal contamination and hard soil to make subsequent **clearance** operations more efficient. Ground preparation may or may not involve the detonation, destruction or removal of **landmines**.

handover
the process by which the beneficiary (for example, the **NMAA** on behalf of the local community or land user) receives and accepts land which was previously suspected of containing an explosive hazard but which has subsequently had this suspicion removed, or reduced to a tolerable level, either through **non-technical survey, technical survey** or **clearance**.

handover certificate
documentation used to record the handover of land which was previously suspected of containing an explosive hazard, but which has subsequently had this suspicion removed or reduced to a tolerable level.

harm
physical injury or damage to the **health** of people, or damage to property or the environment.

harmful event
occurrence in which a **hazardous situation** results in **harm**.

hazard
potential source of **harm.** [ISO Guide 51:1999(E)]

hazard (ous) area
see **contaminated area**
a generic term for an area perceived or actual presence of **mines** or **EO**.

hazard marker
object(s), other than **hazard signs**, used to identify the limits of a **mine** and **EO hazard area**. Hazard markers shall conform to the specification established by the **NMAA/UNMAS-UNMISS.**

hazard marking system
a combination of measures (signs and barriers) designed to provide the public with warning and protection from **mine** and **EO hazards**. The system may include the use of signs or markers, or the erection of physical barriers.

hazard sign
a permanent, manufactured sign which, when placed as part of a marking system, is designed to provide warning to the public of the presence of **mines** or **EO**.

health
in relation to work, the term refers to …. not merely the absence of disease or infirmity, it also includes the physical and mental elements affecting health, which are directly related to safety and hygiene at work. [ILO C155]

humanitarian demining
see **demining.**

Note: In **IMAS** standards and guides, the terms demining and humanitarian demining are interchangeable.

International Ammunition Technical Guidelines (IATG)

Note: IATG are referred to as appropriate within IMAS and are of relevance to demining organizations for the storage, transport and logistics disposal of ammunition. IATG also provide guidance on the EOD clearance of ammunition storage areas after explosion.

impact
in the context of mine action, the term refers to ..... the level of social and economic suffering experienced by the community resulting from the harm or risk of harm caused by **explosive ordnance hazards** and hazardous areas.

Note: **Impact** is a product of:

a) the presence of explosive ordnance hazards in the community;

b) intolerable risk associated with the use of infrastructure such as roads, markets etc;

c) intolerable risk associated with livelihood activities such as use of agricultural land, water sources etc; and

d) number of victims of mine and EO incidents within the last two years.

Note: *in the context of mine action evaluation, the term refers to .....* the positive and negative, primary and secondary long-term effects produced by an intervention, directly or indirectly, intended or unintended. The term 'final outcome' may be substituted.

impact free
a term applied to countries that may still have **mines** but where the **mined areas** are not having a negative socio – economic **impact** on communities, e.g. the mines may be in remote, marked and unpopulated areas.

Note: In most cases, "impact free" should be considered in a static sense (i.e. impact free at this point in time) because changes in socio-economic patterns may bring people into contact with mines/EO that previously had no impact

impact survey
an assessment of the socio-economic **impact** caused by the actual or perceived presence of **mines** and **EO**, in order to assist the planning and prioritisation of mine action programmes and projects.

IMSMA (Information Management System for Mine Action)

Note: This is the United Nation's preferred information system for the management of critical data in UN-supported field programmes. IMSMA provides for data collection, data storage, reporting, information analysis and project management activities. It is used by the staff of **MACs** at national and regional level, however the system is also deployed in support of the implementers of **mine action** projects and **demining organizations** at all levels.

incident
an event that gives rise to an **accident** or has the potential to lead to an accident.

inert
a munition that contains no **explosive**, pyrotechnic, **lachrymatory**, radioactive, chemical, biological or other toxic components or substances.

Note: An **inert munition** differs from a **drill** munitions in that it has not necessarily been specifically manufactured for instructional purposes. The inert state of the munition may have resulted from a **render safe procedure** or other process to remove all **hazardous** components and substances. It also refers to the state of the munition during manufacture prior to the filling or fitting of explosive or hazardous components and substances.

informal demining
self-supporting **mine** and/or **EO clearance** and **hazardous area** marking, normally undertaken by local inhabitants, on their own behalf or the behalf of their immediate community. Often described as a self-help initiative or spontaneous demining, informal demining usually sits outside or in parallel with formal mine action structures, such as demining undertaken by military or humanitarian demining such as is supported by the UN, international and national nongovernmental organisations, private enterprise and governments, among others.

Note: Informal demining is sometimes referred to as “village demining”.

inspection
the observation, measurement, examination, testing, **evaluation** or gauging of one or more components of a product or service and comparing these with specified requirements to determine conformity.

inspection body
an organisation which conducts post-clearance **QC** on behalf of the **NMAA/UNMAS-UNMISS** by applying **random sampling** procedures, or other appropriate and agreed methods of **inspection**.

insurance
an arrangement for financial compensation in the event of damage to or loss of (property, life of a person) to an individual or organization to predetermined levels and due to specific listed circumstances.

Note: Insurance should include appropriate medical, death and disability coverage for all personnel as well as third party liability coverage.

Note: Such insurance need not necessarily have to be arranged through an insurance broker or company, unless otherwise required by contractual arrangements. Self-insurance (underwriting) schemes, provided they are formally constituted on accepted actuarial principles and provide adequate cover, may be an acceptable alternative.

intended use (land)
use of land following **demining** operations.

Note: Intended use: use of a product, process or service in accordance with information provided by the supplier. [ISO Guide 51:1999(E)

Note: Intended land use should be included in the **clearance** task specification and clearance task **handover** documentation.

interchangeability
*in the context of **mine action** equipment **procurement**, the term refers to ….* a condition which exists when two or more items of **equipment** possess such functional and physical characteristics as to be equivalent in performance and durability, and are capable of being exchanged for one another without alteration of the items themselves, or of adjoining items, except for adjustment, and without selection for fit and performance.

intermediate point
survey markers used between **turning points** that are more than 50m apart.

International Mine Action Standards (IMAS)
documents developed by the UN on behalf of the international community, which aim to improve safety, quality and efficiency in mine action by providing guidance, by establishing principles and, in some cases, by defining international requirements and specifications.

Note: They provide a frame of reference which encourages, and in some cases requires, the sponsors and managers of mine action programmes and projects to achieve and demonstrate agreed levels of effectiveness and **safety**.

Note: They provide a common language and recommend the formats and rules for handling data which enable the free exchange of important information; this information exchange benefits other programmes and projects, and assists the mobilisation, prioritisation and management of resources.

International Organisation for Standardization (ISO)
A worldwide federation of national bodies from over 130 countries. Its work results in international agreements which are published as ISO **standards** and **guides**. ISO is an NGO and the standards it develops are voluntary, although some (mainly those concerned with **health**, **safety** and environmental aspects)

have been adopted by many countries as part of their regulatory framework. ISO deals with the full spectrum of human activities and many of the tasks and processes which contribute to **mine action** have a relevant standard. A list of ISO standards and guides is given in the ISO Catalogue [www.iso.ch/infoe/catinfo/html].
Note: The revised mine action standards have been developed to be compatible with ISO standards and guides. Adopting the ISO format and language provides some significant advantages including consistency of layout, use of internationally recognised terminology, and a greater acceptance by international, national and regional organisations who are accustomed to the ISO series of standards and guides.

key informants
all men, women and children who have relatively good knowledge on the hazardous areas in and around their community.

Note: Key informants may include, but are not limited to, community leaders, mine-affected individuals, schoolteachers, religious leaders etc.

lachrymatory ammunition
Lachrymatory **ammunition** contains chemical compounds that are designed to incapacitate by causing short-term tears or inflammation of the eyes.

land release
*in the context of **mine action**, the term* describes the process of applying "all reasonable effort" to identify, define, and remove all presence and suspicion of **Explosive Ordnance** through **non-technical survey, technical survey** and/or **clearance**. The criteria for "all reasonable effort" shall be defined by the **NMAA**.

letter of agreement
a simpler form of contract that states the essentials of the agreement without including all the details. It may be used as a precursor to a formal contract or, in some cases, may be used in place of a more formal contract.

licence
*in the context of **mine action**, the term refers to …..*a certificate issued by a **NMAA/UNMAS-UNMISS** in relation to the capacity or capability of a facility, for example a demolition site may be licensed for certain explosive limits and explosive storage areas may be licensed for certain types and quantities of munitions. **Demining organisations** receive organisational or operational **accreditation** from an **accreditation body** authorised by a NMAA/UNMAS-UNMISS.

logistic disposal
*in the context of **mine action**, the term refers to …..*the removal of **munitions** and **explosives** from a **stockpile** utilising a variety of methods, (that may not necessarily involve **destruction**). Logistic disposal may or may not require the use of **RSP**.

lot size
*in the context of **humanitarian demining**, the term refers to …..*an area (comprising a number of 1.0m^2 units of **cleared land**) offered for **inspection**.

magazine
In the context of **mine action**, the term "magazine" refers to any building, structure, or container approved for the storage of explosive materials c.f. explosive storehouse.

maintainability
the ability of an **equipment**, component or sub-component under stated conditions of use, to be retained or restored to a specific condition, when maintenance is performed by personnel having specific skill levels, under stated conditions and using prescribed procedures and resources.

marking
emplacement of a measure or combination of measures to identify the position of a **hazard** or the boundary of a **hazardous area**. This may include the use of signs, paint marks etc, or the erection of physical barriers.

marking system
an agreed convention for the **marking** of **hazards** or **hazardous areas**.

mechanical application
the generic term to describe the use of machines in the conduct of **mine clearance** operations.

mechanical demining operations
refers to the use of **machines** in demining operations and may involve a single **machine** employing one **mechanical tool**, a single machine employing a variety of tools or a number of machines employing a variety of tools.

mechanical tools
the working component(s) attached to a **machine**, such as flails, tillers, sifters, rollers, excavators, ploughs, magnets etc. A single machine may utilise a number of different **tools**, which may be fixed or interchangeable.

medical support staff
men and women employees of **demining organisations** designated, trained and equipped to provide first aid and further medical treatment of **demining** employees injured as a result of an **accident**.

Memorandum of Understanding (MOU)
a document used to facilitate a situation or operation when it is not the intention to create formal rights and obligations in international law but to express commitments of importance in a non-binding form.

mine
munition designed to be placed under, on or near the ground or other surface area and to be exploded by the presence, proximity or contact of a person or a vehicle. [APMBC]

mine accident
an accident away from the **demining workplace** involving a **mine** or **EO** hazard (see **demining accident**).

mine action
activities which aim to reduce the social, economic and environmental **impact** of **mines** and **EO** including **unexploded sub-munitions**.

Note: Mine action is not just about demining; it is also about people and societies, and how they are affected by **landmine** and **EO** contamination. The objective of mine action is to reduce the risk from **landmines** and **EO** to a level where people can live safely; in which economic, social and health development can occur free from the constraints imposed by landmine contamination, and in which the victims' needs can be addressed. Mine action comprises five complementary groups of activities:

a) EORE;

b) humanitarian demining, i.e. mine and EO survey, mapping, marking and clearance;

c) victim assistance, including rehabilitation and reintegration;

d) stockpile destruction; and

e) advocacy against the use of APM.

Note: A number of other enabling activities are required to support these five components of mine action, including: assessment and planning, the mobilisation and prioritisation of resources, information management, human skills development and management training, **QM** and the application of effective, appropriate and safe equipment.

Mine action organisation
refers to any organisation (government, military, commercial or NGO/civil society) responsible for implementing **mine action** projects or tasks. The **mine action** organisation may be a prime **contractor**, subcontractor, consultant or agent.

Mine clearance
the clearance of **mines** and **EO** from a **specified area** to a predefined standard.

Mine Detection Dog(s) (MDD)
a dog trained and employed to detect **mines**, **EO** and other **explosive** devices.

mine free
a term applied to an area that has been certified as clear of mines to a specified depth. Also applied to a country or an area that has not had a mine contamination problem.

mine incident
an incident away from the demining workplace involving a **mine** or **EO** hazard see **demining incident**.

mine risk
the probability and severity of physical injury to people, property or the environment caused by the unintentional **detonation** of a mine or EO. [ISO Guide 51:1999(E)]

explosive ordnance risk reduction
those actions which lessen the probability and/or severity of physical injury to people, property or the environment. [Adapted from ISO Guide 51:1999(E)]

mine sign
a sign which, when placed as part of a **marking system**, is designed to provide warning to the public of the presence of **mines**.

mined area
an area which is dangerous due to the presence or suspected presence of **mines**.

minefield
an area of ground containing **mines** laid with or without a pattern. [AAP-6]

monitoring
refers to a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an on-going project, programme or policy with indications of the extent of progress and achievement of objectives, and progress in the use of allocated funds.

monitoring body
an organisation, normally an element of the **NMAA/UNMAS-UNMISS**, responsible for management and implementation of the national **monitoring** system.

munition
a complete device charged with **explosives**, propellants, pyrotechnics, initiating composition, or nuclear, biological or chemical material for use in military operations, including **demolitions**. [AAP-6]

Note: In common usage, 'munitions' (plural) can be military weapons, ammunition and equipment.

national authority
*in the context of **stockpile destruction,** the term refers to ….* the government department(s), organisation(s) or institution(s) in each country charged with the regulation, management and coordination of stockpile destruction.

National Mine Action Authority (NMAA)
the government entity, often an inter-ministerial committee, in a mine-affected country charged with the responsibility for the regulation, management and coordination of **mine action**.

Note: In the absence of a **NMAA**, it may be necessary and appropriate for the UN, or some other recognised international body, to assume some or all of the responsibilities, and fulfil some or all the functions, of a **MAC** or, less frequently, an **NMAA**.

Non-permissive environment
In the context of humanitarian mine action: an operational area during a specified time period where there is a humanitarian need, where access is not possible, or where consent is not provided by relevant stakeholders, preventing mine action activities to take place according to the humanitarian principles and within the framework of international humanitarian law. (opp. Permissive environment).

Neutralise
The act of replacing safety devices such as pins or rods into an **explosive** item to prevent the **fuze** or igniter from functioning.

Note: It does not make an item completely safe as removal of the safety devices shall immediately make the item active again (i. e. **disarm**).

Note: A **mine** is said to be neutralised when it has been rendered, by external means, incapable of firing on passage of a target, although it may remain dangerous to handle. [AAP-6]

non-sparking material
material that shall not produce a spark when struck with tools, rocks, or when the material itself strikes hard surfaces.

Non-Technical Survey
refers to the collection and analysis of data, without the use of technical interventions, about the presence, type, distribution and surrounding environment of **explosive ordnance** contamination, in order to define better where explosive ordnance contamination is present, and where it is not, and to support **land release** prioritisation and decision-making processes through the provision of evidence.

Operational Analysis (OA)
see operational research
a field of research that applies scientifically based quantitative and qualitative analysis to assist management decisions relating to operations.

output
in the context of mine action evaluation, the term refers to ..... the products, capital goods and services which result from a mine action intervention. Outputs may also include changes resulting from the intervention which are relevant to the achievement of outcomes (such as the development of local capacities).

outcome
in the context of mine action evaluation, the term refers to..... the likely or achieved short-term and medium-term effects of an intervention's outputs. Outcomes are related to the 'effectiveness' of an intervention.

particle board
a composition board made of small pieces of wood, bonded together.

permanent marking system
a **marking system** having an indefinite period of use, usually requiring maintenance (i. e. **temporary marking system**).

Permissive Environment
In the context of humanitarian mine action: an operational area during a specified time period where there is a humanitarian need, where access remains possible, and where consent is provided by relevant stakeholders, allowing mine action activities to take place according to the humanitarian principles and within the framework of international humanitarian law. (opp. Non permissive environment
Note: Reference can be made to IMAS 01.10: 6.2 Humanitarian Principles: In its response to explosive ordnance, mine action is first and foremost a humanitarian

concern. Framing of the standards and their application as part of any humanitarian response shall reflect the fundamental humanitarian principles of humanity, impartiality, neutrality and independence

Personal Protective Equipment (PPE)
all equipment and clothing designed to provide protection, which is intended to be worn or held by an employee at work and which protects him/her against one or more **risks** to his/her **safety** or **health**.

pilot test
a process ahead of the commencement of wide range data collection to ensure that all survey project elements, such as team deployment, data collection, reporting and administration, are functioning as planned.

policy
defines the purpose and goals of an organisation, and it articulates the rules, standards and principles of action which govern the way in which the organisation aims to achieve these goals.

post clearance assessment
surveys to assess the effectiveness and efficiency of **mine action planning**, **priority setting**, and implementation processes, aiming to enhance the productivity and effectiveness of **mine action**, monitor post-clearance land use, ensure priority-setting processes are clear, transparent and carried out correctly, and help identify problems faced by communities in transforming the outputs of **mine action** (e.g. cleared land) into sustainable developmental outcomes.

pre-test
a process at the start of a survey to validate clarity and appropriateness of the selected survey instrument.

primer
a self-contained **munition** which is fitted into a cartridge case or firing mechanism and provides the means of igniting the propellant charge.

principal
the entity that contracts another entity to undertake the required **mine action** activity. The principal may be a donor, a **NMAA**, organisation acting on behalf of the NMAA, a commercial organisation or any entity that desires mine action to be conducted and engages a mine action organisation to do so.

procurement
the process of research, development and production or purchase which leads to an **equipment** being accepted as suitable for use, and continues with the provision of spares and **Post Design Services** (PDS) throughout the life of the equipment.

prodding
a procedure employed in the process of **demining** whereby ground is probed to detect the presence of sub-surface **mines** and/or **EO**.
Also See **sapping**.

programme
a group of projects or activities which are managed in a co-ordinated way, to deliver benefits that would not be possible were the projects and/or contracts managed independently.

project
an endeavour in which human, material and financial resources are organised to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives.

project management
the process by which a project is brought to a successful conclusion.

proposal
an offer for consideration or acceptance by another entity.

protective measure
means used to reduce **risk.** [ISO Guide 51:1999(E)]

proximity verification
an activity to observe explosive ordnance hazard areas reported during the community interview.

Note: Observation must be done from a safe area and in accordance with the relevant protocols.

public education
the process aimed at raising general awareness of the **hazards of mines** and **EO**; through public information, formal and non-formal education systems.

Note: Public education is a mass mobilisation approach that delivers information on the mine/EO threat. It may take the form of formal or non-formal education and may use mass media techniques. There may be a difference in access to education between men, women, boys and girls, which may affect the outreach of the mine awareness message and may call for the adoption of different educational means, message and material.

Note: In an emergency situation, due to time constraints and the lack of available data, it is the most practical means of communicating safety information. In other situations, it can support **community liaison.**

public information dissemination
information concerning the **mine** and **EO** situation, used to inform or update populations. Such information may focus on particular issues, such as complying with mine ban legislation, or may be used to raise public support for the mine action programme. Such projects usually include risk reduction messages but, may also be used to reflect national mine action policy.

quality
degree to which a set of inherent characteristics fulfils requirements. [ISO 9000:2000].

Quality Assurance (QA)
part of **QM** focused on providing confidence that quality requirements shall be fulfilled. [ISO 9000:2000]

Note: The purpose of QA in **humanitarian demining** is to confirm that management practices and operational procedures for demining are appropriate, are being applied, and will achieve the stated requirement in a safe, effective and efficient manner. Internal QA will be conducted by **demining organisations** themselves, but external inspections by an external **monitoring body** should also be conducted.

Quality Control (QC)
part of QM focused on fulfilling quality requirements. [ISO 9000:2000]

Note: QC relates to the *inspection* of a finished product. In the case of **humanitarian demining**, the 'product' is **safe cleared land**.

Quality Management (QM)
coordinated activities to direct and control an organisation with regard to **quality**. [ISO 9000:2000]

random sampling
selection of **samples** by a process involving equal chances of selection of each item. Used as an objective or impartial means of selecting areas for **test** purposes.

recognition piece
A metal piece, which is placed under test items to make them recognisable with a metal detector.

reduced area (m2)
A defined area concluded not to contain evidence of **explosive ordnance** contamination following the technical survey of a **SHA/CHA**.

reference point
landmark
a fixed point of reference some distance outside the **hazard(ous) area**. It should be an easily recognised feature (such as a cross-roads or a bridge) which can be used to assist in navigating to one or more **benchmarks**.

Note: Internationally these are often also referred to as Geodetic Points when they refer to a pre-surveyed location such as a trig point.

reliability
the ability of an **equipment,** component or sub-component to perform a required function under stated conditions for a stated period of time.

reliable (mine action) information
information deemed acceptable and reliable by the **NMAA/UNMAS-UNMISS** for the conduct of **mine action** operations.

Render Safe Procedure (RSP)
the application of EOD methods and tools on EO to interrupt functions or separate components to prevent an unacceptable detonation.

Note: The term permanent neutralisation is sometimes used interchangeably here.

Note: EO is said to be “neutralised” when it has been rendered, by external means, incapable of firing on passage of a target, although it may remain dangerous to handle.

research
the systematic inquiry, examination and experimentation to establish facts and principles.

residual risk
s the risk remaining following the application of all reasonable effort to identify, define, and remove all presence and suspicion of explosive ordnance through non-technical survey, technical survey and/or clearance.

risk
combination of the probability of occurrence of **harm** and the severity of that **harm.** [ISO Guide 51:1999(E)]

risk analysis
systematic use of available information to identify **hazards** and to estimate the **risk.** [ISO Guide 51:1999(E)]

risk assessment
overall process comprising a **risk analysis** and a **risk evaluation.** [ISO Guide 51:1999(E)]

risk evaluation
process based on **risk analysis** to determine whether the **tolerable risk** has been achieved.[ISO Guide 51:1999(E)]

risk reduction
actions taken to lessen the probability, negative consequences or both, associated with a particular **risk**.

safe
the absence of risk. Normally the term tolerable risk is more appropriate and accurate.

Note: in the context of **munitions**, the term safe is related to the “safe position” of a **fuze**. This may not reflect the status of the munition, as internal corrosion and / or degradation may have compromised the safety mechanisms of a fuze.

safety
the reduction of risk to a tolerable level. [ISO Guide 51:1999(E)]

sample
*in the context of **humanitarian demining**, the term refers to …..* one or more $1.0m^2$ units of land drawn at random from a lot.

sample size
*in the context of **humanitarian demining**, the term refers to …..* the number of $1.0m^2$ units of land in the **sample**.

sampling
*in the context of **humanitarian demining**, the term refers to …..*a defined procedure whereby part or parts of an area of **cleared land** are taken, for testing, as a representation of the whole area.

sampling plan
*in the context of **humanitarian demining**, the term refers to …..*a specific plan that indicates the number of 1.0m^2 units of land from each lot which are to inspected (**sample** size or series of sample sizes) and the associated criteria for determining the acceptability of the lot (acceptance and rejection numbers).

sapping
*in the context of **humanitarian demining**, the term refers to ….* a procedure employed in the process of demining whereby, in conjunction with other procedures, ground is cleared by digging forward to a **specified depth** from a **safe** start point.

scent
a distinctive odour.

secondary fragmentation
in an **explosive** event, fragmentation which was not originally part of the **explosive ordnance**. Usually secondary fragmentation consists of stones from the ground or masonry from structures, which have been projected as a result of an explosion.

sex and age disaggregated data (SADD)

collection of data which includes details on sex and age, knowing who is affected – men or women, boys or girls - and who among them is the most at risk, and so prevents the services provided from being off target. Data on the population affected by the crisis should always be broken down by age and sex and other relevant factors such as ethnicity or religion.

South Sudan National Mine Action Authority (NMAA)
The institution appointed by the Government of South Sudan charged with the regulation, management and coordination of mine action in South Sudan.

Note: In South Sudan, NMAA is supported by UNMAS-UNMISS, who may assume some or all of the responsibilities, and fulfil some or all the functions of the NMAA.

specified area
*in the context of **humanitarian demining**, the term refers to …..*that area for which **mine clearance** activity has been contracted or agreed, as determined by the **NMAA/UNMAS-UNMISS** or an **organisation** acting on its behalf.

specified depth
*in the context of **humanitarian demining**, the term refers to …..*the depth to which a **specified area** is contracted or agreed to be cleared of **mine** and **EO hazards**, as determined by the **NMAA/UNMAS-UNMISS** or an **organisation** acting on its behalf.

standard
a standard is a documented agreement containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics to ensure that materials, products, processes and services are fit for their purpose.

Note: **Mine action standards** aim to improve safety and efficiency in mine action by promoting the preferred procedures and practices at both headquarters and field level. To be effective, the standards should be definable, measurable, achievable and verifiable.

Standard Operating Procedures (SOPs)
instructions which define the preferred or currently established method of conducting an operational task or activity.
Note: Their purpose is to promote recognisable and measurable degrees of discipline, uniformity, consistency and commonality within an organisation, with the aim of improving operational effectiveness and safety. SOPs should reflect local requirements and circumstances.

standards
requirements, specifications or other precise criteria, to be used consistently to ensure that materials, products, processes and services are fit for their purpose.
Mine action standards aim to improve safety and efficiency in mine action by promoting the preferred procedures and practices at both headquarters and field level.

Standing Operating Procedures (SOPs)
see Standard Operating Procedures (SOPs).

steel
general purpose (hot or cold rolled) low-carbon such as ASTM A366b or equivalent.

stockpile
*in the context of **mine action**, the term refers to …..*a large accumulated stock of **EO**.

stockpile destruction
the physical destructive procedure towards a continual reduction of the stockpile of explosive ordnance.

submunition
any **munition** that, to perform its task, separates from a parent munition. [AAP-6]
mines or munitions that form part of a **CBU**, artillery shell or missile payload.

survey marker
a durable and long lasting marker used to assist in the management of marked and **cleared land** during **demining** operations.

survivor
a man, or a woman or a child who has suffered harm as a result of a **mine**, **EO** or **cluster munition accident**.

survivor assistance
see **victim assistance**

Suspected Hazardous Area (SHA)
an area where there is reasonable suspicion of **explosive ordnance** contamination on the basis of indirect evidence of the presence of **mines/EO**.

sustainability
in the context of mine action evaluation, the term refers to …. the continuation of benefits from a **mine action intervention** after major assistance has been completed.

systematic investigation
a systematic process of applying **technical survey** in a **SHA/CHA**. It is typically used where there are no areas within the SHA/CHA that are more likely to contain **mines/EO**, than others.

targeted investigation
the investigation during technical survey of certain areas within a **SHA/CHA** that are more likely to contain **mines/EO**.

task identification number (ID)
a unique number used to designate a **hazardous area**. Task identification numbers shall be allocated by the **NMAA/UNMAS-UNMISS**.

team leader
The individual in charge of the mine action organisation task site. Mine action organisations may refer the same to Site Supervisor, Technical Field Manager, Technical Advisor or any other name suitable to them.

technical survey
refers to the collection and analysis of data, using appropriate technical interventions, about the presence, type, distribution and surrounding environment of **explosive ordnance** contamination, in order to define better where explosive ordnance contamination is present, and where it is not, and to support **land release** prioritisation and decision making processes through the provision of evidence.

temporary marking system
a marking system having a stated finite period of use (i. e. **permanent marking system**).

test
determination of one or more characteristics according to a procedure. [ISO 9000:2000]

Test and Evaluation (T&E)
activities associated with the testing of hardware and software.

Note: Activities include the formation and use of procedures and standards, the reduction and processing of data and the assessment and evaluation of **test** results and processed data against criteria such as defined **standards** and specifications.

test site
the site at which a series of test boxes or lanes are prepared for the purpose of operational accreditation testing of MDD.

theft resistant
construction designed to deter and/or delay illegal entry into facilities used for the storage of explosives.

TNT (2, 4, 6 Trinitrotoluene)
one of the most widely used military high **explosive**s. TNT is very stable, non-hygroscopic and relatively insensitive to impact, friction, shock and electrostatic energy. TNT is the most widespread type of explosive used in **mines** and **munitions**.

tolerable risk
risk which is accepted in a given context based on current values of society. [ISO Guide 51:1999(E)]

trial
a series of **tests** organised in a systematic manner, the individual results of which lead to an overall evaluation of a component, **equipment** or system.

turning point
a fixed point on the ground which indicates a change in direction greater than 3 degrees of the perimeter of the **hazardous area**. It shall be clearly marked and recorded. Buried metal objects should be used to mark all turning points for permanent future reference.

Unexploded Ordnance (UXO)
explosive ordnance that has been primed, fuzzed, armed or otherwise prepared for use or used. It may have been fired, dropped, launched or projected yet remains unexploded either through malfunction or design or for any other reason.

unit rate
the rates agreed and accepted for specific priced activity items and quantities stated in a **contract**.

United Nations Mine Action Service (UNMAS-UNMISS)
the focal point within the UN system for all mine-related activities.

Note: UNMAS-UNMISS is the office within the UN Secretariat responsible to the international community for the development and maintenance of **IMAS**.

user
a man or a woman or an organisation that will operate the equipment.

Note: For the purpose of mine action, the user could also be defined as ‘a composite body of informed and authoritative opinions on the needs of national commercial and NGO users, today and in the future’.

validation
the act of ratification that takes place after a process of **verification**.

verification
confirmation, through the provision of objective evidence that specified requirements have been fulfilled. [ISO 9000:2000].

victim
persons either individually or collectively who have suffered physical, emotional and psychological injury, economic loss or substantial impairment of their fundamental rights through acts or omissions related to the use of **mines** or the presence of **EO**. Victims include directly impacted individuals, their families, and communities affected by **landmines and EO**.

Note: in the context of victim assistance, the term may include …. dependants or other persons in the immediate environment of an explosive ordnance casualty, hence having a broader meaning than **survivor**.

victim assistance
refers to all aid, relief, comfort and support provided to victims (including survivors) with the purpose of reducing the immediate and long-term medical and psychological implications of their trauma.

Victim Operated
A type of switch designed to be initiated by a victim's presence, proximity, contact or activity causing a device to function that may injure or kill one or more persons.

village demining
self-supporting **mine** and/or **EO clearance** and **hazardous area** marking, normally undertaken by local inhabitants, on their own behalf or the behalf of their immediate community. Often described as a *self-help initiative or spontaneous demining,* village demining usually sits outside or in parallel with formal mine action structures, such as *demining* undertaken by militaries or *humanitarian demining* such as is supported by the UN, international and national non-governmental organisations, private enterprise and governments, among others.

visitor
for the purposes of IMAS, a person who is neither member of the **demining organisation**, nor a **demining worker** accredited by the **NMAA/UNMAS-UNMISS.**

White Phosphorous (WP)
a chemical smoke screening agent which burns in contact with air, (with serious **anti-personnel** affect if the phosphorous comes in direct contact with people).

workplace
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. [ILO R164]

South Sudan

National Technical Standards Guidelines

Date: 03 October 2024

Chapter 01

Survey

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1.1 Non-Technical Survey

a. Non-technical survey (NTS) is an essential component of humanitarian mine action on the South Sudan Mine Action Programme. The term Non-Technical Survey describes an important survey activity which involves collecting and analysing new and/or existing information about a hazardous area (HA). Its purpose is to confirm whether there is evidence of a hazard or not, to identify the type and extent of hazards within any HA and to encourage operators to estimate a HA perimeter as far as possible, based on available information without physical intervention.

b. This chapter provides guidance on the conduct of NTS and details procedures, responsibilities and obligations of the mine action organisations involved. This chapter should be read in conjunction with NTSG Chapter 23 Land Release.

1.1.1 Purpose of NTS

c. Due to the high number of hazardous areas (HA) reports recorded in South Sudan, NTS is necessary to confirm the status of this data by conducting thorough investigations of the reported HA and conducting reviews of any existing data available.

d. In addition, the NTS is necessary in areas where it was not previously conducted. The reasons may be:

- Prolonged insecurity in an area.
- Lack of information resources such as the absence of population during previous mine action activities.
- Lack of physical access.

e. NTS serves the following purposes:

- to assess whether areas are contaminated by Explosive Ordnance (EO);
- to define SHAs where analysis of indirect evidence of the presence of EO justifies doing so;

- to define CHAs where direct evidence of the presence of EO justifies doing so;
- to cancel all, or part of, the area of SHAs/CHAs where there is no evidence of EO contamination;
- to identify socio-economic and threat factors that may influence future prioritisation of clearance;
- to collect, as accurately and reliably as possible, information about:
  i. The characteristics and distribution of contamination that may assist in the effective and efficient planning of follow-on technical interventions such as targeted technical survey and clearance;
  ii. Accidents and incidents to people and animals;
  iii. Physical changes to the environment such as the disposition of soil by flooding and wind, landslides etc. that may have modified the local situation after contamination was laid/deployed;
  iv. The physical circumstances at the site such as access route, vegetation, soil, topography, infrastructure, agriculture, the security situation and other factors that may influence priority setting and method of following up with additional mine action support.

1.1.2 NTS Outputs

a. Upon completion of an NTS, surveyors should reclassify the Suspected Hazardous area into one or more Confirmed Hazardous Areas (CHA). It may be possible to move from NTS straight to clearance operations if the data collected during the survey is reliable, direct evidence that identifies the location(s) and/or type and/or proportion of the hazard. NTS therefore has the following outputs:

- Identify, define and/or remove all suspicion of EO;
- Recommend the definition of the CHA, where appropriate and justified on the basis of ‘’all reasonable effort’’.

- Recommend the cancellation of some or all of the area of existing SHA/CHAs where appropriate and justified.

- Recommend for further non-technical or technical action including, where appropriate, details of recommended asset types and methodologies.

b. CHAs should only be created after an NTS has been undertaken and sufficient direct evidence of hazards has been found which shall require further action. An NTS may not be able to define clear boundaries of the area and, if this is the case, approximate boundaries should be assessed. All reasonable effort should be applied when estimating the boundaries and presenting them in the survey report. A lack of survey detail, including the evidence, should not inflate these boundaries.

1.1.3 SHA and CHA criteria

NTS criteria for defining SHA and CHA can be found in Chapter 23 Land Release, Direct and Indirect Evidence.

1.1.4 Cancellation

a. A condition for the cancellation of an area through non-technical survey is that “all reasonable effort” has been applied up to, and including the non-technical survey, and that it can be demonstrated with high confidence that there is no evidence of EO contamination in the area. A definition and criterion for “all reasonable effort” can be found in the Chapter 23 Land Release, “All Reasonable Effort”.

b. Absence of evidence may be taken as justification for cancellation by demonstrating that, had contamination in fact been present, the combination of all the efforts applied would have identified evidence in the respective area.

1.1.5 Evidence-based decision-making process

a. Decisions about defining SHAs and CHAs and progressing through the land release process efficiently and effectively should be taken on the basis of available evidence. The quality, quantity and detail of available evidence will determine to a great extent the quality and reliability of decisions.

b. The use of all appropriate evidence in support of decision-making should be documented in order to establish and maintain confidence in non-technical surveys and in the overall land release process. Such evidence should also be made available to support investigations into matters relating to liability.

1.1.6 NTS General Methodology

a. Where applicable, during the planning phase for the NTS activity a comprehensive desk assessment shall be conducted. All sources of information should be explored and analysed to determine their authenticity and accuracy (e.g. IMSMA information to include but not restricted to accident and incident reports, NTS reports, minefield records).
b. The NTS team shall ensure that all relevant information sources are identified, and relevant information is appropriately collected, recorded and analysed.
c. SHA/CHA should be defined on the basis of information source reliability and the relevance of direct or indirect evidence.
d. In the absence of reliable and verified survey information, in order to yield additional information, the decision makers should consider additional non-technical or technical survey activities.
e. Recommendations to cancel existing areas should only be made on the basis that ‘’all reasonable effort’’ has been applied to identifying, defining and removing suspicion of the presence of EO.

1.1.7 Sources of information

a. The survey should be structured to enable male and female informants to share their knowledge of contaminated areas.
b. The principles of cultural diversity awareness shall be considered, and separate meetings should be arranged with female informants and children respectively, as these groups might be prevented from participating fully in mixed group meetings. When required, female team members should assist in conducting interviews with females and children.
c. It may also prove difficult to repeatedly return to the same informants many times for information about new areas. A plan for the systematic collection of information should address this issue.

d. The quality of information received during NTS is dependent upon the informant's knowledge and the evidence found by the team when conducting NTS. Therefore, to assist in determining the quality of information received, the following broad classification should be considered:

- **First-hand sources of information:** people and institutions with first-hand knowledge about specific hazards (e.g. when and where mines were laid). This information may be considered more accurate than second and third hand information. First-hand sources of information may include men, women and children in the affected communities, military, police, mine victims and others who observed mine laying or accidents etc.
- **Second-hand sources of information:** people and institutions that did not form part of or observed, for example, the mine laying or accidents but have been told about EO hazard. Second-hand sources of information may also include men, women and children in the local communities, pedestrians, local authorities, farmers, hunters, hospitals etc.
- **Physical evidence of EO:** physical observable information that indicates various degrees of evidence of EO. Physical evidence may include craters, military positions, trench lanes, local mine marking, packaging, SAA cartridges etc.
- **Information from historical sources and records:** the reliability and accuracy of information from historical sources and records which have or have not been assessed for accuracy.

e. Direct evidence can generally be classified as offering greater confidence than indirect evidence and first-hand information is likely to offer greater confidence than second-hand or more informal information.

1.1.8 Land Use

a. During NTS, a team may find that the recorded HA is being used by the local community for cultivation or grazing purposes. When this has occurred, the

use of land by the community may serve as one of the factors in the confirmation of whether or not a HA contains landmines and other EO.

b. Depending on the degree of use by the local community, a wrongly recorded HA may be cancelled in part or completely.

c. Usage of land varies significantly, from intensive cultivation to infrequent use by hunters. The level of usage determines how reliable the information is. For example, if land has been used extensively for cultivation over a number of seasons and no evidence of EO has occurred, this should be deemed sufficient information to clarify the true situation of the HA.

d. If land has been used only marginally, a longer period may be required before the same confidence can be assured.

e. The fact that land is in use may not, in isolation, be sufficient to release land. Past, current and future use should be combined with additional information to allow land release. A standard system should be in place to classify confidence in the information provided by assessing the use of the land therefore, when assessing past and current use of land, the following broad requirements should apply:

- A systematic assessment should be made of:
- How the land is being used;
- How long it has been used;
- How many people have used the land;
- The precise limits of areas used, together with any areas which have not been used;
- Depth of cultivation;
- Whether landmines and other EO have been found during the use of the land;
- The circumstances under which these hazards were found;

- How long ago they were found.

1.1.9 Road Use

a. NTS may find that extensive use of a suspected road over a prolonged period of time and without recorded accidents may provide sufficient evidence to conclude that the road, or parts of it, is no longer suspected of being hazardous due to landmines and other EO, even though it may not have been physically cleared.
b. It is rare that roads are mined along their entire length, so they should be divided into smaller sections that may form part of a longer HA. Some sections may be released while other sections may not be released and may require further investigation. This may apply to linear road sections as well as to the areas on the side of the road, particularly as requirements develop for certainty about safety at greater distances from the centre line of the road.
c. When assessing past and current use of roads, the requirements in para 1.1.8 Land Use should be adapted and applied as well as Chapter 20 Route Verification.

1.1.10 NTS Requirements

a. **Reports:** Standards have been set for the recording of information so that there are standard formats for collation and dissemination. Records shall be kept in written, graphic, and digital formats so that both digital and paper-based reports may be transferred to the teams in the field and the operational planners on the programme. On the SSUDANMAP the IMSMA Survey123 shall be the primary tool used for recording of all NTS. NTS teams shall also provide photographs/sketches/maps with the Survey Report. When applying the Land Release (Chapter 23); during NTS of a HA, i.e. no evidence of EO found, as mentioned in paragraph 1.1.8 Land Use, then a Completion Report with sufficient justification shall be used to cancel the area.
b. **Maps:** Maps are a key element in providing geographical data on SHAs and CHAs. If available, the most detailed and accurate maps should be used for recording of these areas; however, if no suitable maps are available accurate

sketch maps may be used. The map series, date of production and scale shall be clearly identified. It is important to remember that a different map series may have been used and referred to in earlier surveys/mapping reports; there should be no confusion in cross-referencing. The use of digital maps is widely used on the South SUDANMAP therefore it is the organisation's responsibility to liaise with the UNMAS-UNMISS IMSMA Office on the most compatible mapping software recommended to be used.

c. **Measurement:** All measurements used on the South SUDANMAP shall be metric measurements. A variety of measurement equipment may be used to accurately record SHA and CHA data. These may include:

- Metric measuring tape, compasses, protractors, Global Positioning System (GPS), Differential Global Positioning System (DGPS), range finders etc.
- In each case the equipment selected shall provide the greatest degree of accuracy and reliability to the field operator who shall ensure accuracy during the application.
- Personnel tasked to conduct NTS shall have a good working knowledge of map reading and be able to operate and calibrate their own equipment.

d. Differential Global Positioning System (DGPS) provides the greatest degree of accuracy when recording positional data. Whenever possible and/or practicable, a DGPS should be employed by mine action organisations to accurately record positional data during humanitarian mine action activities. When organisations are contractually obligated to utilise DGPS during the recording of positional data, they shall be required to do so.

e. Marking of all hazardous areas is a vital component of humanitarian mine action operations and should be implemented at the earliest possible opportunity in order to provide a visual warning of the presence of EO. Whenever possible the standard mine sign and minefield marking systems, as per Chapter 3, shall be the chosen method; however, it is accepted that initially this may not always be possible or practicable. However, markings shall be installed at the earliest opportunity and where it is safe to do so.

f. Hazardous area marking shall be considered in line with Chapter 3. For further information on marking systems and procedures see Chapter 3 Marking System.

1.1.11 NTS Team Requirements

Organisations / Teams conducting NTS on the South SUDANMAP shall meet the following requirements:

a. **Training:** All organisations conducting NTS shall be required to submit a training programme to NMAA/UNMAS-UNMISS for approval prior to commencing training (See Chapter 13). Correct training of NTS staff shall have a major impact on the accuracy of the NTS being conducted. During the training the following tasks shall be followed:

- Thorough internal assessments of team members shall be conducted and their results to be recorded.
- On completion of training, a signed Training Declaration and the internal assessment results shall be submitted to the NMAA/UNMAS-UNMISS.
- An operational accreditation assessment shall be conducted by the NMAA/UNMAS-UNMISS.

b. **Team Composition** The size and composition of an NTS team may vary depending on the local situation and the complexity of the task. As a minimum, the team shall be composed of;

- 1 x Team Leader
- 3 x Operators/Deminers
- 1 x Accredited medic
- 1 x Designated ambulance driver
- 2 x trained CLOs (can be amongst Operators/deminers)

Non-Technical Survey teams should include both female and male staff to ensure that surveys may be carried out in a gender sensitive manner. At least one member of the team should be trained and accredited as a Community Liaison Officer (CLO).

c. Communication Requirement: There is a requirement for the team to be capable of communicating in the event of an emergency. Each team must have as a minimum a primary and secondary means of communication which is capable of contacting the designated support locations as per organisation SOPs/NTSG.

d. **CASEVAC/MEDEVAC Plan** When conducting NTS tasks, a CASEVAC/MEDEVAC Plan shall be required as per organisations SOPs/NTSG.

e. Minimum Vehicle Requirements

- 1 x Support vehicle
- 1 x Ambulance/Safety Vehicle

f. **Safety** NTS teams shall not take unnecessary risks;

- By walking or driving on land/roads where there is a risk of mines.
- When team members work on foot, credible local advice shall be sought prior to walking on land, paths or roads.
- Local guides should only be considered after a careful assessment has determined that the guide has sufficient knowledge of hazards in the area to safely guide the survey team on mine-free land.
- NTS teams should not enter the SHA.

g. **Liaison** Teams conducting NTS should employ their Community Liaison Officer (CLO) to help coordinate with the appropriate local authorities to ensure that it is safe to conduct NTS work in an area and to avoid disruptions in the work of the authority, the police or the military. He/she may also acquire information from other informants that the team may not have had access to.

h. **Community Involvement** Local participation should be fully incorporated into all stages of the land release process, including non-technical survey, in order to obtain agreement from all relevant stakeholders and to ensure that land is used appropriately after it has been released. Community involvement should include men, women and children living or working in or near the suspected area and where appropriate, owners of land.

1.2 Technical Survey

a. The detail of this Chapter provides the minimum requirements to mine action organisations charged with conducting Technical Survey (TS) tasks on the South SUDANMAP. Organisation SOPs and Implementation Plans shall reflect these minimum requirements. Any deviation from these guidelines shall require approval by the NMAA/UNMAS-UNMISS Chief of Operations.
b. In general, TS is a process during which a clearance asset is engaged in collecting information to support the land release decision-making processes at various levels. Due to a predominantly nuisance minelaying in South Sudan, the TS method should be applied within the limitations further elaborated in this Chapter.

1.2.1 General Requirements

a. To ensure that all activities during TS are carried out safely.
b. To ensure that the technical levels are of a standard that shall ensure the safety, effectiveness, efficiency and quality of all clearance operations.
c. Technical survey should not be carried out unless an assessment of what is likely to be found in the area has been carried out, making use of all relevant data, information and analysis.
d. The technical survey methodology should provide a high degree of confidence that, if the assessed contamination is present, evidence of its presence will be encountered.
e. All information about the nature and distribution of contamination gathered during the TS process shall be recorded and reported as per normal clearance operations.

f. TS should be monitored and Quality Controlled/Assesed as per normal clearance operations.

1.2.2 Information Gathering and Reporting

a. Information collected during TS has the following main purposes:
b. To confirm the presence of EO and to define more accurately the nature and extent of its distribution.
c. To assist decision makers to make valid and efficient decisions within the Land release process. This includes the following factors relevant to any future clearance requirements:

- Priority of future clearance operations;
- Hindrance factors such as vegetation, logistics, communications, etc;
- Area(s) to be cleared in future clearance operations;
- Required clearance depth;
- Local soil conditions, type, density firmness etc;
- Mine patterns and type of mines to include fusing, positions, etc;
- Fragmentation and general metallic contamination levels;
- Suitable means of clearance for the task;
- Areas suitable for different means of clearance i.e. manual, MDD and/or mechanical assets;
- Estimated time for completion of future clearance operations.

d. A Completion Report shall be completed by the mine action organisation and submitted to NMAA/UNMAS-UNMISS Sub-office once the TS has been completed. This shall include a map, which

shall be clearly illustrated, the scale shall be large as is practical and it shall have the following information recorded on it:

- Reference Point details including description, photograph and grid reference.
- Benchmark details including details, photograph and the grid reference.
- Start point position.
- Turning point positions plotted using a DGPS or otherwise approved by the NMAA/UNMAS-UNMISS on exceptional cases, and a Compass bearing and distance taken. All turning points shall be given a number that shall be recorded on the polygon sketch showing distance and bearings. Turning points shall be on the inside of the boundary lane.
- Each Leg (A straight run of the HA boundary lane between intermediate or turning points) the distance shall be recorded in metres; the bearing shall be recorded in degrees (360 degrees' azimuth).
- North indicator.
- Scale.
- Date – the sketch was completed.
- Description and location of the admin area used.
- Name – the name of the person who made the sketch shall be indicated.

- EO Contaminated area – areas found to be contaminated during the survey shall be indicated on the sketch and this shall include patterns, whenever possible.
- All EO locations.
- EO destroyed or removed.
- Exploratory lane details of locations, lengths etc. shall be recorded
- Areas cleared using MDD shall be recorded which should include all indications given by the MDD
- Areas cleared using mechanical means of clearance/ground preparation including detonations are also to be recorded on the sketch.
- Details of possible areas suitable for future mechanical clearance/ground preparation.
- Details of areas suitable for future MDD ops – suitable without ground prep, with ground prep.
- Areas suitable for manual clearance and areas that shall require a full excavation.
- Any steep areas.
- Areas with dense vegetation.
- Marking/Fencing that has been done in the minefield
- Areas with high fragmentation or non-cooperative soil
- Access routes for mechanical means of clearance ground/preparation

- Areas where flooding and/or erosion have occurred.
- Location of accidents in the area.
- Other information such as but not restricted to visual remains, craters, evidence of removed mines, mine patterns.
- Any other relevant information.
- Signature from the verifying Team Leader.
- Type of equipment used.

1.2.3 Output from Technical Survey

a. The outputs from a technical survey may include:
   - Definition of any area containing EO contamination;
   - Additional information for planning the clearance of any area identified as containing EO contamination;
   - Additional information for the establishment of priorities for future action.

b. The resulting Completion report may provide information and make recommendations about:
   - adjustments to SHA/CHA boundaries in light of evidence discovered during the survey;
   - material evidence of EO and various technical details listed in section 1.2.2 of this Chapter;
   - the resources recommended to carry out follow-on activities, such as clearance, including assets to be used in specific areas.

c. The process through which the initial area indicated as contaminated (during the NTS) is reduced to a smaller area is known as 'area reduction'. Area reduction may involve some limited clearance, such as the opening of access routes and the destruction of EO, which represent an immediate and unacceptable

risk, but it shall mainly be as a consequence of collecting more reliable information on the extent of the hazardous area. Due to a predominantly nuisance minelaying in South Sudan, 'area reduction' should be considered only in special cases and shall require approval by the NMAA/UNMAS-UNMISS Chief of Operations.

1.2.4 Technical Survey Methods

a. TS is an intrusive process, utilising accredited clearance assets or their components.
b. TS may be carried out as an independent activity or it may be integrated with clearance operations.
c. In general, the following procedures shall be covered during the TS:

- Tasking;

- Planning: a comprehensive desk assessment shall be conducted.

  All sources of information should be explored and analysed to determine their authenticity and accuracy (e.g. IMSMA information [to include but not restricted to accident and incident reports, HA and/or Completion reports, minefield records] and any other historical information from past reports). This information should help assess:

  i. The type of soil likely to be present;
  ii. The possible density and distribution of EO contamination within the area;
  iii. The type and size of suitable assets;
  iv. Identification of areas that would justify targeted investigation.

- Site visit to the hazardous area. Preferably, the site visit team should comprise of all interested and/or involved parties including but not restricted to, mine action organisation rep(s) i.e. team leaders, site Team Leaders, NMAA/UNMAS-UNMISS rep, EORE

rep, local community rep, mechanical/MDD organisation reps and reps from the organisation that conducted the NTS;

- task preparations including meetings with male and female representatives of the community and EORE for the local population (EORE should be done before, during and after the TS);
- Site preparations and setting up of site;
- Clearance of the boundary lane;
- Preparations of exploratory lanes;
- Marking and/or fencing of the task;
- Internal QA of work;
- NMAA/UNMAS-UNMISS EQA visits;
- Completion Report to be submitted to the NMAA/UNMAS-UNMISS.

d. Depending on evidence about the nature and distribution of contamination, integration of technical survey with clearance should be always considered, to increase the efficiency with which land is confidently and reliably released.
e. Targeted technical survey should reflect available information about the expected presence of hazard items and take into account analysis of the wider context of contamination within the theatre of operations. Targeted technical survey in contrast to 'systematic' technical survey should be considered a preferred TS methodology in South Sudan.
f. Sometimes it may be appropriate to conduct TS when there is no immediate need to clear all the land. The objective in such circumstances shall be to accurately identify, record, mark and fence the extent of the hazardous area in order to reduce the risk of mine accidents or incidents occurring.

1.2.5 TS team Requirements

a. Any accredited clearance team or their autonomous component may be tasked to conduct TS in accordance with approved methodologies and relevant NTSG Chapters.
b. The TS team should be equipped with sufficient field equipment so that it may operate fully autonomous from other operations.

1.3 Responsibilities

c. It is the responsibility of the mine action organisation, with delegated authority through Team Leaders and section leaders, to ensure that all specific TS procedures and associated practices are implemented in accordance with this Chapter:

- Ensure that all activities during TS are carried out safely;
- Ensure that the technical levels are of a standard that shall enhance the safety, effectiveness, efficiency and quality of all technical survey operations.

d. Prior to conducting TS utilising any accredited assets, it is the responsibility of the mine action organisation to compile and assimilate all of the available information concerning their task in order to draft their implementation plan. This may include but not be restricted to information from NMAA/UNMAS-UNMISS, information from other mine action organisations concerning previous relevant activities, information from the NTS team, EORE team and possibly the Landmine Impact Survey.
e. A TS team shall undertake thorough training in all TS requirements to ensure that all team members/assets are competent in performing their individual responsibilities.
f. When conducting TS, the drills for all procedures associated with TS activities Mechanical, Manual, and MDD etc. shall be fully adhered to as outlined in the relevant chapters in this NTSG.
g. TS tasking may require the mine action organisation to erect hazardous area fencing/marking to reduce the risk of unintentional entry into the hazardous area. This may be tasked later in line with Chapter 3..

Information on this shall be passed on to representatives of all members of the community through the EORE team or Community Liaison Officer.

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Chapter 02

Site Preparation and Setting Out

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2.1 Site Layout Requirements

a. The nature of the ground shall determine the layout of any work site, however a consistent arrangement with correct marking shall increase the safety of those involved in humanitarian demining. The standardisation of site layout and all marking systems is a requirement and shall as a minimum conform to the details within this chapter.

2.1.1 Control Point

a. The control point acts as an administration and briefing area and is the point where all visitors shall arrive. Ideally it should be on level, well-drained land and have vehicle access and preferably some shade. The entire area of the control point shall be cleared using appropriate methodology approved in the implementation plan. The location of the control point shall be a minimum of one hundred metres from the baseline of the hazardous area. This distance shall be increased depending on the perceived threat that may result from fragmentation should a high order detonation occur. As the clearance progresses, the CP may be moved to allow easiest access to the HA but shall never be closer than 100m. The relocation of the CP closer to the hazardous area shall after consultation with NMAA/UNMAS-UNMISS.

2.1.2 Access Lane

a. An access lane shall be a minimum of two metres wide. White posts or stones shall be used to mark this lane. Access lane shall be without obstacles.

2.1.3 Vehicle Parking Area

a. This should be part of the Control Point and large enough to accommodate the mine action organisation's vehicles and visitor's vehicles. All vehicles should be positioned in the parking area so they do not have to manoeuvre to depart in the event of an emergency.

2.1.4 Stores & Equipment Area

a. An area used for the secure storage of equipment. Usually part of or adjacent to, the Control Point.

2.1.5 Medical Area

a. Shall be sited and equipped in accordance with Chapter 10.

2.1.6 Explosives Area

a. Shall be sited and stored in accordance with Chapter 12.

2.1.7 Rest Area

a. Rest areas shall be sited for use by deminers during their breaks and should provide sufficient shade, space for resting and for preparing and/or storing necessary equipment. The positioning and location of rest areas shall need to consider the requirements to comply with the wearing of PPE.

2.1.8 Metal Collection Pit

a. This shall be marked and shall be located in a safe area and at a convenient distance from working deminers. All scrap metal removed from the mined area shall be placed within the metal collection pit. Prior to completion or suspension of the task, the contents of the metal contamination pit shall be buried and marked and recorded or removed to another area for disposal. In order to facilitate quality control, metal collection pits should not be located in areas cleared that day. Using concrete slab to cover the metal collection pits after the completion of the task is not a requirement.

2.1.9 Latrine

a. Latrines should be located in the vicinity of the control point and should be adequate for the number of personnel on the site. The location of the latrine shall be a minimum distance of 50m from the CP. Separate toilets shall be constructed for male and female team members.

2.1.10 Demolition Area

a. A location cleared for the disposal, by explosive demolition, of mines and unexploded ordnance which have been deemed safe to move. The demolition area shall 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.

2.1.11 Sentry Points

a. Sited at access points to hazardous areas when required; particularly on route, road and verge clearance tasks. It shall have radio communications with the senior person on site. The team leader shall ensure that the sentries are placed in the correct positions in line with Chapter 5 of this NTSG.

2.2 Site Reference Points Requirements

2.2.1 Reference Points

a. The reference point description, location and the safe route from it to the Start point (SP) of the HA shall be included in the Survey and Hazard Report Form. There may be a requirement to identify intermediate points when the reference point is located at a vast distance from the SP, the terrain is featureless, there are a number of obstacles or there are multiple changes in direction along the route.

2.2.2 Benchmark

a. This is to be erected on completion of clearance and can be of a natural or man-made permanent object (no trees) and shall:

- Be constructed of materials that shall endure the environment and shall extend deep enough into the ground with a solid foundation to support the weight.
- Be clearly visible in normal daylight at a safe distance from the direction of approach. Identifying intermediate points may be required when the BM is located a vast distance from the SP, the terrain is featureless, there are a number of obstacles, or there are multiple changes in direction along the route.
- Protrude a minimum of one metre above the ground.
- A metal picket or similar shall be driven flush with the ground at the base of the benchmark.
- All information is to be engraved as well as painted on the Bench Mark
- Be located anywhere in a safe area outside the task polygon, ensuring there is a line of sight to the start point or intermediate point for the ease of navigation.
- Conform to the figures 0-1 and figure 0-2 in the next page:

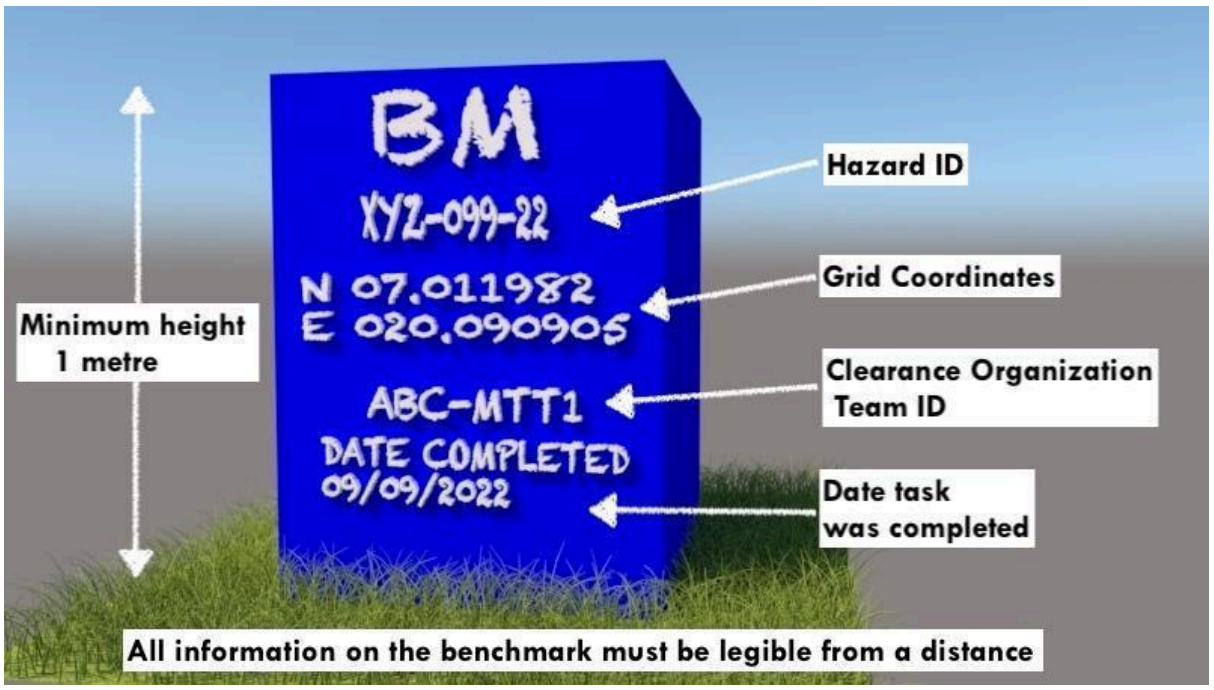

Figure 0-1 Benchmark Marking. Benchmarks can be in any colour.

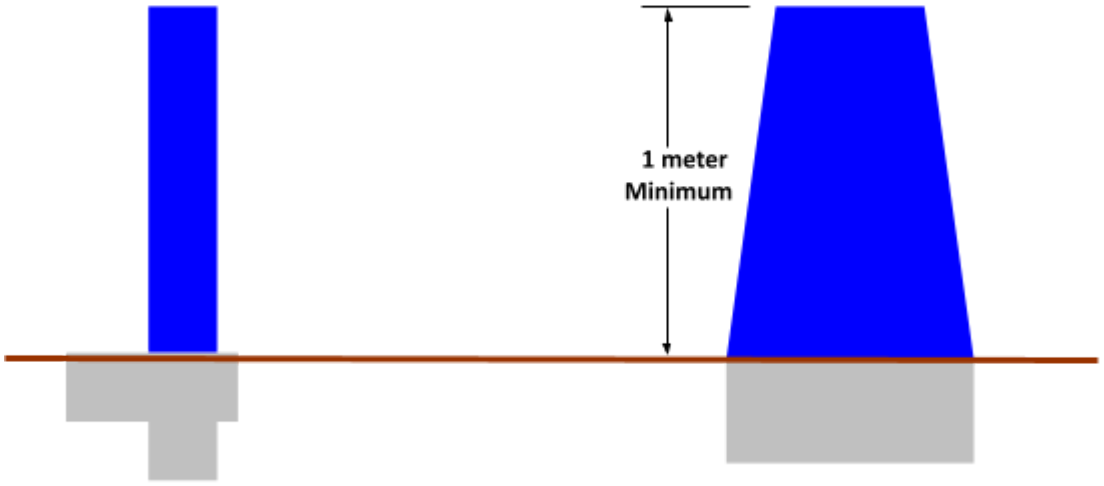

Figure 0-2 Benchmark Designs

b. In consultation with the UNMAS office, there will be cases where the BM is not required for UN Mission/humanitarian requested suspected hazards

2.2.3 Start Point

a. This is a clearly identifiable fixed marker and the point where clearance begins. All minefield measurements are taken from this point and

depending on the location of cleared mines / ERW; it may be decided to position additional start points for ease of mapping during or on completion of clearance. The initial start point should be clearly visible from the benchmark, otherwise Intermediate Points shall be utilised for ease of navigation.

2.2.4 Boundary Line

a. It is a fixed line located from the start point which forms the perimeter of the known hazardous area or cleared boundary lane, providing a definite location of the safe area. As clearance progresses, the minimum necessary markings (e.g., turning points, intermediary points) shall remain in place to identify the boundary line for navigation and post clearance marking purposes. The start line, which may be initially located on the boundary line, should be moved forward after a substantial amount of the area is cleared and subsequently, mark the divide between the cleared and hazardous area.

2.2.5 Boundary Lane

a. This is a cleared and marked lane a minimum of two metres wide along the boundary of the hazardous area which is utilised when there is no confirmed safe boundary from which to start clearance. Where possible, a boundary lane shall be cleared around the entire perimeter of the hazardous area. If there is no requirement to clear a boundary lane then it may be decided to mark a control lane outside and parallel to the Boundary Line. Depending on the requirement to restrict movement of demining personnel, equipment and vehicles in the immediate area around the boundary, it may be decided that a control lane is not necessary.

2.2.6 Start Line

a. This is the line from where mine/ERW clearance begins and marks the divide between the safe and hazardous area. This may be located on the boundary line and should be moved forward after a substantial amount of area is cleared. In circumstances where limited clearance has been conducted (e.g., clearance lanes for technical survey) the start line should remain in position.

2.2.7 Setting out the Boundary Line & Lane

a. When determining the position of the boundary line, the use of existing (known safe areas) linear features such as roads, paths, cultivated land etc. should be considered. When there is a requirement to clear a boundary lane, the boundary line shall mark the rear edge of the cleared lane. The boundary lane shall be a minimum of two metres in width.

2.3 During Clearance

2.3.1 Clearance Lane

a. This is the lane where deminers are working. The clearance lane shall be a maximum of fifty metres in length. On reaching a maximum distance of 5 metres the lane shall be widened to a minimum of two metres, to assist in CASEVAC. Clearance lanes shall also be required to be widened to a minimum of two metres on encountering obstacles i.e. trees, rocks, in order to safely navigate/clear past said obstacles.

2.3.2 Cleared Lane

a. A lane that has been cleared of all mines and ERW to the required standard.

2.3.3 Intermediate Lane

a. A cleared lane forward and parallel to the start line or boundary line which connects clearance lanes for safety and command / control purposes. The distance from the start line / boundary line to the intermediate lane and between any consecutive intermediate lanes shall be a maximum of fifty metres.

2.3.4 Location of Mine/ERW

a. When a mine/ERW is not dealt with immediately upon being located, it shall be marked and the clearance lane closed. Before the end of the working day these mines/ERW shall be destroyed unless prior approval has been granted from the NMAA/UNMAS-UNMISS, in which case the locations shall be also marked by grid coordinates.

2.3.5 Minimum Safety Distances

a. The following table details the minimum safety distances to be enforced at a mine clearance task:

MINIMUM DISTANCES FOR A MINE CLEARANCE WORK SITE			
Situation		Normal Risk	Increased Risk
1	Adjacent working personnel wearing PPE in suspected anti-personnel blast mines less than 200 gm.	10 metres	15 metres
2	Adjacent working personnel wearing PPE in suspected anti-personnel blast mines 200gm or more.	15 metres	20 metres
3	Adjacent working personnel wearing PPE in suspected anti-tank mine areas.	25 metres	50 metres
4	Adjacent working personnel wearing PPE in suspected anti-personnel stake, bounding or directional fragmentation mine areas.	20 metres	25 metres
5	Between the explosive storage point, hazardous area and other designated areas.	50 metres	
6	Between designated safe areas and the hazardous area.	100 metres	
7	Between personnel not wearing PPE and personnel working in anti-personnel or anti-tank mine areas.	100 metres	

1. Any reduction to these distances shall only be authorised by the NMAA/UNMAS-UNMISS on a case-by-case basis and shall be required to be included in the detail of relevant Implementation Plans.

2. These Safety distances shall be increased when required in accordance with the mine / ERW threat.

3. Encroachment of the safety distances IAW Serials 1 to 5 are acceptable, in order to conduct supervisory/QA functions. At these times, supervisory/QA personnel should avoid remaining static and spend minimum time inside the safety distance.

4. Full PPE shall be required to be worn by all personnel at all times regardless of role on encroachment past the designated PPE HOTLINE whilst clearance is taking place.

5. Normal risk. There is no reason to believe that the application of standard manual demining procedures shall result in an unintended detonation.

6. Increased risk. The worksite conditions complicate the application of standard manual demining procedures in a way that could be predicted to result in an unintended detonation. (IMAS 10.20 Annex B.6.2.)

Table 0-1 Minimum Safety Distances for a Mine Clearance Work Site

2.4 **Responsibilities**

2.4.1 NMAA/UNMAS-UNMISS

a. Shall develop a policy and establish national standards for the

- Minimum requirements for the establishment of mine action worksites.
- Procedures for the establishment of working distances based on risk reduction methodologies.
- Standards regarding the selection and use of reference points.

2.4.2 Mine action organisations

a. Mine action organisations shall:

- Issue, maintain and update their own regulations and SOPs regarding the establishment of mine action worksite.
- Cooperate with other mine action organisations in the same country to ensure consistency of standards on worksites.

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Chapter 03

Marking System

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3.1 Scope

This standard specifies the minimum requirements for the marking of explosive ordnance (EO) hazards (isolated EO) and suspected and confirmed hazardous areas (polygons). This marking is intended to warn civilians and to prevent them from approaching EO hazards or entering suspected and confirmed hazardous areas. This standard also details the responsibilities of the national mine action authorities and mine action organisations involved.It applies to the marking of hazardous areas on land. It applies to the marking aimed at preventing the entry into hazardous areas by people approaching by land.

3.2 Terms and definitions

a. Explosive ordnance marking

Emplacement of a measure or combination of measures, including EO signs, EO boundary markers and physical barriers, to indicate the location of a spot hazard or the boundary of a suspected or confirmed hazardous area to provide a clear warning of EO danger to civilians.

b. Explosive ordnance sign

Visual notice giving information in a written and/or symbolic form which is designed to provide warning to the public of the presence of suspected or confirmed hazardous area or spot EO hazard.

c. Explosive ordnance boundary marker

Object, other than EO signs, used to identify the perimeter of a suspected hazardous area or confirmed hazardous areas

3.3 General requirements for EO marking systems

Once a suspected hazardous area (SHA), confirmed hazardous area (CHA) or spot hazard is identified, it shall be marked as soon as possible to reduce the risk to civilians. Where applicable, the EO marking shall be monitored and maintained and shall only be removed once the area is cleared or cancelled. If an SHA or CHA is reduced, the EO marking shall be adjusted to the new perimeter.

The EO marking shall be emplaced along the perimeter of SHA/CHA in a manner that it is visible from any direction of approach. To ensure the continuity of the marking, such

marking shall be emplaced in a manner that is visible when approaching any of its entrances.

EO marking shall be unambiguously recognizable and understandable as indicating EO hazards by persons regardless of their age, gender, language and education, especially their level of literacy.

EO signs and EO boundary markers shall:

− be understood, recognizable and appropriate to the local cultural context;

− use a contrasted and highly visible colour commonly associated with danger, such as red or orange.

EO marking shall clearly identify which side of the marked boundary is considered to be within the SHA/CHA and which side is considered to not be contaminated with EO.

The two sides shall be of different colours. In the case when the marking is put directly on the external structure of a building, the marking shall only have one side.

Manufactured EO signs shall:

− be no smaller than 28 cm horizontally by 20 cm vertically for a triangle;

− be no smaller than 25 cm per side for a square;

− contain a symbol sensitive to the local culture and text indicating a danger due to EO. The text shall be in the language(s) and alphabet(s) that are understood by the local communities. It may contain additional text in a different language accessible to larger groups of people, for example, circulating people or displaced people.

EO signs and boundary markers may be tested with a representative sample of the target audience to ensure marking is understood regardless of literacy, age and other diversity factors relevant to the affected communities.

If EO signs are not available, or when local conditions prevent their effective use, then EO boundary markers shall be used to indicate EO hazards.

EO marking in daylight shall be clearly visible from a distance of at least 30 m before entering an SHA or CHA. An EO sign shall be clearly visible from the next EO sign. If EO signs are obscured by vegetation or terrain, the use of a physical delineation (for

example, warning tape) or barrier (like fencing) should be considered to ensure the continuity of the EO marking. If an area is known to experience a high volume of human traffic, the use of a physical barrier should be considered.

The design of hazard marking systems and material should take account of:

- the duration for which the marking system will be in place;
- the cost and availability of local materials;
- the risk of degradation of the EO marking due to local environmental conditions including the climate, the vegetation and the fauna;
- the risk of degradation of the EO marking by the population, for example, the risk of removal of EO marking material due to its intrinsic value, and the fauna.

It is generally accepted that materials used in marking systems should have little, if any, value or practical use for purposes other than EO hazard area marking in order to minimise the risk of intentional removal.

EO signs and boundary markers shall not be constructed of munition casings, materials that could have contained explosives, or discarded weapon systems.

EO marking of the perimeter of the hazardous area shall be established on safe ground, on the edge closest to the SHA/CHA without entering it. Subsurface checks should be made before driving stakes or any structure into the ground.

3.4 Temporary EO marking

Where applicable, an identified SHA, CHA or isolated EO should be marked as soon as possible.

A temporary EO marking may be installed in order to prevent the entry of the population into these areas. The concerned communities shall be informed of the temporary EO marking.

The temporary EO marking system shall remain effective until:

- the installation of a durable EO marking system if no further land release action or explosive ordnance disposal (EOD) spot task is going to take place in the near future;

− the cancellation of the hazardous area.

The temporary EO marking system shall be replaced with a durable EO marking system if no further land release action or EOD spot task is going to take place in the near future.

3.5 Durable EO marking systems

If no further land release action is not going to take place in the near future, then a durable EO marking system shall be installed if applicable or otherwise agreed with NMAA/UNMAS. The concerned communities shall be informed of the durable EO marking system.

The EO marking system shall remain effective until such a time it is removed. Thus, it shall effectively prevent accidents resulting from the entrance of people in identified hazardous areas or from an interaction with an EO until the completion of the land release process. This overarching requirement guides the design and the choice of material for EO marking systems.

The design of such marking includes but is not limited to the following points:

− the effective exclusion of the population from the identified SHA/CHA;

− the planned or foreseeable duration after installing the EO marking system and further land release activity;

− the cost and durability of EO marking material;

− local materials freely available in the contaminated region;

− the risk of degradation of the EO marking due to human and environmental factors;

− the impact on the environment caused by the EO marking;

− the cost and access to the EO marking to monitor and maintain it.

In certain environments, the use of physical barriers can contribute to the long-term effectiveness of the EO marking system and to the reduction of its maintenance costs. Physical barriers may include fences, walls, ditches or other obstructions that prevent the unintentional entry into an SHA, CHA or spot hazard.

However, as a general rule, it is not efficient to use physical barriers for EO marking of an SHA/CHA that is scheduled for clearance in the near future. Rather, demining organisations may design and use alternative cost-effective materials for EO marking of such areas.

If, due to any reason, the clearance of an SHA or CHA is postponed to an unknown date, then the EO marking system of the area may be reinforced with the use of physical barriers, as agreed with NMAA/UNMAS UNMISS.

The durable EO marking systems shall conform to the standards determined by the NMAA/UNMAS, and required measures should be taken to make sure the EO marking system is monitored and maintained until the area is cleared.

3.6 EORE Integral Component of EO marking

Community liaison is an integral component of efficient EO marking and shall be conducted before, during and after the EO marking. Mine action organisations shall liaise with communities – including, for example, community leaders, community-based organisations and community members – and local authorities concerning EO marking in order to:

- gather and disseminate information about EO marking systems including informal ones;
- record information on community priorities for EO marking (including suitable materials that will reduce the risk of removal, theft or destruction);
- test the recognition and understanding of EO signs and boundary markers with a representative sample of the EO population;
- ensure community understanding and respect for EO marking; and
- actively involve the community in the preservation of EO marking;
- seek approval from the landowner(s) to apply the planned EO marking activity, in cases where there is an identified landowner(s).

The communication about EO marking shall include communities that are likely to transit by the marked areas, such as internally displaced persons.

3.7 Marking Pickets/Posts/Rocks

Boundaries of all areas, lanes and points in EO clearance operations shall be marked with appropriate markers. The methods to be used shall be wooden pickets/posts and/or painted stones. The appropriate method shall be utilised after consideration of the prevailing ground conditions.

3.7.1 South Sudan EO Clearance Marking Standard

To standardise marking the following colour code and identification system shall be adopted (see Figure 1). Organisation may incorporate an enhanced marking system to identify where a specific asset or methodology has worked however this is to be included in their SOP or an amendment shall be submitted as a site-specific amendment.

- **Short red-topped picket/red rocks:** Indicate the boundary between clear/safe and hazardous/unsafe areas. They shall be spaced at a maximum of 1m intervals; posts shall be a minimum of 30cm above the ground and rocks minimum of 10cm diameter. (Rocks shall be painted 50/50 with red and white paint to enhance the visibility and indicate safe / unsafe areas.)

- **White-topped picket/white rock:** Indicate the boundary of designated safe areas. Pickets shall be a minimum of 30cm above the ground, rocks minimum of 10cm diameter.

- **Yellow-topped picket/yellow rock:** Indicate the location of removed or destroyed AP Mines. Should also be used in areas where missing mine drill have been completed (In this case the picket should be designated as “MM”).

- **Yellow & Black-topped picket/yellow & black rock:** Indicate the location of removed or destroyed AT Mines. When applicable this system should also be used in areas where missing mine drill have been completed (In this case the picket should be designated as “MM”).

- **Yellow & Red-topped picket/yellow & red rock:** Indicate the location of removed or destroyed ERW.

- **Blue-topped picket/blue rock:** Indicate the start of the daily clearance/GP and the location of metal contamination pits.

- **White-topped blue picket/white blue rock:** Shall be used to indicate the internal QC conducted by the organisation.

- **Green-topped picket/green rock:** Indicate the boundaries of the areas processed using MDD.

- **Long-red topped picket:** These pickets are used to enhance the boundary marking between clear/safe and hazardous/unsafe areas, during clearance operations in conjunction with short red pickets and rocks at 1m intervals, when the visibility is restricted due to terrain or vegetation they shall be spaced a maximum of 15 metres apart and a minimum of 1m above the ground. A mine or UXO warning sign is normally positioned on the long picket.

- **Crossed Red Pickets:** Used to indicate a clearance lane has been closed on MMC sites.

N.B. The aim of marking is to always have one continuous perimeter that clearly defines the hazardous and safe areas throughout the life of the task.

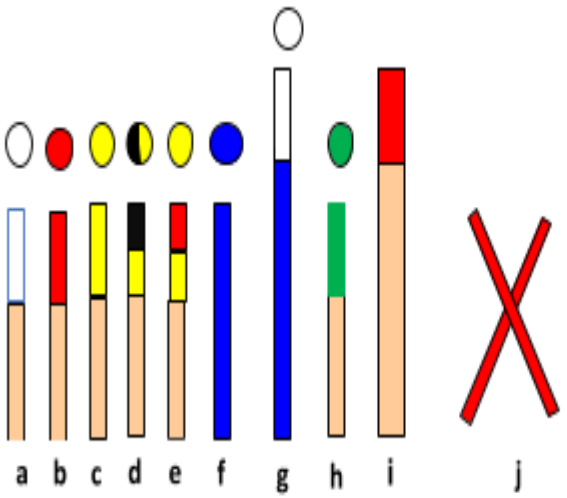

Figure 3-1 South Sudan EO Clearance Marking Standard

3.8 Base Sticks

Base sticks are used by deminers to maintain the width of the clearance lane. The figure below shows the recommended design. The rule is that the area behind the base stick is safe (cleared of mines), and in front of the base stick it is unsafe (not cleared of mines). The red portion of the base stick marks the 1m lane width whilst the 10cm white ends indicate the required overlap.

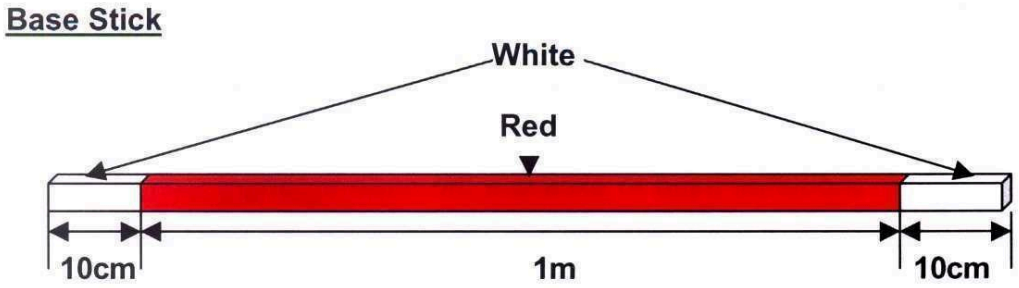

Figure 3-2 Base Stick Design

3.9 Hazardous Area Marking

The triangular or square sign conforming to the diagrams below have been adopted as the recognised sign for a hazardous area in South Sudan.

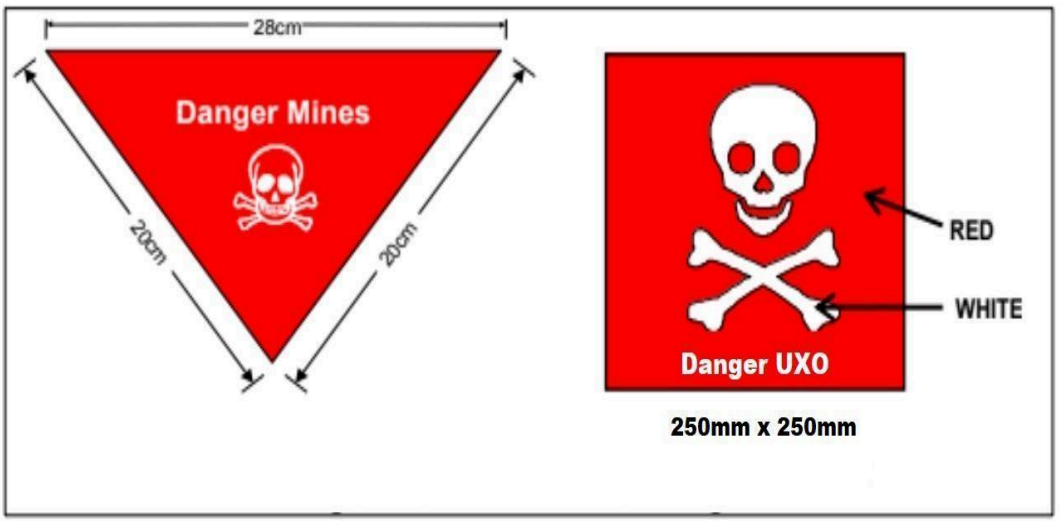

Figure 3-3 Hazardous Area Marking / EO Sign

The rear of the sign shall be white or uncoloured to allow differentiation between safe and hazardous/unsafe areas with the red side being visible from outside (or safe side) of the area. Signs printed in English and Arabic should be used.

3.10 **Hazardous Area Fencing /**

Permanent hazardous area fencing shall conform to the minimum standards depicted in the following diagram:

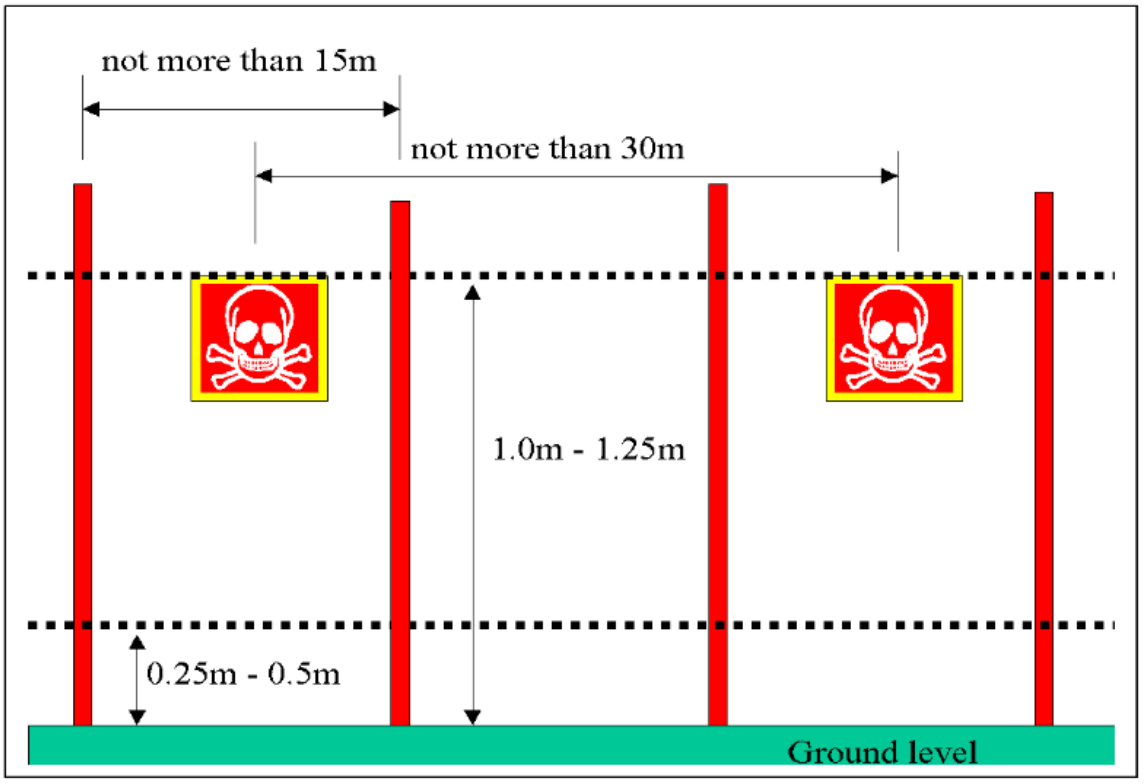

Figure 3-4 Hazardous Area Fencing

Fences should be erected with two strands attached to uprights at 0.25 m to 0.5 m, and 1.0 m to 1.25 m above the ground (See Figure 3-4). Fencing strands may be of any suitable durable material including wire, string, synthetic cord or tape. Uprights may include trees, buildings or existing structures and posts erected as part of the warning system and should be positioned not more than 15 m apart. EO hazard signs shall be attached to the top strand

of the fence not more than 30 m apart and within 5 m of each turning point. If necessary, they may also be attached to uprights.

All materials used shall be durable enough to resist the deteriorating forces of their environment, and to conform to the length of time of their intended use.

In cases where area fencing may not be applicable for whatever reason, a solution shall be discussed and agreed with NMAA/UNMAS-UNMISS.

3.11 **Marking of a Cleared Area**

Marking of a cleared area shall be obvious and permanent. The cleared area marking should have the following minimum basic requirements:

When the entire hazardous area has been cleared and no adjacent areas are suspected to be hazardous the perimeter points are marked using steel pickets, minimum of 30cm long and driven flush with the surface starting at the start point (SP) and preferably working in a clockwise direction. All turning points (TP) shall be marked with a maximum distance of 50m between each point. If the line of sight is obscured, then intermediate points (IP) shall be marked with a maximum distance of 50m between each IP and IP/TP. If the ground is such that it is impossible to drive pickets into the ground, then high-visibility paint splashes; a minimum of 30cm in diameter shall be applied to rocks, roads surfaces or walls. The positions and relevant details of SP, all TP's and IP's shall be indicated on a map submitted with the IMSMA Completion Report. In addition, a compass bearing, the coordinates recorded using DGPS and the distance in metres between Benchmark, SP, TPs and IPs shall be recorded on the IMSMA Completion Report.

If only a portion of a suspected minefield is cleared, and hazardous areas remain adjacent, then the cleared area completion markings (TPs & IPs) on the safe/unsafe boundary and or hazardous area fencing should allow for a 1m overlap in from the un-cleared area boundary line.

For details of the requirement for recording of positional data, see Chapter 1.

3.12 **Responsibilities**

The NMAA/UNMAS-UNMISS shall prepare and publish standards for the design and construction of appropriate and achievable hazard marking systems to be used within South Sudan. Mine action organisations shall apply the NMAA standards for hazard marking systems.

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Chapter 04

Manual Mine Clearance

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4.1 Introduction

This chapter provides guidelines for Manual Mine Clearance (MMC)

Humanitarian demining techniques used during each project may differ according to the equipment used, the terrain, the type of mines/EO and other factors. Methodologies used in manual mine clearance operations shall be explained in detail, as well as applicable steps in the organisations' Standard Operating Procedures (SOP).

4.2 Standers, Methodology and Actions On

South Sudan Mine Action Programme applies the following manual mine clearance methods:

- Standard MMC
- Linear MMC

4.2.1 Clearance depth

The minimum clearance depth when applying MMC shall be 13cm from the original ground surface to the top of the mines.

Any requirements to alter the 13cm minimum depth shall be formulated in the Task Implementation Plan (TIP) and authorised by the NMAA/UNMAS-UNMISS.

4.2.2 Standard MMC method

Standard MMC considers an individual Deminer operating in a one-meter-wide clearance lane.

- **Clearance lane**
  An MMC Deminer is responsible for clearing a one-metre-wide lane using one or a combination of the following methods:
  A) Hand-held metal detector. This is a preferred, efficient clearance method and should be used wherever possible.
  B) Full excavation. This method is inefficient and should only be used where hand-held metal detectors cannot be used for any reason.

- **Visual search**
  Prior to conducting MMC, a visual search of the area that is immediately unclear shall be conducted. The Deminer shall not step beyond marking into an uncleared area. The following, but not limited to, should be taken into account when conducting the visual search:
  - Possible tripwires
  - Protruding fuses, mines, EO and any suspicious objects that may be hazardous
  - Disturbance to the original ground
    Depressions, holes, mounds

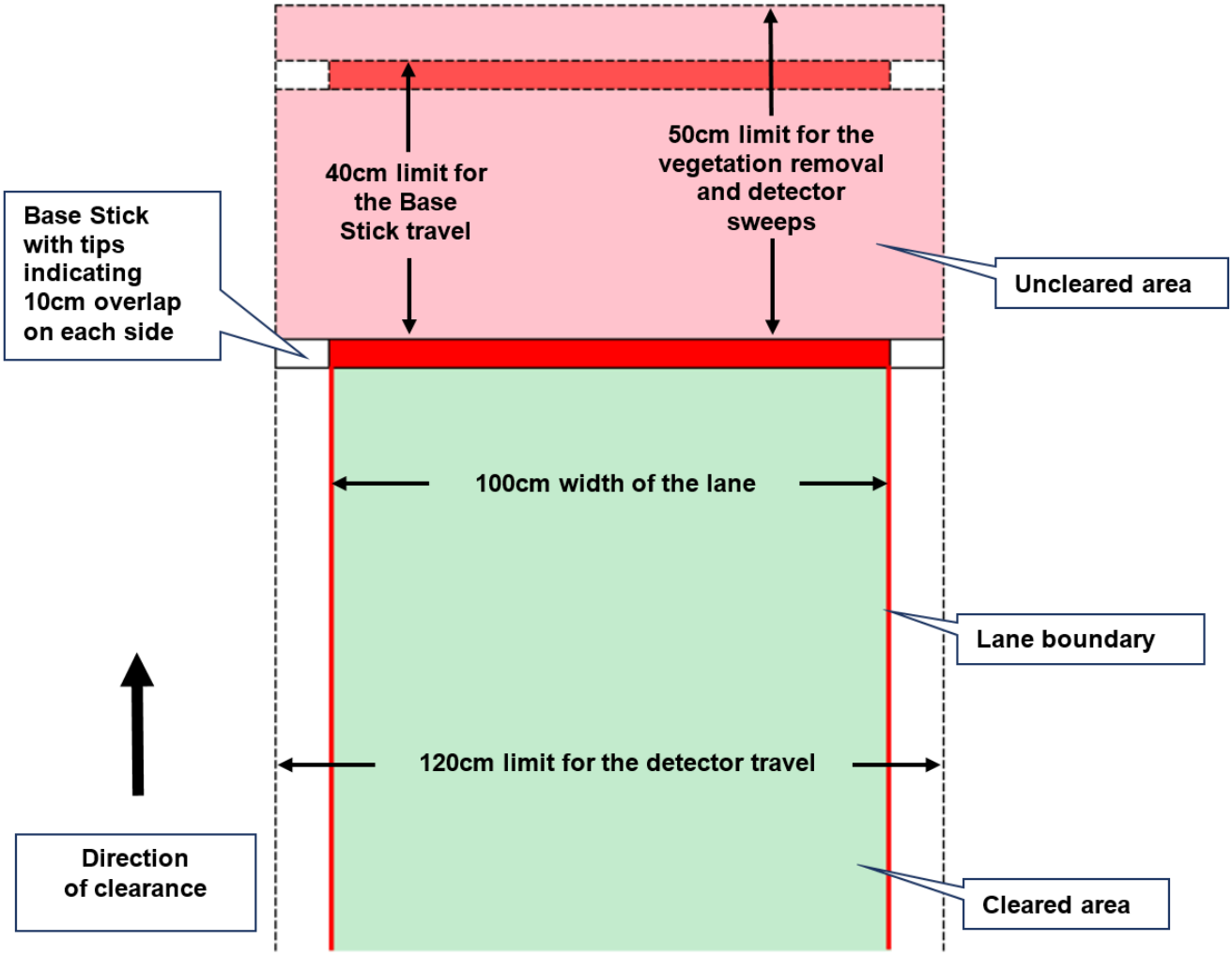
- **Removal of vegetation (cutting)**
  The removal of vegetation shall be done in a safe, controlled manner. Cutting shall not proceed further than 50cm from the Base Stick and 10cm overlap on each side of the lane. If necessary, thick vegetation, such as a tree branch or a clump of vegetation, may be held with one hand while a cutting tool is applied with another one. Vegetation should be cut as close to the ground surface as required for the smooth detector sweeps; this shall be done in a safe manner without intrusion of the ground. Efforts shall be made to avoid heavy vegetation falling on the uncleared ground. Removed vegetation should be piled neatly in a cleared area so the piles do not hinder safe movement in and out of the lanes.

- **Use of metal detector**
  Prior to its use, the metal detectors shall be checked to ensure their correct functionality. The detector sweeps shall be applied to the whole width of the lane, including a 10cm overlap on either side. The detector sweeps shall not be conducted further than 50cm from the Base Stick. The ground shall be swept at least two times with the detector.

To ensure the suitability of the detection requirements applied, the detector functionality and sensitivity shall be checked periodically in accordance with the manufacturers' guidelines, and particular procedures shall be clearly outlined in the organisations' SOP.

- **Moving forward**
  Base Stick shall not be moved forward further than 40cm.
  As the lane progresses forward, every 1m interval shall be marked to differentiate between the cleared and Uncleared areas.
  10cm overlap outside the one-meter-wide lane and beyond the Base Stick shall be maintained at all times.

The diagram below serves to provide a general reference for the above principles.



4.2.3 Linear Manual Mine Clearance Method

Clearance may be conducted by an individual deminer or by a team through rotation between linear lanes with the team members assigned to particular tasks.

Linear clearance Lane
A deminer is responsible for a bound indicating the width and the length of the area to be cleared at a time. The bound is broken up into 1m wide segments so that it can be managed safely, easily and accurately. The depth of the bound shall not exceed 0.7m.

Linear visual Search

The visual search shall be conducted in line with Section 4.2.2.

Before initiating clearance of vegetation, the deminer shall visually inspect for any presence of tripwire. For action on encountering tripwire, see section 4.2.12 ‘Action on Locating Tripwires.’’

Linear removal of vegetation (cutting)
The following approaches may be considered:

- Manual vegetation clearance shall be conducted in line with Para 4.2.2.
- Mechanised manual vegetation strimmers (further in the narrative referred to as “strimmers”) – key requirements:
  - Mine action organisations/companies shall train and accredit personnel in the use of strimmers prior to deployment in the minefield.
  - Strimmers may be fitted with either a metallic blade or nylon string.
  - Strimmer rods shall be at least 2m long to provide a standoff in the case of an initiation of a mine or other EO.
  - Personnel using strimmers shall wear ballistic visors and body armours, including leg panels, to provide full frontal-body protection.
  - Strimmers shall not be used if the minefield is suspected of containing AP mines, tripwire-operated mines, and prong-operated mines. In this case, vegetation removal shall only be conducted manually.
  - Prior to cutting, the lane shall be checked using a metal detector to detect any surface mines/EO. No strimmers shall be used in the immediate area where pre-cutting detector checks pick up a metal signal. Such areas shall only be cut manually.
  - Mine action organisations shall elaborate strimmer procedures, including pre-cutting checks and actions on detection of a signal during pre-cutting checks.

Remotely-operated mechanical assets - may be used to assist manual mine clearance, regardless of the threat. In this respect, mine action organisations//companies shall adhere to the principles of mechanical mine clearance.

Linear use of metal detectors

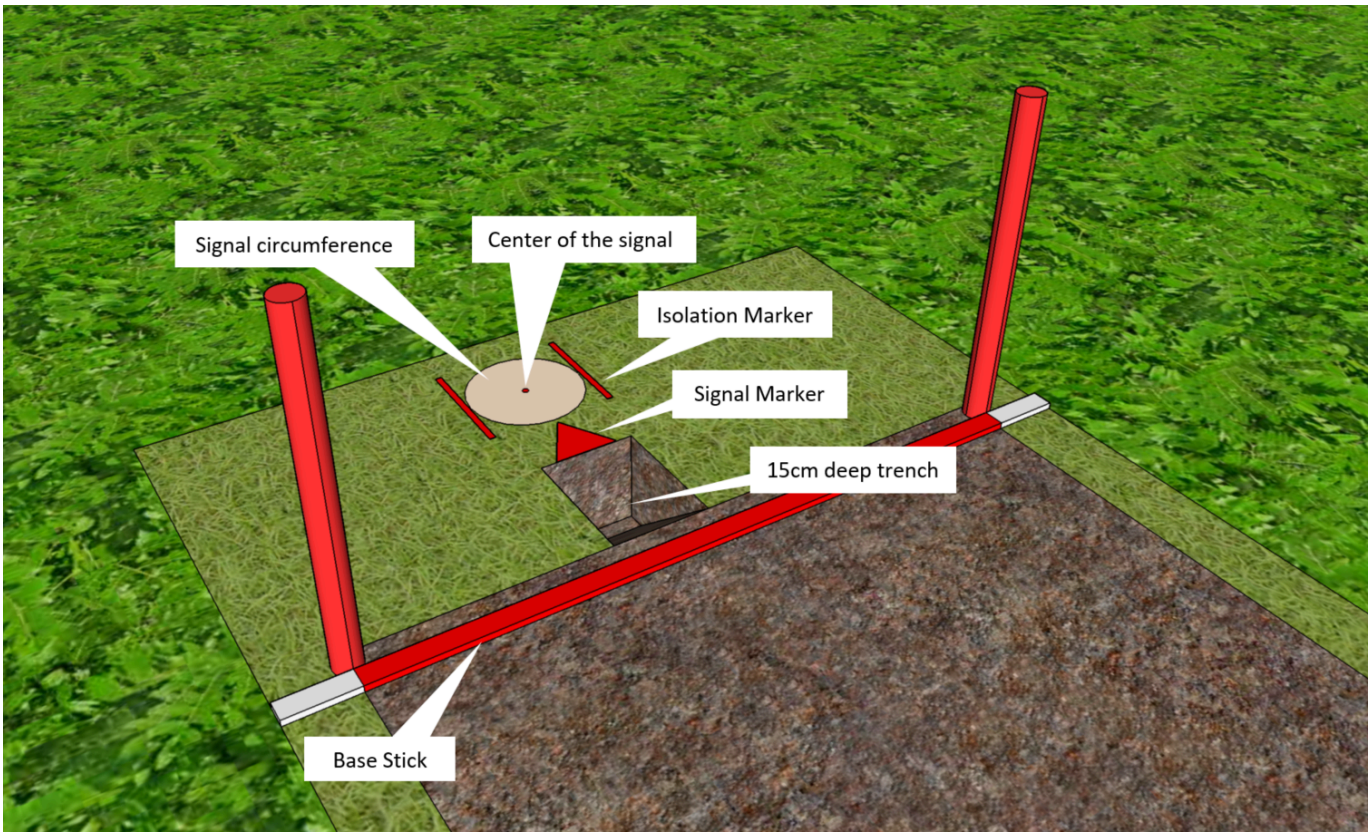
The metal detector search may start either from left or right, and the search shall be completed in a methodical fashion, segment by segment along the entire bound. The detector search process shall incorporate the required overlaps between the sweeps.

Productivity

A preferred application of the linear clearance method is section-based, meaning a division of responsibilities between members of the team, aimed at ensuring uninterrupted operation of manual detector operators and maximisation of productivity. Linear Clearance Method should be considered efficient if the average clearance rates per team member per day are equal to or greater than the Standard MMC Method should it be applied.

4.2.4 Signal isolation and marking

When a signal is detected, the Deminer shall pinpoint its centre and establish its margins. While signals may be large and extend in front or either side of the lane, its rear should always be understandable. Prior to any ground entrenchment, a signal marker shall be placed at the rear edge of the signal circumference, which should provide a safety margin where the excavation trench can be opened. The signal marker should be of a triangular shape to point towards the centre of the signal. Additionally, Isolation markers may be used to define side edges of the signal circumference. See the diagram below.



4.2.5 Signal investigation (manual excavation)

Once the signal is marked and isolated, it should be excavated so that its source can be located and disposed of. Most of the signals are expected to be non-explosive metallic objects; however, all the signals shall be treated and investigated conventionally as there is no prior knowledge of which of them will turn out to be mine/EO.

A trench shall be dug a minimum of ten centimetres back from the rear edge of the signal and to a minimum depth of 15 centimetres. A trowel or a similar tool should be used to remove the soil moving forward towards the signal. This shall be done carefully, with no excessive pressure on the ground or abrupt movement of the tool. The detector should be used to check the progress towards the signal periodically or if it came off with the excavated soil. There may be situations when a signal disappears and cannot be located; for example, compacted mineralised soil, which, after loosening, no longer emits the signal or a tiny metallic object that cannot be seen straightforwardly. Such a situation shall be assessed by the team leader, who shall conduct further investigation or declare it complete at their discretion.

4.2.6 Actions on locating metal

The metal shall be carefully removed from the ground and placed in the metal contamination/collection pit. The areas where the metal was removed shall be checked visually and with the metal detector for additional signals prior to moving forward.

4.2.7 Actions on locating a mines/EO

The Deminer shall stop, place a mine marker a minimum of ten centimetres before the mine/EO and notify the Team Leader through the chain of command. A qualified person shall carry out all actions relating to the removal or destruction of the mine/EO in situ. No personnel shall be allowed past a mine/EO located in a one-metre-wide clearance lane. In circumstances where the mine/EO is not destroyed or removed immediately, the Deminer shall be moved to an alternative lane.

Note: The No4 AP Blast mine is considered sensitive to any disturbance and shall always be destroyed in situ without touching it.

4.2.8 Disposal of a mine/EO

Efforts shall be made to destroy all mines/EO in situ. Where this is not possible or proves to be impractical, the mines/EO may be manually neutralised/disarmed and moved to a secure location, subject to prior approval from the NMAA/UNMAS-UNMISS. All Anti-Vehicle mines shall be pulled prior to neutralising/disarming. Any Anti-Personnel mines suspected of being booby-trapped shall be pulled prior to neutralising/disarming. The planned destruction of located mines should be carried out during or after each working day unless a specific safety hazard (or lack/limited amount of explosives) prevents this. Only qualified EOD personnel shall conduct demolitions or render safe procedures.

Where mines/EO are not destroyed on the day that they are found, the case shall be reported to NMAA/UNMAS-UNMISS; they shall be accurately recorded in the organisation's daily clearance log and destroyed at the earliest possibility. If they are not destroyed by the end of the working week, the organisation shall provide the NMAA/UNMAS-UNMISS with an email statement explaining the situation and justifying all reasonable efforts applied.

4.2.9 The Missing-Mine-Drill

When clearing within a well-defined mine laying pattern, mines are expected to be found in certain intervals. If a mine that was expected to be present is not found, the Team Leader shall assess the ground, determine the dimension of the spot and subject it to a full manual excavation. This process is referred to as the Missing-Mine-Drill, and in such a situation, it is assumed that the mine could be outside of the detector sensitivity range or any other reason; hence, full manual excavation is applied to ensure the land is cleared where possible a detector sweep shall be conducted.

4.2.10 Actions on a missed mine

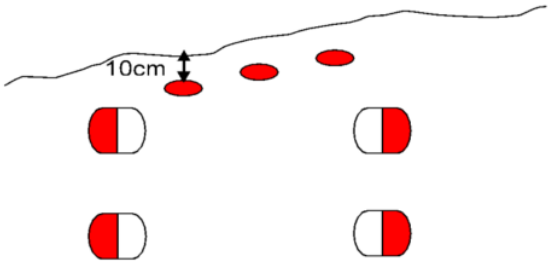
The term missed refers to an occurrence of a situation when a mine is found following any stage of the formal clearance, including post-task completion. This is a serious matter that shall be dealt with carefully to ensure the safety of the personnel and civilians. Should a missed mine be found, the team leader shall stop the work immediately, instruct all personnel to remain in their places and conduct appropriate personnel extraction drills, as per organisational SOP. Within the same day, the matter shall be reported to NMAA/UNMAS-UNMISS, who may launch an internal or external investigation, depending on the initial findings/report by the organisation.

4.2.11 Tripwire detection

This drill is applicable where the presence of a tripwire is suspected or it has been detected unexpectedly. Depending on the vegetation type and density, specific feelers may be used to locate tripwires. This should be made from light-gauge wire and fabricated in such a way as to allow the detection of both slack and taut wires. Starting from a crouched/ kneeling or prone position, the tripwire feeler is moved along the ground, forward of the base stick and raised slowly upwards until clear of the vegetation or above head height when standing. This is completed a minimum of three times over the full width of the clearance lane and overlap. In order to deploy the trip wire feeler safely, the operator should be able to see the end of the feeler at all times. If certain vegetation does not allow the use of a tripwire feeler, the search is completed using hands after a thorough visual inspection of the area. The Deminer shall slowly and carefully move their hands forward, gently parting the vegetation that may be obscuring tripwires. The Deminer shall not pull vegetation and shall not touch the tripwire noticed.

4.2.12 Action on locating a tripwire

The Deminer shall stop clearance activity and place 3 small red markers such as stones coming a minimum of 10cm back from it – see the diagram below. The Deminer shall notify the Team Leader once the tripwire is detected and marked. The Team Leader shall ensure that both ends of the tripwire are located and appropriate action is taken depending on what is found at each end. It is stressed that the method employed in tracing the tripwire shall at all times ensure that Deminer's tasked do not become isolated. Conditions should always allow for swift, safe and effective Casevac to be conducted in the event of an accident. While tracing a tripwire, there shall be no other activities within fifty metres.



4.2.13 Pulling procedures

When it is necessary to remotely pull a mine/EO or other item, the Team Leader shall be responsible for the pulling procedure. All personnel not involved in the pulling operation shall be withdrawn to a safe area, and sentries shall be placed. There are various successful techniques known to the Mine Action Sector; however, an accidental detonation of an item being pulled shall always be assumed, and all safety measures should be established before pulling. EOD evacuation and safety distance calculations should be used to determine how far the pulling point is located from the item to be pulled. The safety distance may be reduced to a minimum of 50 metres when:

A. There is adequate protection from blast and fragmentation in relation to the item to be pulled and the threat from secondary devices.
B. The person conducting the pull is wearing full PPE (helmet/visor and body armour) and is close to the ground. This shall only be conducted as a last resort and when there is no alternative protection from blast and fragmentation.

The following shall always be considered when conducting the pulling drill:

- The type of ordnance (e.g., mine, mortar, grenade, projectile, rocket, sub-munition).
- The function of the ordnance (e.g., blast, fragmentation).
- The condition of the ordnance (e.g., fuzed/unfuzed, unfired/safe, blind).
- The explosive quantity of the ordnance.
- Booby traps / secondary devices.
- Proximity of personnel, animals, equipment and buildings.

Once all safety distances have been implemented and the sentries are given the all-clear, the pulling line can be attached while ensuring it is laid freely with no tension or crossings. After returning to the determined pulling point, the pull can commence. A minimum of 1-minute soak time shall be applied after pulling before the Team Leader moves forward to assess the site for further actions. In case of smoke or other concerning developments post-pulling, a minimum of 30-minute soak time shall be applied from the moment the smoke is gone, or the site is otherwise seen clear before the Team Leader moves forward to assess the site for further actions.

4.2.14 High-metal-contaminated areas

In areas where the metallic content of the soil is high, the metal detector may be ineffective. The detector procedure shall be replaced with a full excavation procedure to ensure all mines/EO are located to the required depth. The minimum depth to be excavated is 15 centimetres and the full width of the one-metre-wide lane shall be investigated to this depth. The detector should be used to regularly check the soil contamination level and confirm whether the full excavation process can be replaced with the detector procedure. Alternatively, high-metal-contaminated areas may be marked off as uncleared and dealt with using MDD or mechanical assets.

The size of the area, the type of terrain and the availability of alternative clearance assets will determine the most efficient method of clearance to use.

4.2.15 Rocky terrain

In areas where the ground is rocky, there may be a requirement to remove rocks (e.g., physical hazard, suspicion that a mine/EO is beneath the rocks, 'ghost signal'). Therefore, the Team Leader shall decide on the best clearance method(s) (E.g., lifting, detector search, excavation, pulling drill). When removing rocks by hand, caution shall be made to avoid disturbing the ground, and the rocks should be lifted vertically.

4.2.16 Mountainous areas

Mountainous areas may require specific approaches to ensure the safe passage of the personnel during demining and casevac. Stairs may be necessary within steep slopes. Efforts should be made to conduct clearance up the hills instead of going sideways, which may result in Deminers losing balance and accidentally slipping into an uncleared area. If lanes are required to be interconnected, then clearing short distances and levelling them before lengthening may be prudent.

4.2.17 Obstacles in minefields

Obstacles such as termite hills and spoil piles on the top of an originally mined area, fallen trees, dugouts, artificial ponds, etc., are common and shall be cleared through all reasonable effort applied. Mine action organisations shall establish relevant procedures for dealing with obstacles safely and efficiently. Those obstacles that cannot be cleared immediately shall be marked and, if necessary, fenced for future clearance operations.

4.2.18 Partially completed minefields

Upon partial completion of a minefield, any remaining uncleared areas shall be demarcated with permanent

marking – refer to NTSG Chapter 3 Marking System.

4.2.19 Working Hours

A manual Deminers shall not work for longer than sixty (60) minutes before taking a break of at least ten (10) minutes. The working time may vary between organisations and specific situations (e.g., climate); however, the aforementioned times shall be adhered to. A normal working day for a manual mine clearance Deminer shall not exceed 6 hours' actual mine clearance work a day. In excessive climatic conditions, working hours may be reduced, or the daily routine may be changed. A safe and sensible approach shall be taken by the mine action organisation team leader in order to achieve the best possible mine clearance results without compromising the safety of demining personnel.

4.2.20 Quality Control (QC) and Quality Assurance (QA)

100% of the ground cleared by Deminers shall be subjected to the QC by a managing role in the field, such as Team Leader, Deputy Team Leader and Site Supervisor. QC considers the application of detector sweeps over the ground cleared by Deminers. The detector used for QC shall be of the same type as the one used for the initial Deminer search but in a different unit. In the areas of full manual excavation, the QC considers checking and confirming the achievement of the minimum clearance depth, as well as width and other required elements of the excavation. The QC should be recorded and detailed in the site folder daily.

In addition to the QC conducted by the field management roles, organisations shall ensure periodic QA visits are conducted by operations/project management roles. QA visits should include overall observations and random QC sampling. QA visits shall be recorded and be available for external QA conducted by the NMAA/UNMAS-UNMISS.

4.3 Human Remains

Human remains and graves are sometimes reported or found during mine action operations. In such circumstances, the organisation carrying out the clearance operations shall ensure the following, but not limited to:

- Human remains encountered shall not be touched or moved.
- The description and location of the remains shall be recorded, and the information shall be relayed to the NMAA/UNMAS-UNMISS and local authorities as soon as possible.
- The location of graves and cemeteries shall be recorded, and no demining operations shall be conducted within close proximity without prior authorisation from the NMAA/UNMAS-UNMISS and local authorities.
- In circumstances where mine action organisations are requested to conduct clearance to enable safe access to the human remains, the NMAA/UNMAS-UNMISS shall be informed, and appropriate authorisation shall be obtained prior to commencing any such operations.

4.4 Responsibilities

A. NMAA/UNMAS-UNMISS shall, in relation to Manual Mine Clearance operations:
   - Specify the area to be cleared and the depth of clearance in contracts and agreements
   - Specify the standards and guidelines for QA and QC to be applied to clearance and agreements
   - Accredit mine action organisations as fit to conduct manual clearance
   - Provide for a system to monitor the work of the mine action organisations
   - Maintain a registry of cleared and uncleared land showing the clearance status for each hazardous area.

B. Mine action organisations undertaking manual mine clearance operations shall:
   - Gain from NMAA/UNMAS-UNMISS accreditation to operate as manual clearance teams
   - Apply the standards as laid down in the NTSG
   - Ensure that the organisation's SOP are in compliance with the NTSG
   - Maintain and make available documentation of clearance as specified by NMAA/UNMAS-UNMISS
   - Apply management practices and operational procedures which aim to clear land to the requirements specified in the contract and/or agreement.

South Sudan

National Technical Standards Guidelines

Date: 03 October 2024

Chapter 05

Explosive Ordnance Disposal

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5.1 Introduction

a. The aim of this chapter is to provide specifications and guidance for the management of Explosive Ordnance Disposal (EOD) operations as part of mine action in South Sudan. It covers general principles and management responsibilities for EOD. It does not provide specific technical guidance for the disposal of particular Explosive Ordnance (EO) as this shall be covered in detail by the mine action organisations Standard Operating Procedures (SOP).

b. EOD involves the disposal of all EO including mines and Explosive Remnants of War (ERW). For the purposes of these NTSG, ERW is taken to include all unexploded ordnance (UXO), including blind ammunition and emplaced mines as well as Abandoned Explosive Ordnance (AXO) such as discarded ammunition, caches and stockpiles, which may be found in South Sudan.

c. The range of ordnance commonly found in South Sudan includes air-dropped bombs, guided missiles, rockets and artillery, cannon ammunition, shoulder launched munitions, mortars and grenades. There is no record of the use of nuclear, chemical or biological munitions in South Sudan, so they are not addressed in this chapter. Similarly, there is no record of the use of Depleted Uranium so that also is not addressed, but White Phosphorus does exist in South Sudan and any agency operating here should be prepared to deal with it. The wide variety of size and complexity of ERW requires special attention to be given to the management of EOD and the competencies required to deal with the varying devices and situations.

5.2 General Principles

a. EOD involves the detection, identification, field evaluation, render safe, recovery and disposal of EO.

b. EOD might be conducted anywhere in South Sudan, and could involve a single item of ERW, a number of ERW, either dispersed or stacked, or stockpiled ammunition.

c. The establishment and preservation of a safe and effective EOD capability will require varying levels of expertise.

d. EOD operators are only authorised to deal with those items and situations for which they have been trained and assessed as competent to undertake.

e. EOD organizations should only instruct EOD operators to undertake tasks that they are appropriately trained and experienced to carry out.

a. Whenever EOD operations are conducted the safety of the personnel involved shall be the primary concern, while all reasonable efforts to minimize damage to property should be pursued.

EOD operators will always observe the following principles in the course of their duties:

a. Preservation of Life.

b. Preservation of property / infrastructure.

c. Return the situation to normality.

d. Collect information to aid analysis for future EOD activities.

5.3 Training & Qualifications

a. EOD training and qualifications should be appropriate to the ERW threat encountered in South Sudan. The training and qualifications of deminers carrying out EOD activities shall satisfy the requirements and policies of the NMAA/UNMAS-UNMISS and be in accordance with IMAS 09.30. The following is a guide:

b. Level One EOD qualification demonstrates the competence to carry out single item in-situ demolitions. It may be restricted to those particular items on which an individual has been trained or limited by the maximum calibre or explosive quantity of the item to be destroyed.

c. Level Two EOD in addition to the skills of a Level 1 (EOD) qualification, a Level 2 (EOD) qualification enables the holder to determine when it is safe to move, and the ability to carry out multi-item demolitions using either ring mains or line mains to connect charges affixed next to each item to be destroyed.

d. Level Three EOD In addition to the skills of a Level 1 and 2 (EOD) qualification, a Level 3 (EOD) qualification enables the holder to conduct render-safe procedures and demolitions up to 50 kg net explosive quantity (NEQ) on a wide range of specific types of explosive ordnance on which the individual has been trained. A Level 3 (EOD) operator may authorize in writing a Level 2 (EOD) operator to conduct tasks in a range of environments and to make decisions on safe movement of EO.

e. Level Three + EOD in addition to the skills of a Level 1, 2 and 3 (EOD) qualifications, a Level 3+ (EOD) qualification is for advanced EOD operators who have been trained and are qualified to conduct specialist disposal tasks.

f. For all qualifications the training institution is required to stipulate exactly what items or activities the holder is trained to destroy or carry out, and NMAA/UNMAS-UNMISS should check their veracity with the certifying agency.

5.3.1 Explosive Ordnance Disposal Competencies in South Sudan

a. Within South Sudan the following competencies will be considered core to the evaluation of any individual's capacity to operate in the country.

5.3.2 Level One Disciplines:

- Recognition of mines and Land Service Ammunition deployed in South Sudan.
- In situ demolition of land mines and specific items of ordnance as named on the certification, and using donor charges as stipulated in the respective organisation's SOP
- Safety fuse initiation of explosive charges including the calculation of burning time
- Electrical initiation of explosive charges including the use of remote firing devices if in use by the organisation.
- Construction of pre-designed protective work arrangements for single items

5.3.3 Level Two Disciplines:

- Identification of fusing modalities used in ordnance in South Sudan
- Recognition of fired and unfired ordnance
- Determination of whether an item is safe to move
- Pulling drills
- Preparation and use of ring mains
- Preparation and use of line mains
- Incineration of small arms ammunition using a closed incinerator

5.3.4 Level Three Disciplines:

- Open burning of explosive ammunition
- Calculation of range danger areas
- Use of pyrotechnic tools (torches or deflagration powder)
- Render safe of fused ammunition using a de-armer
- Construction of protective works

- Conduct of Multi item demolitions in bulk demolitions according to a pre- determined plan
- The final disposal of specific items of explosive ordnance that the individual has been trained to destroy and has also demonstrated the capability and competence to dispose of either single or multiple items of this specific nature.
- Disposal of White Phosphorous if trained in South Sudan and accredited to do so by an EOD3+ operator.

5.3.5 Level Three + Disciplines:

- Preparation of licences of Central and Temporary Demolition Sites
- Fuse removal using a rocket wrench
- Disposal of White Phosphorous[1]
- Planning and construction of protective works
- Planning of multi item demolitions in bulk demolitions including formulation of a demolitions order

5.3.6 Accreditation

a. All operators are required to present their training certificates to NMAA/UNMAS-UNMISS. That certification should detail the exact competencies upon which the individual has been trained and should be supported by evidence of practical experience in the competencies. It is permissible for any operator to be accredited for additional competencies outside his/her core group. This will be achieved by first demonstrating that the relevant training for the additional skill set has been carried out followed by a demonstration of the competency.

b. NMAA/UNMAS-UNMISS shall accredit all EOD operators prior to them commencing work in South Sudan. The accreditation process shall comprise of both written and practical assessments designed to verify the documented competency of the operator. NMAA/UNMAS-UNMISS shall re-assess any operator after any significant EOD incident in which they are involved or after a failure in a Quality Assurance procedure.

c. Should any individual fail an accreditation then a period of one week shall be imposed for retraining before re-accreditation shall take place.

[1] Should be considered in line with Level 3, bullet point 3.5.7

d. Individuals are to be assessed according to the competency sets listed above and will be authorized to conduct those competencies on which they have been accredited.

e. EOD operators shall continually be subjected to periodic EQA in line with their accredited disciplines. In the event that any individual fails an EQA three times during one demining season, NMAA/UNMAS-UNMISS shall withdraw the accreditation of the individual.

5.4 **Definitions**

a. The following definitions are not included in the glossary but are applicable in terms of this NTSG:

- **Central Demolition Site (CDS)** – an area authorised for the destruction of bulk ERW this may be for repeated or singular use.
- **Net Explosive Quantity/Content (NEQ/NEC)** – the sum of the explosive contents of the munition (main charge, propellants, pyrotechnics etc).
- **All Up Weight** – the gross weight of a demolition including all ammunition items, packaging, donor charges, and ancillary material used in a demolition
- **Primary Fragmentation** – projected elements from an explosive event fragmentation that were originally part of a mine/ERW.
- **Secondary Fragmentation** – projected elements from an explosive event that were not part of the exploding device, most notably projected stones and earth.
- **Condensed Explosive** – Explosive charges and those items of ammunition such as thin-skinned anti- tank mines that contain minimal fragmentation
- **Safe to move** – safe to move ammunition is ordinarily considered to include those items for which there is no inherent danger of detonation through movement.
- **Ammunition item** – any item containing explosives that is not affixed to another item. Thus, a fuse is independently considered to be an ammunition item but when it is affixed to a projectile the entire unit is considered to be a single item.
- **Blind items** – blind items are those that are armed and fired which have failed to detonate either through malfunction or design and which therefore have a significant risk of detonation through movement and especially impact or shock.
- **Stockpile** - any accumulated, organised and maintained ammunition stock.

5.5 **Requirements and Procedures**

a. The following requirements and procedures shall be applied during EOD operations:

5.5.1 In situ disposal:

a. Wherever possible and/or practicable mines/ERW shall be destroyed in-situ. This is to be achieved by means of detonation or by pyrotechnic attack.
b. Agencies are required to indicate through their SOPs, for all ammunition natures commonly found in South Sudan, the charge placement that its operators will adopt as well as the minimum size of charge to be used.
c. Whenever explosives are used a suitable protective cordon shall be established around the item to ensure the safety of everyone. Anyone remaining within the cordon, such as the EOD operator initiating the action, should be under and behind suitable forward and overhead protection cover.
d. Once established and secured, the cordon should not be collapsed, other than for supervised/escorted transit through the site, until all items on the day's disposal plan have been destroyed.
e. Only in the most exceptional circumstances may blind items be left overnight at a demolition site; any intention to do so should be approved by the local NMAA/UNMAS-UNMISS office. Any such items are to be correctly marked and their location recorded using handheld GPS as a minimum.
f. In unforeseeable circumstances of access denial to the demolition site where blind items have been previously left, then the Implementing Partner shall raise a Hazard Report denoting the type and quantities of the ammunition. This is for ease of reference in the event of a different Implementing Partner is tasked to access the site in the future. The exact location of the items shall be accurately recorded.

5.5.2 Alternative Techniques

a. If local conditions prohibit the use of high order destruction, on account of possible damage to infrastructure or local bans on generating explosions, then alternative disposal techniques may be applied. These may include the use of render safe techniques such as the use of a de-armer, rocket wrench or cracker-barrel to remove the fuzing/initiation systems to allow the safe movement of the ERW to a safe location for disposal, or the use of low-order techniques aimed at minimizing the scale of the blast generated. When alternative techniques are employed, mitigation against the effects of High Order detonation shall be in place.
b. Agencies are required to detail, in their EOD SOPs, which alternative techniques they are equipped to deploy and the methodology and constraints for their use.

5.5.3 Movement of Blind Ammunition

a. The security and political situation in South Sudan is such that at times operators will be prevented from carrying out in-situ demolitions of blind items. On such occasions there may be reasonable justification for movement.

b. Should an agency wish to move blind items it must, through its Standard Operating Procedures, detail the conditions under which such an action will be sanctioned. The SOP should further detail the method by which an item is first moved (pulled) and then how it may be transported, and the limitations thereafter, such as how far it may be moved.

c. The SOP must also detail:

- The internal authority needed to approve the movement of items,
- The supporting evidence that must be gathered in order to approve the movement, and
- The way that the approval is documented and communicated.

d. The movement of blind items is to be considered an exceptional option and is not to be routinely approved. The Regional NMAA/UNMAS-UNMISS office is to be informed of all approvals for the movement of blind items.

5.6 Range Danger Areas Single and Multi-Item Demolitions

In general mine action organisations SOPs shall adhere to the formulas presented in IMAS Technical Note 10.20, as per section below (a). For in-situ disposal of single items commonly found in South Sudan, the following **minimum** protective distances shall be applied, unless otherwise approved through Demolition Plan or Task Implementation Plan:

Item	Tamped	Surface/Untamped
AP Blast Mine	100	100
AP Fragmentation Mine	150	300
Hand Grenade	150	350
Cluster Munition (PM-1)	150	300
51/60mm HE Mortar	150	300
RPG7 (*consider shaped charge direction)	150	200
81/82mm HE Mortar	200	300
AT Mine	300	300

a. Mine action organisations SOPs shall adhere to the formulae presented in IMAS Technical Note 10.20 Explosion Danger Areas. These may briefly be summarized as follows:

- For Single item tamped (No frag hazard) or condensed explosive[2] $R = 130\ (NEQ)^{1/3}$.
- For Single item not tamped or items arranged linearly not stacked[3] $R = 370\ (AUW\ largest\ item)^{1/5}$
- For BULK demolitions of cased ammunition: $R = 444\ (AUW)^{1/6}$

b. In all cases R is measured in metres and AUW/NEQ in kg.

c. A register of all-up weights and net-explosive quantities, to be referred to when calculating range safety limits, shall be maintained by the UNMAS-UNMISS Chief of Operations and updated registers distributed to all accredited agencies on a regular basis.

d. For vertical limits see NOTAM para 6.1.2.b

e. In all instances wherever possible, in order to minimize the hazard of projected fragmentation, demolitions should be conducted below ground level in steep sided narrow trenches.

f. In addition, on those occasions where cased ammunition is being destroyed and where the required safety distance cannot be reached, protective works should be put in place to mitigate against the effects of projected fragmentation.

5.7 Protective Works

5.7.1 General Provisions

a. Protective works shall be implemented whenever cased ammunition is destroyed and the safety distances for All-Up Weight cannot be achieved.

b. Tamping is integral to application of protective works. It is an operation performed before the explosion, to regulate and direct the destructive power of the explosive.

[22] Or very thin skinned items such as anti-tank blast mines (i.e.without EFP). Or any single items without fragmentation hazard.

[33] See reference "1" for conditions under which this may be applied. The formula may be applied on single items with fragmentation hazard.

c. As a general rule:

- For surface ammunition, EOD operators should plan on 40 sandbags of soil or earth per 1kg of explosive.
- For buried[4] ammunition 20 sandbags per 1kg of explosive is required.
- Regardless of the total NEQ involved in a surface demolition of cased ammunition, the minimum number of sandbags shall never be below 32.
- Regardless of the total NEQ involved in a demolition of buried items, the minimum number of sandbags shall never be below 16.
- A standard sandbag is taken to be any bag measuring 60cm x 30cm and containing at least 5kg of soil or sand but not filled with rocks or other material that might be projected as fragmentation. Differently sized packaging may be used as long as the required mass of tamping is achieved.

d. Alternatively, items may be buried below ground in square sided narrow trenches in such a way that tamping is achieved through the unexcavated earth that lies above the upper layer of donor charges. An explanation of this methodology and recommended trench depths and tamping levels is included as Annex A to this chapter. However, regardless of the tamping applied, additional safety distance shall be considered due to inconsistency of several critical factors, such as soil density, type and quality of explosive fill and therefore the detonation velocity; and eventually the likeliness of the fragmentation projection hazard. This is particularly applicable on large calibre items and bulk demolitions.

e. For the disposal of single items standard sandbag surround designs should be included in operator SOPs which their staff may then implement as a routine procedure.

5.8 **Initiation Methods**

a. Non-electric or Electric detonators may be used to initiate explosive charges. The following applies to whichever initiation method is used:

General: In general, when preparing to initiate a demolition the following rules should be adhered to: Crimping of detonators, attaching of detonators, final placement of charges and “All Clear

[4] Buried items are those that are 0.7m or greater below ground.

Checks" at the completion of a demolition are a '**one-person drill**' to minimise the risk to personnel. The 'All Clear Check' shall only be completed by the OIC of the disposal site.

- SOPs relating to demolitions shall be strictly adhered to and shall include the following safety precautions when conducting either electrical or non-electrical methods of initiation:
- Electrical Initiation is the preferred method to be used whenever there is a possibility of a cordon being breached.

b. SOPs should detail the circumstances under which each method is to be used.
c. Electrical Initiation:

- The firing point shall be sited outside of the fragmentation hazard zone or be suitably protected against the effects of fragmentation and blast caused from the demolition.
- All electrical firing circuits shall be sited a minimum distance of 300m from the nearest radio or radar transmitting aerial.
- The minimum safety distance from all HF vehicle radio transmitters is 160m.
- The minimum safety distance from all VHF radios is 20m.
- The minimum distance for high voltage power lines is 200m.
- Anti-static precautions shall be taken prior to handling any electro-explosive items.
- A wait time of 10 minutes shall be applied for all electrically initiated misfires.

d. Non Electrical Initiation:

- This may be used when it is considered practical in controlled environments such as minefields.
- The minimum length of safety fuse permitted to be used per firing serial shall be equivalent to two minutes of burning time.
- The first and last 300mm of the safety fuse coil shall be discarded.
- SOPs shall document the rules for safety fuse length calculations.
- In the event of a misfire a minimum period of 30 minutes after expected detonation shall elapse before moving forward to investigate the misfire.

e. Use of Remote Firing Devices (RFDs). The use of RFDs has may have advantages over the use of electric cable for the purpose of initiating electrically initiated demolitions. The following procedures are to be adhered to when using RFD in South Sudan:

- Only approved RFDs are to be used in South Sudan.
- RFDs are to be used according to the manufacturer's instructions as long as those instructions do not violate NTSGs.
- Before using RFDs on any demolition, the RFD is to be tested on the demolition site using electric test bulbs or squibs, to ensure that the RF environment and ground topography allow the RFD to function as intended.
- When using RFDs, all RF safety distances are to be applied FROM THE Rx / cable / detonator assembly. There is no RF hazard from the Tx end of the system. i.e. a minimum of 20m / 160m and 300m must be maintained between VHF radio / HF Radio and unknown transmission hazards respectively from the DP. There is no requirement to apply RF safety distances from the FP.
- Before using RFDs, the equipment is to be approved through NMAA/UNMAS-UNMISS and SOPs for the use of the RFD are to be incorporated into IP SOPs.

5.9 **Disposal of White Phosphorous**

a. White Phosphorous (WP) ammunition is found in South Sudan, by its nature it has additional hazards and as such its disposal is subject to additional rules:

- WP ammunition shall be disposed of separately from other ordnance.

- Shall be destroyed on the surface with explosive attack used to either:

Open the case, destroying the fuse and releasing the WP content into the air to burn.
or
To consume the filling.

- When an explosive attack is used to consume the WP filling and explosive components through detonation then a ratio of 4kg of explosive to 1kg of WP should be used.
- Whenever WP is destroyed the explosive attack should either be lateral to burst charges open or upwards to project WP into the air to burn, but it should not be driven into the ground where it might be suffocated and then ignite on subsequent exposure to the air.

- Whenever WP is stored, transported, or destroyed protective equipment should be used, and tanks of water should be on hand in which any smoking round can be immersed.
- Agencies operating in South Sudan shall detail the methodology that will be used in the disposal of WP.

5.10 **Incineration of Small Arms Ammunition (SAA) using an incinerator**

Small arms ammunition up to 14.5mm can be destroyed through incineration using UNMAS approved portable incinerators within South Sudan.

- The minimum safety distance will be 50m when using a purpose built incinerator.
- The incinerator design must be of sufficient thickness to ensure that no rounds firing can pierce the incinerator shell.
- A minimum of 5mm thickness of steel is recommended for this.
- The incinerator must have a secure door for loading/unloading ammunition.
- The door must be able to withstand the pressure of multiple rounds firing without damaging the integrity of the door, frame, hinge and latch.
- The incinerator must also contain holes/vents, to allow air to enter and smoke to exit. (These holes/vents must be designed to ensure that any ammunition firing off is either caught by the incinerator or fires directly into the ground beneath it.)
- All ammunition to be destroyed should first be inspected by a qualified official to check that the ammunition is suitable for burning.
- It is the responsibility of the organisation to indicate in their SOP's the specification and maximum load quantities of standard SAA found in South Sudan,

5.11 **Open Burning of Ammunition**

a. Open burning of ammunition is a well-established and accepted practice in South Sudan. Prior to conducting any burn, the following precautions should be taken.

- All ammunition inspected to determine it is not of a nature that will detonate through burning.
- Items with bursting charges are not to be included in the burning operation

- A safety cordon is established that is appropriate to 2/3rds the limit for a high order detonation of all items involved.
- An initiation method is adopted that allows time for the operator to be in a safe position when an explosive begins to burn.
- Agencies are required to details their methodology for open burning in their SOPs.

5.12 EOD Reporting

a. Comprehensive reports are required following the completion of an EOD task. The destruction of ERW during spot EOD tasks shall be recorded in the IMSMA NTS and UXO Spot Reports, ensuring the appropriate sections of the Survey123 forms are completed. Responses to ERW call-outs or investigations of suspected items reported by community members and/or humanitarian partners, including after EORE sessions delivery, that following investigation are determined to be FFEs and/or domestic scrap shall also be recorded as EOD spot task activity; however, the FFE and/or domestic scrap shall not be tallied in the number of items. All other EOD tasks shall be recorded in the IMSMA Completion Report and highlighted in the organisation daily progress report.
b. For UXO Spot Tasks, at least three (03) photographs shall be taken and included in the Spot Task report. Two (02) photos will be taken prior to the initiation and one (01) will be taken post detonation. The pictures should clearly show:
    - Item(s) on location as found or stacked prior to charge placement and tamping
    - Complete item or items or a stack prepared for demolition with charge placement and partial tamping and protective works in place where applicable.
    - A complete crater after demolition.
    - Site remediation where applicable.
c. Whenever Logistical Disposal of an ammunition stockpile is taking place, adequate authorisations shall be obtained, and handover and disposal certificates provided and signed by all parties.
d. A specimen handover and disposal certificate showing the minimum detail to be included is attached as Annex C to this chapter.

5.13 **Demolition Orders**

a. General Provisions: Whenever demolitions involving the stacking of multiple items (refer to the decision making tree on Annex D to this chapter) are carried out a demolitions order shall be submitted for approval to the respective regional office of UNMAS-UNMISS/NMAA. A demolition order shall also be submitted for approval whenever a demolition involves Air Delivered Weapon (ADW). For further reference see the decision support tool at Annex D to this Chapter. The demolition order should clearly indicate:

- The range limits: range in (m), All Up Weight in (kg), NEQ in (kg)
- The sentry positions
- The pit location
- The firing point
- The list of serials to be conducted
- Vertical distance on NOTAM
- Safety considerations, protective works and methodology explained

b. Each demolition order submission shall have a Google “KMZ” file attached, to include the following information:

- Control Point (CP) location
- Destruction Point (DP) location
- Firing Point (FP) location
- Sentries locations
- Fragmentation Radius
- Nearest Village location
- Nearest Hospital Location
- Nearest HLS Location

c. For each serial:

- The ammunition to be destroyed
- The sequence in which the ammunition will be layered in the pit
- The donor charges to be used
- The means of initiation
- The schematic layout of the ammunition, including layers and donor charges.

d. Demolitions orders are to be submitted at least 24 hours in advance of the intended initiation time and are to be formally approved by the regional UNMAS office.
e. All demolitions orders involving the destruction of more than 250kg (NEQ) in a single pit or 1,000kg of ammunition overall are to be approved by the UNMAS Chief of Operations.
f. A specimen demolitions order showing the minimum detail to be included is attached as Annex B to this chapter.

5.14 Central and temporary Demolitions Sites

a. General Provisions: The terms Central and Temporary Demolition Sites (CDS and TDS) are inter- changeable. A disposal site is an area authorised for the destruction of munitions and explosives by detonation and burning. These in turn are referred to as demolition grounds and burning grounds and may be co-located on a central disposal site (CDS). Mine action organisations may develop a CDS for use during field operations, but these shall be approved and licenced by the NMAA/UNMAS-UNMISS prior to their use.
b. Wherever possible agencies should aim to avoid using former demolitions sites used by other parties.
c. CDS shall be sited to ensure that the hazards associated with the destruction operations are reduced to a tolerable level and the environment should be protected. IMAS 11.20 Principles and procedures for open burning and open detonation operations should be read in conjunction with this Chapter.
d. The minimum details required for the documentation of a demolition site are outlined within the specimen dems order at Annex B, but include:

- Pit location
- Firing point
- Sentry Positions
- Range limits
- Associated Maximum All up Weight
- Associated Maximum NEQ
- Site specific special considerations

e. Agencies shall document within their own SOPs the rules for the adoption and use of CDS.

f. Authority and Licencing: Once a suitable CDS has been identified, all details including the explosive limit (maximum NEQ), a map and a scale drawing of the site and an Explosive Safety Trace shall be forwarded, via the regional UNMAS office, to the NMAA/UNMAS-UNMISS. This shall be evaluated and a recommendation for approval/non-approval as appropriate shall be forwarded to the Organisation.

g. There is no requirement to permanently mark Central Demolition Sites in any way. A master map and other relevant details of the approved CDS shall be kept with the NMAA/UNMAS-UNMISS.

h. Closing of a CDS: At the completion of each demolitions serial the following actions are to be taken:

- The range area shall be walked to check that no item containing any explosive content (kick-outs, partial detonations, or stray items of ammunition) remains.
- All ERW scrap shall be removed or buried in which case its location shall be record on the completion form.
- All demolition or burning pits shall be filled and all markings and artificial structures removed.
- UNMAS-UNMISS is to be notified and they may conduct an inspection.

5.15 **Notice to Airmen (NOTAM)**

a. See NTSG Chapter 6 Notice to Airmen (NOTAM).

5.16 **Operational Sequence**

5.16.1 General Sequence:

a. For the process of **bulk demolitions**, **all actions involving aircraft bombs** and all demolitions involving **White Phosphorous** the following sequence shall be followed:

- Implementing agency conducts assessment and drafts demolition order
- Demolition order submitted to UNMAS regional office for approval
- Approval for demolition activity given by regional office
- Demolition process takes place

b. Stop-No Culture: It is important that all EOD procedures are carried out safely. If, at any phase of an EOD operation, any individual has cause to believe that an activity will fail, or will incur unreasonable risk and particularly incur harm including reputational damage, that person should stop the procedure and refer it the UNMAS SS Chief of Operations for review.

5.17 **Responsibilities**

a. NMAA/UNMAS-UNMISS: The NMAA/UNMAS-UNMISS shall where applicable establish and/or maintain:

- National standards for the qualification of EOD operators.
- National standards for EOD procedures.
- Review and approve the operational SOPs of all Mine Action agencies conducting EOD in South Sudan
- A process for the accreditation of all organisations and individuals involved in EOD operations.

- The capability to monitor the effectiveness and safety of mine action organisations involved in EOD operations
- National systems for EOD incident reporting

b. Mine Action Organisations: Mine action organisations shall:

- Establish and maintain SOPs for EOD operations which comply with this NTSG and IMAS and submit them to NMAA/UNMAS-UNMISS for review and approval.
- Recruit, train and maintain appropriate staff to carry out EOD operations.
- Maintain a register of qualified personnel and any amendments to their accredited competencies.
- Apply the detail of accredited SOPs during EOD operations in a consistent, effective and safe manner.
- Cooperate with NMAA/UNMAS-UNMISS staff responsible for implementing policy and monitoring EOD operations.

Annexes

Annex A	Below ground tamping Calculation
Annex B	Specimen Demolitions Order
Annex C	Specimen Ammunition Transfer Sheet and Disposal Certificate
Annex D	Demolition Order Decision Tool

Annex A to NTSG Chapter 5 Explosive Ordnance Disposal 'Below Ground Tamping Calculations'

Calculation of equivalent tamping mass

When ammunition is destroyed in a backfilled trench '*w*' wide and '*l*' long with the upper surface of the ammunition at a depth '*d*' below ground level, with soil of density 'σ'

Then the total mass of soil M that acts as tamping on that demolition may be calculated using the following formula

$$M = \sigma ((w.d.l)+2/3\ \pi.d^3 + \pi.d^2.w/2)$$

And the Net Explosive Quantity of Explosive that this mass of soil will tamp is given by the formula:

$$NEQ = \sigma ((w.d.l)+2/3\ \pi.d^3 + \pi.d^2.w/2)/k$$

Where k is the equivalent weight of twenty 5kg sand bags or 100kg.

For ease of use the following tables summarize these calculations using the average soil density:

Tables of Equivalent Tamping for disposal of cased ammunition

Density of Soil = 1500 kg/cubic metre

Depth from ground level to upper surface of ammunition **0.7m**

	Width of trench		
Length of trench	**0.6**	**0.7**	**0.8**
1	18.5	19.6	20.8
1.2	20.8	21.9	23.1
1.4	23.1	24.2	25.4
1.6	25.4	26.6	27.7
1.8	27.7	28.9	30.0
2	30.0	31.2	32.3

Depth from ground level to upper surface of ammunition **1m**

	Width of trench		
Length of trench	**0.6**	**0.7**	**0.8**
1	37.7	40.1	42.4
1.2	42.4	44.8	47.1
1.4	47.1	49.5	51.8
1.6	51.8	54.2	56.6
1.8	56.6	58.9	61.3
2	61.3	63.6	66.0

Figures indicated within the table indicate the Net Explosive Quantity that the trench may contain in order for the demolition to be considered as properly tamped.

Annex B to NTSG Chapter 5 EOD 'Specimen Demolition Order'

Organisation

Logo

Demolition Order

Team:	
Location:	
Date:	
Time:	

DESCRIPTION:

Source of Munitions (List HAs)

KEY PERSONALITIES	
OIC of Demolitions	
2IC Of Demolitions	
Cordon Commander	
Team size available	

RANGE LIMIT	
Distance	

Range Limit is the maximum range from the pit that can be safely secured. The Range Limit can NOT be exceeded by the Danger Area calculation.

PIT SERIALS

List items in descending fashion depending on the charge to weight ratio

Pit 1	Nature & Designation	N° to Destroy	AUW Per Item	NEQ Per Item	Total AUW (kg)	Total NEQ (kg)
1					0.00	0.00
2					0.00	0.00
3					0.00	0.00
4					0.00	0.00
5					0.00	0.00
6					0.00	0.00
DEMOLITION STORES						
1	Pentolite			0.8	0.00	0.00
2	Detcord (M)			0.015	0.00	0.00
3	Detonator			0.001	0.00	0.00
GRAND TOTAL (Kg)					**0.00**	**0.00**

Danger Area: Bulk Demolition	**0.00**
Danger Area: Single Item Tamped (no frag hazard)	**0.00**
Danger Area: Single Item not Tamped*	**0.00**

Also applies on multiple item demolitions where the items to be destroyed are more than one charge width apart to avoid sympathetic detonation. In this situation you do not combine and total the AUW of all of the items being destroyed but use the AUW of the largest item to be destroyed. This should then be the safety distance taken from the items on the extremities of the demolition.

NOTAM REQUIREMENT

[Reference NTSG Part 1, Chapter 6]	YES	NO
Timings:		

NOTE: For single Dems, NOTAM requested timings should be 1 hour only.

CASEVAC PLAN

● Appropriate Medical Facility:	
● Type of Facility:	
● Location:	
● Evacuation Method:	
● Location of HLS if applicable:	
● Distance:	
● Driving:	

Medical Facility PoC contact detatails:

EXTERNAL NOTIFICATIONS

DEMOLITION SITE DETAILS:

1. Provide Demolition Site Map with CP, DP, FP , Sentries Location and Fragmentation Radius.
2. Provide Google KMZ/KML file with following references:

	YES/NO
● Control Point (CP) location on the map?	
● Destruction Point (DP) location on the map?	
● Firing Point (FP) location on the map?	
● Sentries locations on the map?	
● Fragmentation Radius on the map? (**distance measure using 'circle'**)	
● Nearest Village location on the map?	

• Nearest Hospital Location on the map?	
• Nearest HLS Location on the map?	
• Other Pertient Info if significant?	

2. Provide KML/KMZ File	Submit Electronic File separate, with Dems Order or insert in the box below.	
	To insert "kmz" file, click: Insert/ Object/ Create from File/ Browse/ Display as Icon/ Ok	

LOCAL RESTRICTIONS

UNMAS Sub-Office use only:

Date Received:	
Date Approved:	
Approved by:	
Date Passed to UNMAS Juba (if Req'd)	
Date Approved:	
Approved by:	

Annex C to NTSG Chapter 5 EOD 'Specimen Ammunition Transfer Sheet'

AMMUNITION TRANSFER SHEET

Location		Date (dd/mm/yyyy)	
Issued by		**Received by**	

This is to certify that the unserviceable ammunition listed below has been transferred as specified.

Ser.	Designation	Qty	Remarks

Handed over by

Name:	Rank	Unit	Date	Signature and stamp

Handed Over to

Name:	Rank	Agency	Date	Signature and stamp

Witnessed and/or Approved by

Name:	Rank	Agency	Date	Signature and stamp

Annex C to NTSG Chapter 5 Explosive Ordnance Disposal 'Disposal Certificate'

DISPOSAL CERTIFICATE

Location			
Destroyed by (Agency)		**Date (dd/mm/yyyy)**	
Longitude (dd.ddddd E)		**Latitude (dd.ddddd N)**	

This is to certify that the unserviceable ammunition listed below was destroyed.

Ser.	Designation	Qty	Remarks

Demolition conducted by

Name:	Position	Agency/team	Date	Signature and stamp

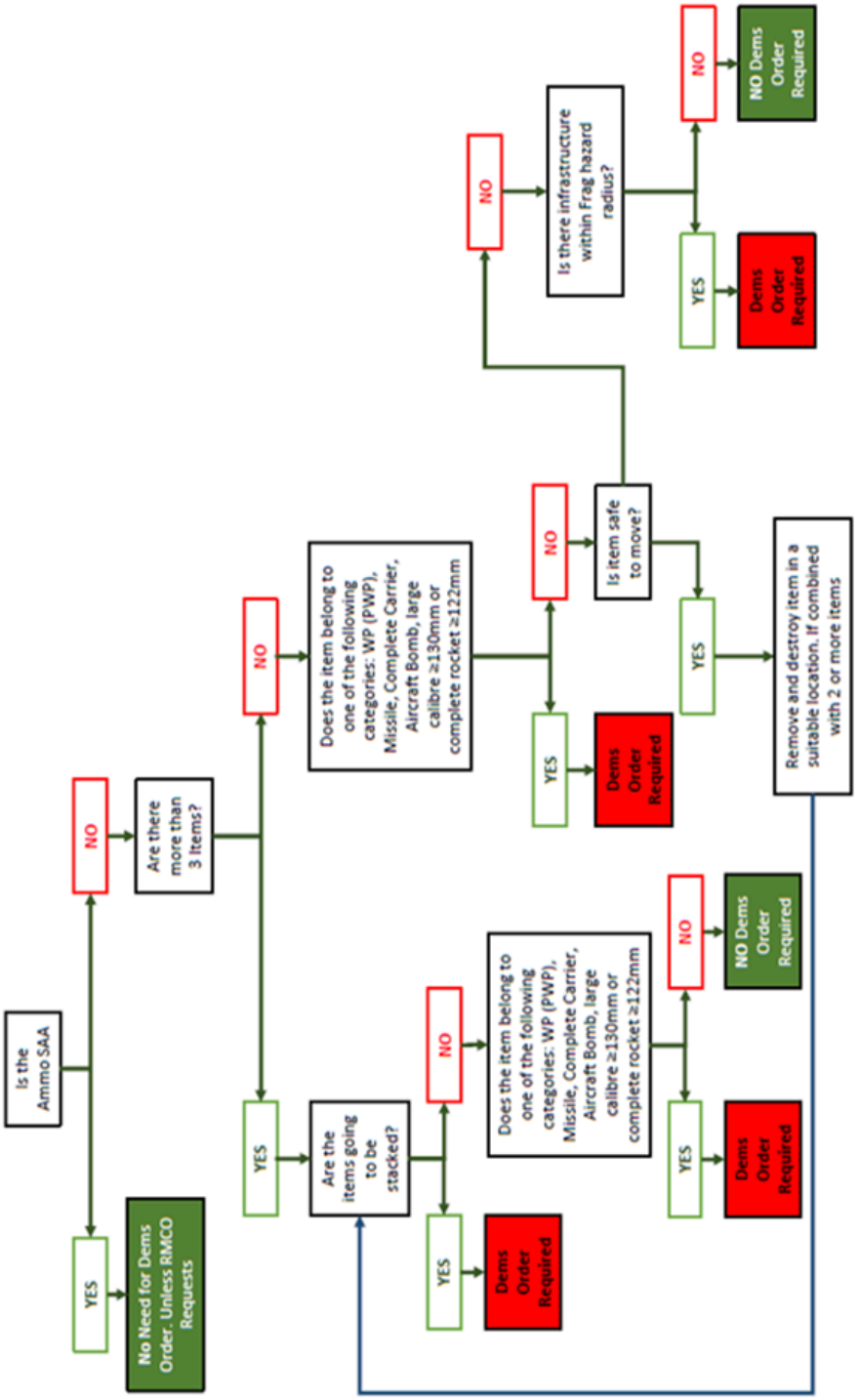
Witnessed by

Name:	Position	Agency	Date	Signature and stamp

Witnessed by

Name:	Position	Agency	Date	Signature and stamp

Annex D to NTSG Chap 5 EOD 'Demolition Order Decision Tree'



South Sudan

National Technical Standards Guidelines

Date: 03 October 2024

Technical Note 05.01

Binary Explosives

Nitromethane and Diethylenetriamine (NMD)

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1.1 Introduction

a. The aim of this chapter is to provide the specifications and guidance relating to the storage, transportation, use and accounting of Nitromethane (NM) and Diethylenetriamine (DETA) within South Sudan. NM is an organic nitro paraffin with a dye indicator and the DETA is an amine that acts as a chemical sensitizer.

b. Neither of the above mentioned chemicals are considered or classified as explosives until they are blended. Once mixed, the liquid can be initiated with the equivalent of a #8 blasting cap, which is commonly used within South Sudan. NM is considered a flammable liquid and DETA a corrosive material and thus handling, storage and transportation considerations only applies with reference to these classes when separate. Once there is a mixture between the two chemicals, irrespective of the ratio, the dye indicator in the NM will be activated and the mixture will be considered as high explosives and all considerations for handling, storage and transportation of high explosive materials will apply.

c. Once NM is sensitized with DETA, the container shall be clearly marked as “NMD”. NMD at a 4% mixing ratio has a VOD of 6,290 m/s and is considered to have a power equivalent to TNT on a 1:1 weight ratio.

d. NMD binary explosives are considered to be highly stable and have a high resistance to drop, shock and friction forces.

e. This chapter only considers the use of NMD as an additional means of explosive attack. NMD is a multi-purpose binary explosive used for breaching, low and high order applications and as donor charges during bulk demolitions. NMD shall only be used by qualified and suitably trained EOD operators, accredited by UNMAS-UNMISS/NMAA in this particular function and with all explosive characteristics of HE and EOD considerations apply.

f. This chapter does not provide specific technical guidance for the disposal of particular Explosive Ordnance (EO) as this shall be covered in detail by the mine action organisations Standard Operating Procedures (SOP).

g. The usage of NMD when addressing multiple items or conducting bulk demolitions, will be subjected to the same preconditions as when using conventional explosives and the demolitions order (DO) shall clearly indicate the use of NMD for this purpose.

1.2 Storage

a. NM and DETA shall be stored separately in a secure and well ventilated storage area. Access control measures shall be in place and only authorised personnel allowed to enter the storage areas.
b. The dedicated storage areas should conform to all United Nations environmental considerations for flammable and corrosive materials respectively. Signs will be placed clearly denoting the area as containing flammable and corrosive materials.
c. Where any contamination between the NM and DETA has occurred, irrespective of the ratio, the dye indicator in the NM will turn the NM from a clear colourless liquid to light yellow in colour. When NM is not clear in colour, for whichever reason, it shall be stored as high explosives and are not to be stored with the NM and DETA. Any container used to mix or store NMD mixture in, should be clearly denoted as containing NMD and should never be used for any other purpose than storing mixed NMD.
d. All containers should conform to the requirements and standards of fuel storage containers. Plastic HDPE[1] containers shall be used. (Never store NM, DETA or NMD in PET[2] containers for extended periods of time as the container will collapse due to the corrosive properties). Do not store NM, DETA or NMD in metal containers as the corrosive properties will degrade the metal over time.
e. Containers shall be tightly closed when stored and transported.
f. No heat, sparks, open flames or smoking to be within 25m of the storage area.
g. Even though NM and DETA are both considered to be biodegradable, suitable means to deal with spillage (absorbents such as sponges or kitty litter) should be in place. Do not dispose of any spillage control measures through means of normal garbage disposal, but rather store it in a container and dispose of during the next demolition where possible. Use only non-sparking tools when scooping up absorbents containing NM, DETA or NMD. If there is mixture between NM and DETA, store as high explosives until it can be disposed of appropriately. Do not release into sewers or waterways.

[1] High Density Polyethylene, more durable and temperature resistant then PET.
[2] Polyethylene terephthalate, normally used for plastic bottles.

h. When storing NM, Carbon Dioxide (CO2), dry chemical or alcohol resistant foam fire extinguishers should be available in case of any small fire breakout. For larger fires, water spray and alcohol resistant foam is better suited. Never use Sodium or potassium bicarbonate as an extinguishing media.
i. Never store NM, DETA or NMD in direct contact with copper, as this will cause a chemical reaction that releases toxic and explosive gasses.

1.3 **Handling**

a. NMD requires no special tools and can be mixed either at the operation site if transportation restrictions are in place, or pre-mixed for immediate use.
b. Minimum personal protective equipment required for handling and mixing includes clear safety glasses, to protect against splattering in the eyes, and disposable surgical gloves that will minimize cross contamination and the drying of the skin due to the corrosive properties. This minimum requirement is acceptable when handling and mixing NMD in the field for use.
c. Where extensive decanting is taking place chemically protective gloves, aprons, protective eyeglasses/face shield and the use of an organic vapour cartridge respirator with a particulate pre-filter is recommended when handling the sensitizer Diethylenetriamine.
d. When mixing NM and DETA, it is recommended that it take place outdoors and not in a confined space due to the vapours of the Diethylenetriamine.
e. Ensure that an eyewash station and fresh water is available and proximal to the work-station location. In the field an eyewash station can comprise of purified water in a bottle with a small hole in the cap that allows water to be directionally gushed into the eye if needed.
f. Keep separate and clearly labelled containers and measuring cups for mixing of the Nitromethane and Diethylenetriamine, once the two parts are mixed, the resultant mixture is considered an explosive and should be treated as such.
g. When mixing, medical personnel are on standby and all personnel mixing have been briefed on emergency medical procedures.
h. No smoking within 100 meters of the mixing site and the use of either dry chemical, carbon dioxide, water spray or alcohol-resistant foam fire extinguishers are recommended.

1.4 **Mixing**

a. NM can be sensitized (sufficient to become cap sensitive) with as little as 2% DETA. However, research into the effectiveness of NMD has shown that a 3% ratio is best suited to achieve the ideal VOD. However, for field use, and allowing sufficient room for deviation, a 4% ratio will be implemented within South Sudan.
b. Consequently 4% of DETA is used when mixing with NM.
c. Here are some common ratios for quick reference purposes:

NM Amount		DETA 4% Mix
Litres	Kg	ML/CC
0.10	0.11	4
0.25	0.28	9
0.50	0.56	20
1.00	1.13	40
1.25	1.41	49
1.50	1.69	60
1.75	1.97	78
2.00	2.25	80
3.00	3.38	120
5.00	5.63	200
10.00	11.26	400
20.00	22.52	800

d. Using the above mixing chart, or determining an alternative amount based on the amount of NM required, the required amount of DETA is measured out and poured into the mixing container with the Nitromethane. The mixing container shall be a separate container and any remaining or excess NM shall never be poured from the mixing container back into the NM storage container as this may result in contamination. Separate measuring cups shall be used for measuring both the NM and DETA out and should then be poured into the mixing container where the two components will mix.
e. Once mixed, the mixing container is now considered to be filled with an explosive and shall be labelled and treated as such.
f. The NMD is now ready for use and can be transferred to other containers for demolition purposes.

g. Should any NM, DETA or NMD spill on the ground, dilute by pouring appropriate amounts of water over the area. Both chemicals are considered biodegradable.

1.5 Using NMD

Due to the unique properties of NMD, the system can be deployed using a wide variety of watertight containers to accomplish standard demolitions as well as many specialized applications.

1.5.1. Donor Charges:

a. NMD is a multipurpose liquid explosive and will conform to the container in which it is placed. It can be poured into pouches, bottles, tubes, hoses or shape charge containers. General EOD principles apply and the liquid explosives will exert the same blast characteristics as conventional explosives such as block or plastic explosives.
b. NMD has a critical diameter of 8mm.
c. The most convenient way in which NMD can be used in South Sudan is by pouring it into an appropriately sized container such as a used a used water bottle (Ensure all water has been removed before pouring NMD in the bottle. If the mixture becomes milky, discharge the entire container as this is an indication of too much water contamination).
d. 250ml, 500ml or 1.5l water bottles has proven to be most reliable and widely available within South Sudan. Pouring NMD in a water bottle is useful in creating a donor charge with the NMD.
e. When pouring NMD in a bottle or pouch, ensure that all the air pockets have been removed to allow for full propagation of the shock wave from the detonator or detonation cord.
f. The detonator can be secured directly to the bottle, but the preferred method is to use a basic 5-wrap detonation cord (minimum 10gr/m) whip. The detonation cord wrap can be around the top of the bottle (providing a one directional blast wave to the opposite side) or in the middle of the bottle (providing a two directional blast wave to the top and bottom of the bottle).
g. Depending on the thickness of the plastic, the detonator may not be sufficient to initiate the NMD and the detonation cord wrap would be

best suited. For thicker containers the amount of wraps can be increased to ensure full initiation.

h. These donor charges can be used in many applications from single item, multi-item or bulk demolitions and serves a similar role to conventional explosives. Normal EOD charge placement principles applies.

1.5.2. Unfuzed Munitions:

a. When dealing with unfuzed munitions, the operator may decide to opt for initiating the items as designed. With the NMD this is easily achieved with minimal usage of explosive stores.

b. Secure munitions upright, allowing the fuze well to be able to contain any liquid poured inside it.

c. Depending on the amount of items to be destroyed, prepare an appropriate length of detonation cord and make the corresponding number of knots in the detonation cord to the amount of items to be destroyed. The detonation cord can be used in either a line or ring main configuration but the detonator cradle should be provided for.

d. Place one knot in each fuze well, ensuring that the knot is properly secured inside the fuze well thus forming a continuous loop connecting all the munitions.

e. Use a small amount of NMD and pour it into the fuze wells until flush with the rim of the fuze well.

f. Munitions should be secure and not tilt or fall over. Do not bump the munitions while working.

g. Once the liquid is poured in, the remainder of the EOD actions remain the same when placing the detonator.

h. This method is extremely useful in high ordering items such as 120mm Chinese Type 55 mortars that tend to not be fully destroyed when attacked explosively from the side. By functioning as designed, the entire munition is consumed.

1.5.3. Alternative Techniques

a. Using a container i.e. plastic bucket or bin, large quantities of odd shaped ordnance i.e. hand grenades, 40mm projected grenades etc. can be destroyed by submerging it in NMD. Where available, industrial quality plastic bags may also be used, but this should be

done carefully as to not pierce the bag resulting in the NMD leaking out.

- This method is achieved by carefully placing all items in the relevant container, and then filling it up with NMD until such point that all the items are submerged by at least 8mm of NMD.
- To initiate the NMD inside the container, a plastic bottle with the above described detonation cord wrap should be placed in contact with the NMD in the container. Alternatively, a detonation cord knot should be secured to one of the items inside the container that would ensure that the detonation cord is retained under the surface of the NMD to allow proper initiation of the NMD.

b. A small cylindrical container such as a pill bottle filled with NMD, can be used to propel a metal plate forward in a cracker barrel application. The metal plate should be at least 1.5 times the weight of the explosives and ideally have a minimum thickness of 10mm. The NMD can be initiated with the normal detonation cord wrap.

1.6 Accounting

a. Each storage location shall have a logbook in which the issuance of NM and DETA can be tracked.
b. Organizations shall maintain usage logbooks, clearly tracking the quantity of NM and DETA received, the amount used and the amount of both on hand.
c. Whenever ready mixed NMD or contaminated NM is stored in line with HE considerations, this shall be reported to UNMAS and clearly tracked in the logbooks.
d. Usage records shall clearly indicate the location of each demolition, the items destroyed, and the amount of NM and DETA used.
e. All spillage and wastage shall be reported to UNMAS and tracked in the respective logbook.

1.7 Qualifications

Only operators that hold a recognized EOD qualification in line with the respective post requirements in South Sudan (See NTSG Chapter 5) will be allowed to undergo the appropriate training to use NMD within the South Sudan program. Obtaining the appropriate training and being successfully assessed as competent in the use of NMD, will be clearly recorded in the

UNMAS Accreditation Tracker. Depending on the frequency of use, UNMAS reserves the discretion to require operators to undergo refresher training if NMD was not used by the operator for a prolonged period of time.

NMD is another type of explosive used by qualified EOD operators. UNMAS South Sudan will not issue certifications in its use, and the training delivered and the use of NMD is exclusively intended for the program.

1.8 Advantages of NMD

Some of the advantages of NMD include but are not limited to:

- Power is equivalent to TNT on a 1:1 weight basis
- Costs significantly less than Pentolite based explosives
- Significantly reduces shipping, storage and handling costs over conventional explosives
- Does not require new or exotic equipment for effective use
- Requires minimal training
- Essentially non-toxic, making it safe to store and handle; simply flush with water if spilled
- Biodegradable in the event of accidental spills
- Easy to purify if contaminated with solids such as gravel, rocks or sand; does not affect explosives properties
- Versatile, economical in both surface and underwater applications
- Proven 100% reliable in harsh and hostile environments
- Low flammability with a flash point of 35°C (96°F)
- Highly stable; tested against .50 caliber bullet impact, drop, shock and friction
- Extended shelf-life, lasts well over 20 years.

1.9 Responsibilities

a. NMAA/UNMAS-UNMISS: The NMAA/UNMAS-UNMISS may where applicable:
   - Deliver the appropriate training to senior organizational staff to transfer the necessary skills to use NMD in the required application.
   - Monitor and provide necessary technical support to organizations using NMD.

b. NMAA/UNMAS-UNMISS: The NMAA/UNMAS-UNMISS shall where applicable:

- Accredit operators in the use of NMD within the South Sudan Mine Action Program.

c. Mine Action Organisations: Mine action organisations shall:

- Establish and maintain their own SOPs for the usage of NMD in EOD operations which shall comply with this NTSG and shared with the NMAA/UNMAS-UNMISS for review and approval.
- Only transfer the skills to use NMD to qualified individuals.
- Maintain a register of qualified personnel and any amendments to their accredited competencies.
- Maintain accounting records of all NM and DETA stores.

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Chapter 06

Notice to Airmen

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6.1 Introduction

a. A NOTAM shall be submitted when the total of any one explosive charge exceeds 25kg; this includes the explosive quantity of the donor charge. The only exception to this rule is demolitions within 1km of any airport or main HLS, which require a NOTAM at all times. This guideline shall assist in the authorisation and reporting of the use of explosives by mine/UXO clearance organisations. All explosive demolitions shall be formally co-ordinated by mine action organisations.
b. Whenever mine action organisations are using explosives for any reason, on or off a recognised Central Demolitions Site (CDS), with or without a NOTAM, they shall inform the local military unit. Demolitions shall not proceed without military knowledge and approval.
c. It is the responsibility of the mine action organisation carrying out any demolitions to inform and co-ordinate their activities at the local level with military units and where necessary and/or required other national, governmental and local authorities.

6.1.1 Submission of NOTAM

a. All NOTAMs shall be submitted directly to the NMAA/UNMAS-UNMISS who are to disseminate it to both UNMISS and UNHAS Air Operations and to the local office of UNDSS.
b. A NOTAM shall always be submitted at least 3 days in advance of a planned demolition. The only exception to this 3-day rule is when exceptional circumstances and the tasking process dictate otherwise.

6.1.2 NOTAM Information

a. NOTAMs are required in order to warn aviators of the use of explosives in any area, so that these areas are not over-flown at critical times. However, the information may also be used to warn/inform other interested parties.
b. The following details are required:
    - Location of Demolition: This shall be in the form of GPS coordinates in longitude/latitude.

- Maximum Quantity of Explosives to Be Used In Any One Detonation: This shall be reported in kilograms.
- Planned Date of Detonation: If no time zone is shown on the NOTAM, local time shall be stated. If demolitions are to be carried out at the same time each day, daily timings should be stated on a consolidated weekly NOTAM. In exceptional circumstances a monthly NOTAM may be approved.
- Planned time frame of detonation: This shall be a stated specific time.
- Safety distances for charges used: Horizontal safety distances shall be reported in metres. The calculated vertical safety distances shall be reported in feet.
- In calculating the horizontal safety distance for demolitions, the following formulae should be used:
- For single ammunition item only - $D = 370(AUW)^{1/5}$
- For multi-item fragmenting munitions - $D = 444(AUW)^{1/6}$
- In calculating the vertical limit for demolitions, the following formulae should be used (As per IATG 01.80 section 6.1.2):
- For single ammunition item only - $D = 314(AUW)^{1/3}$
- For multi-item fragmenting munitions - $D = 470(AUW)^{1/5}$
- 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.
- Team Details: Name, radio call sign and frequency of demolition Team Leader.
- Contact Details: Name and telephone number of contact at mine/ERW clearance organisation’s headquarters or field office.

- Additional Information: This shall include the reason for the demolition.
- e.g. destruction of ERW. All ERW, anti-personnel mines and anti-tank mines for explosive destruction shall be assessed by weight of explosives contained inside them, and this figure included in the statement of net explosive quantity (NEQ) in kilograms.

6.1.3 Emergency NOTAM

a. When an emergency demolition is necessary, such as for the destruction of ERW in a dangerous location, which poses a threat to the immediate population or asset, the details required for NOTAM shall be passed on to the NMAA/UNMAS-UNMISS.
b. An Emergency NOTAM shall be dealt with on a case-by-case basis. These should be the exception rather than the rule. In all such cases the means of initiation shall be electrical, and the time of detonation shall be carefully controlled to ensure that the airspace is clear of aircraft.
c. Normal safety precautions shall be taken whenever the explosive destruction of any item of ordnance is carried out. These safety precautions shall include visual inspection of the airspace above and around the demolition area to encompass the implemented safety distance.
d. If explosive charges or the explosive destruction of ordnance is carried out within 1km of an airport, the organisation carrying out the explosive demolitions should contact the airport control tower or authority in order that local co-operation is achieved.

6.2 **Example NOTAM**

(NOTAM)

From						
To						
For Information						
Subject		NOTAM Request				
Ref No						
A.	Location (name)					
i.	Co-ordinates	Latitude		Longitude		
ii	Map Name					
iii.	Sheet No					
B.	Quantity of Explosive per Charge					
C.	Date		Time from		Time to	
D.	Safety Distances; Horizontal (m)		Vertical (ft)			
E.	Name & Call Sign of Contact					
F.	Name & Tel of Contact at Org HQ					
G.	Call Sign			Frequency		
	Additional Information					

6.3 **Responsibilities**

a. NMAA/UNMAS-UNMISS shall assist the mine action organisations in processing NOTAMs and shall conduct any liaison required with United Nations Air Operations.

b. Mine action organisations shall accurately complete a NOTAM request as displayed in Para 6.1.2 and submit to the relevant NMAA/UNMAS-UNMISS Sub Office at least 3 days prior to the planned demolition.

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Chapter 07

Battle Area Clearance

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7.1 Introduction

a. Some ammunition on the battlefield does not always work as intended. The failure rates from fired munitions can be as high as 50%, therefore, in situations where there has been high ammunition usage rates the resulting hazards from EO, including unexploded submunitions, can be extensive across former battle areas.

b. BAC is the systematic search and controlled clearance of hazardous areas where the hazards are known not to contain mines. It involves the removal and/or destruction of all EO and their component parts, which would otherwise pose a significant threat to the local population. Whilst individual areas may vary from location to location the basic principles of conduct shall remain the same.

7.2 BAC General

a. BAC operations involve the location and disposal of EO, including UXO and AXO, but not mines, over specific areas, which may include:

- Battlefields, including single items of UXO;
- Sites where air delivered or artillery munitions, including cluster munitions, have been fired or dropped;
- Buried or abandoned ammunition caches. This type of clearance requires a defined, controlled and systematic clearance which shall be elaborated in an approved technical note or clearance organisation's SOP prior to the commencement of clearance;
- Areas affected by unplanned explosions at munition sites because of inadequate and/or inappropriate munition management.

b. BAC operations do not cover the disposal of stockpiled munitions in national storage facilities.

c. BAC planning shall account for all types of EO likely to be encountered and the appropriate procedures for disposal. This includes the use of suitably qualified personnel, using appropriate/serviceable equipment, stores and supplies.

d. Personnel who have successfully completed the Basic Deminer Training Course may be used to staff BAC Teams following specific BAC and basic EOD training. BAC Team Leaders shall be qualified to the required level. Please refer to Chapter 5 and Chapter 13.

e. MDD may be used for BAC once accredited; in which case the detailed BAC drill shall be described in the mine action organisations accredited SOP. Use of MDD in BAC is not described in further detail in this standard.

Note: MDD's may only be used on cluster munition sites after passing the discipline specific accreditation.

f. Mechanical assets may be used in certain aspects of BAC, such as ground preparation or excavation. This will depend on the type of hazard, risk assessment and applicable method, proposed by the demining organisation and approved by the UNMAS-UNMISS for any specific task.

7.3 Area to be cleared

a. The extent of the area to be cleared shall be defined through non-technical and/or technical surveys, or progressive clearance operations

b. In most cases, especially for submunition strikes, the extent of the area to be cleared cannot always be established at the outset but can be identified as clearance progresses.

7.4 Depth of Clearance

a. EO may be on the surface of the ground. In this case, the specification may call for the removal and or destruction only of surface EO hazards.

b. The minimum BAC subsurface clearance depth is 20 cm or greater, depending on the site/hazard specific requirements and as stated on the Implementation Plan.

c. The required clearance depth can be adjusted as clearance work progresses. Any change shall be agreed on between the NMAA/UNMAS-UNMISS and the clearance organisation, and shall be formally recorded in the Implementation Plan amendment and in the team's daily clearance records.

7.5 Detection Equipment

a. The following detection tools may be used for BAC, task and hazard dependant and subject to approval by the NMAA/UNMAS-UNMISS:

- Shallow search metal detectors - the same as used during mine clearance albeit they may be too sensitive for efficiently conducting a BAC task;
- Shallow search metal detectors which are designed or calibrated against a specified EO target instead of minimum metal mines;
- Wide area and large loop detectors;
- Deep search locators;
- Magnetometers[1];
- Detector arrays, manually carried or mounted on vehicles or trailers;
- Mine detecting dogs (MDD).

7.6 Phases of BAC

a. All BAC tasks shall have the following five phases which may differ in proportion and conduct depending on the task type and task priority given by the NMAA/UNMAS-UNMISS.

Phase 1 Desktop Assessment:

This is the preparatory phase. During the planning phase for the BAC activity a comprehensive desktop analysis shall be conducted. This should include all potential sources of information from a multitude of resources. All sources of information should be explored and analysed to determine their authenticity and accuracy (e.g. IMSMA information, other historical information from past reports – aerial photographs, military

[1] In general, magnetometers shall not be used as primary search tools on submunition clearance tasks.

dossiers and hospital records). The main purpose of this is to ensure that teams are not deploying onto any mine hazards. Only then the next phase shall commence.

Phase 2 Survey:

This phase may result in:

- confirmation of the existing survey information;
- (re)definition of the existing survey information;
- registration and mapping of a hazardous area.

With areas that have been subjected to submunition strikes, this shall mean defining a “fadeout" around known confirmed hazards or, ultimately, defining the actual strike footprint. In most cases, the size of a footprint may not be possible to define through the survey but through clearance, by achieving “fadeouts”, hence the initial area for clearance should be identified around confirmed evidence of cluster munitions.

Phase 3 Marking:

This is the physical marking of the defined hazardous area which, regardless of the method of search to be employed, shall conform to the requirements of ’Site Preparation and Setting Out’ (see Chapter 2) and include benchmark, start point, turning points, boundary lines and lanes, intermediate lanes and other defined requirements.

Phase 4 BAC:

This is the clearance by systematic search, detection and removal of all EO within the marked area, to the required depth.

Phase 5 Reporting:

This is the accurate recording of the cleared perimeters, mapping and the final handover to the NMAA in the form of a completion report.

7.7 Safety

a. The minimum safety distances for BAC operations are dependent on the expected hazard and the type of operation being conducted. The safety distance for surface clearance and subsurface clearance involving signal investigation have been given in para 7.8 for Surface and Subsurface Clearance.

b. If required, manual ground preparation should be done concurrently with Visual Search.

c. In addition to the manual means, mechanical means of vegetation cutting may be applied in which case the methodology and the safety measures shall be outlined in the implementing partners' SOP.

d. The PPE requirement shall be considered in line with the HSSE Chapter to this NTSG.

7.8 Methods of Search

The clearance methodology and assets to be used will be dependent on several factors i.e. vegetation, terrain, metal contamination and obstacles etc. A combination of different search methods shall normally be employed in order to achieve the desired result. Appropriate levels of PPE to be worn will be determined by the threat assessment and methodologies used. Methods that may be used include:

a. Visual Search: is the most effective method of removing the immediate threat from a hazardous area. It shall be strictly controlled to ensure that the complete area is systematically searched. The following applies:

- The vegetation, terrain and environment shall dictate the number of deminers making up a BAC team and the spacing between these individuals;
- The TL shall ensure he/she is always able to see and hear all deminers.
- Each deminer shall visually search the area he/she is responsible for and be able to hear the TL at all times;
- BAC teams shall not search continuously for more than 60 minutes without at least a 10-minute break;

- A team shall be allocated a ‘box’ to search, which is further segmented into ‘lanes’ of a width normally around a Meters;
- A minimum safety distance of 50 metres shall be maintained between each BAC team but it may be necessary to increase this depending on the fragmentation threat;
- Once a box has been searched and all EO found are marked, the team may then move onto the next box;
- Searching shall always be carried out in complete silence, except for instructions given by the TL and on the identification of the EO by a deminer;
- Any deminer who identifies an item of EO shall immediately alert the remainder of the team and the TL. Under no circumstances shall the EO be moved or disturbed at this stage;
- After an evaluation by the TL the EO shall be appropriately marked;
- In those areas where sub-munition clearance is being conducted, the location of sub-munition strike marks shall be recorded to assist in the identification and future evaluation of the strike area footprint and boundary;
- All items of EO that have been identified shall be rendered safe either by disposal by detonation/burning, or if safe to do so, recovered to a central storage area for demolition later;
- The preferable method of destruction for sub-munitions shall be destroyed in situ. Unless the threat can be established that they are safe to move for later destruction.

b. Instrument Aided Visual Search: is used to assist visual search procedures when the density, covering and/or spread of vegetation hinder progress, effectiveness, efficiency

and safety. Numbers of deminers, allocation of tasks, adequate supervision and overall conduct of this method of search must take into consideration the use of detectors.

c. Subsurface Search: May be employed initially or following a visual search of the contaminated area. Dependent upon methodology and equipment used deminers may work singularly, in pairs or more[2]. The minimum BAC Subsurface clearance depth is specified in para 7.4. The following applies:

- The threat shall dictate the composition of deminers and the spacing between each;
- The TL shall allocate each deminer a box ensuring he/she is able to see and hear all deminers at all times;
- Each deminer shall visually and instrumentally search the area they are responsible for and be able to hear the TL at all times.
- A deminer shall not search continuously for more than 60 minutes without at least a 10-minute break.
- The allocated 'box' to search shall be further segmented into 'lanes' of no more than 2m width taking into account the restrictions detailed in paragraphs (1), (2) and (3) above as well as the instrument being used and its configuration;
- A minimum safety distance of 25 metres shall be maintained between each deminer involved in excavation of a signal;
- The safety distance may be increased depending on the specific hazard and related fragmentation threat;
- Once all signals have been interrogated and items either removed destroyed or remain for later destruction the deminer moves on to another box;

[2] Whichever entity is used reference to a single entity in this chapter is made by the term 'deminer'

- Searching shall always be carried out in complete silence, except for instructions given by the TL and on the identification of the EO by a deminer;
- Constant reassessments of the area, including threat assessments, shall be made at all times and any signal from the instrument shall be investigated;
- On location of a sub-surface signal, investigation drills shall be employed as per company's SOP and the extent of excavations only enough as to positively identify the item. Every effort shall be made not to jolt, vibrate, strike or otherwise disturb the item being investigated;
- Any deminer who excavates and identifies an item suspected of being EO shall immediately alert the TL who will in turn evaluate and mark accordingly;
- All items of EO that have been identified shall be rendered safe either by disposal by detonation/burning, or if safe to do so, recovered to a central storage area for demolition at a later date. All sub-munitions shall be destroyed in situ. However, if there is a need to remove to centralised area, permission is to be sought from UNMAS before it being moved;
- A minimum 50m fade out extension is to be instigated from the last known submunition position of the outer perimeter of the strike footprint. As displayed in the diagram below:

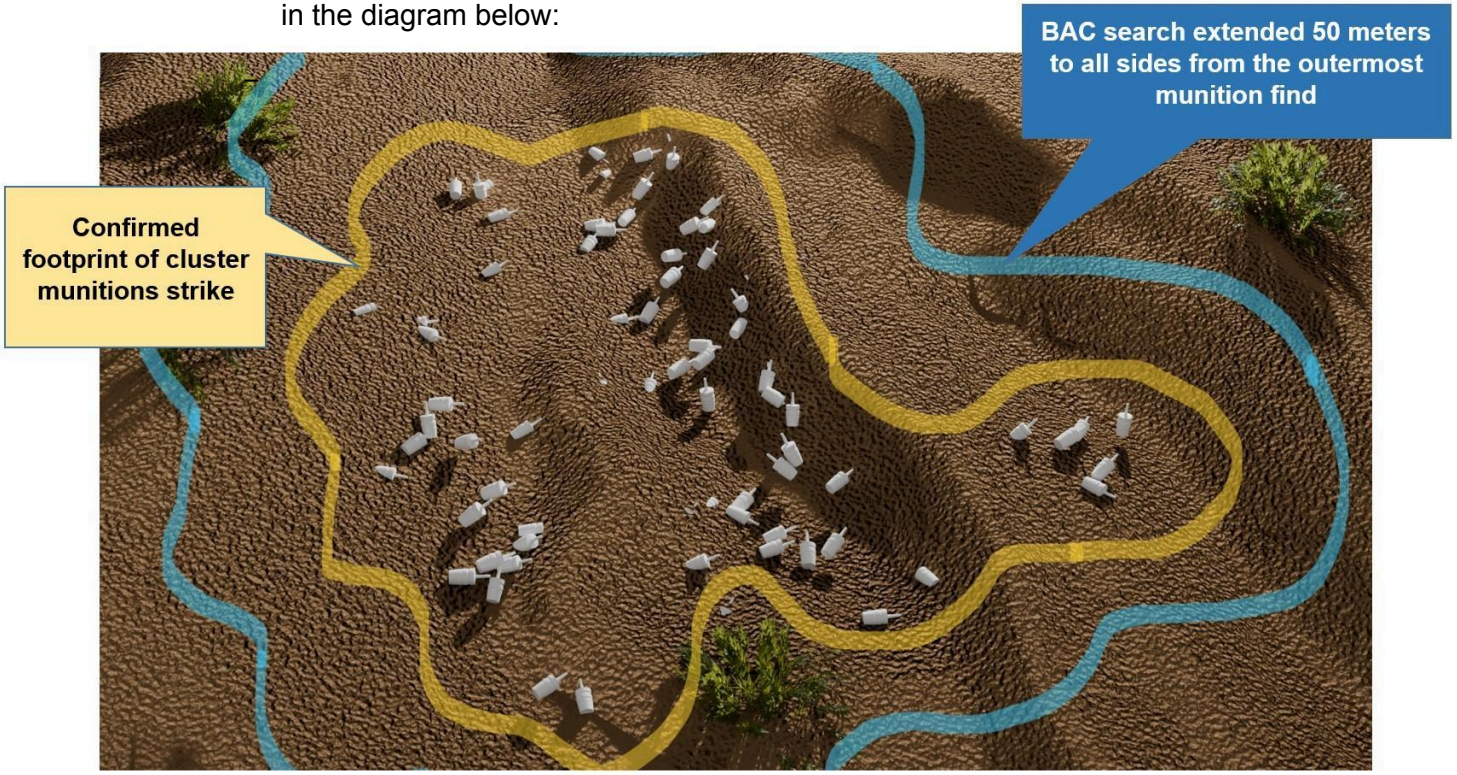

Figure 0-1 BAC Fade Out

- Clearance QC shall be minimum 10% or otherwise as stated on the Implementation Plan;
- The QC shall be targeted and conducted over the areas with highest concentration of items previously found, or over any other relevant areas (higher metal contamination, natural obstacles and similar);
- The QC sampling shall be conducted on each internal QA visit, external QA visit and task completion. The sampling should be conducted on an area with high concentration of finds and/or any other area identified by the QC officer. The size of the sampled area shall be site specific but never below 10 x 10m;
- In addition to the 10% QC measures, additional QC measures such as ‘’360 degrees’’ check and targeted/random sampling shall be considered.
- Mandatory large loop detector “360 degrees” check around each EO find, shall be described in the clearance company’s SOP.
- If a mine is found during BAC, the task is to cease immediately and be considered as a Mine Clearance Operation with NMAA/UNMAS-UNMISS being informed. A safety procedure to extract the searchers from the minefield is to be defined in the organisation’s SOP.

7.9 Disposal of EO

a. All EO shall be disposed of by detonation/burning either in situ (if unsafe to move) or at a CDS (if safe to move) as soon as possible. In circumstances, where disposal cannot take place that day, the item shall be effectively marked, protected, and the local inhabitants informed and UNMAS-UNMISS/NMAA shall be notified. The clearance shall not continue until items identified and marked on the previous day have been disposed of;

b. Items of EO that are considered safe to move shall be transported to a pre-designated storage area for future bulk disposal. Excessively large quantities shall not be allowed to accumulate.

7.10 Free from Explosive

a. All items of metallic scrap, which have been certified as Free from Explosive (FFE) shall be stockpiled on site and arrangements made for its removal to a final place of disposal. The final place of disposal shall be marked by DGPS and recorded in the Completion Report;

b. Fade out from found FFE submunition shall be cleared

7.11 Reporting

a. Daily reporting of production and demolitions conducted on the site shall be submitted daily in the format specified by NMAA/UNMAS-UNMISS.

b. Upon completion of a BAC task a Completion Report shall be submitted to the NMAA/UNMAS-UNMISS. This shall include the description of the task, details of all items found, demolitions conducted, maps indicating the cleared area perimeter points and location of where assets worked and items found. The location of found FFE submunition shall be recorded in the Completion Report.

7.12 Responsibilities

a. NMAA/UNMAS-UNMISS shall

- Where possible, specify the area to be cleared and depth of clearance in contracts and agreements;
- Specify the criteria for clearance to allow clearance organisations the flexibility to clear out to the limits of a suspect area;
- Specify the standards and guidelines for QA & QC to be applied to clearance contracts and agreements;
- Accredit organisations to undertake BAC, monitor and conduct inspections of their clearance activities in line with the NTSG, Chapter 14;

- Maintain records of cleared and uncleared land showing the clearance status for each suspected area;
- Specify the core EOD competencies to be applied with clearance organisations;
- Develop national standards for the conduct of BAC operations.

b. Mine action organisations shall:

- Gain accreditation from NMAA/UNMAS-UNMISS to operate as a BAC organisation;
- Establish and maintain SOPs for BAC operations which comply with this NTSG;
- Apply the detail of accredited SOPs during BAC operations in a consistent, effective and safe manner;
- Develop and maintain a system to reconcile the number of isolated and investigated signals. They shall keep the record for each clearance box, naming the signal investigation deminer and officer in charge. Depending on the method applied, the organisations shall also keep the record of each operator, his clearance tool and a clearance box cleared by him/her;
- Cooperate with NMAA/UNMAS-UNMISS staff responsible for implementing policy and monitoring BAC operations.

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Chapter 08

Mechanical Demining

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8.1 Introduction

a. Mechanical demining is an essential component of humanitarian mine action and part of an integrated approach with the associated organisational structure, logistic and administrative support to provide sustainability.

b. Mechanical demining operations may involve a single machine employing one mechanical tool, a single machine employing a variety of tools or several machines employing a variety of tools.

c. A mechanical demining unit refers to one or more machines working as part of a system e.g., a front-end loader and a screening plant.

d. Mechanical tool refers to the working component(s) attached to a machine, such as flails, tillers, sifters, rollers, excavators, ploughs, magnets etc. A single machine may utilise several different tools, which may be fixed or interchangeable.

e. Intrusive machine refers to those machines that are designed to work inside a hazardous area, while the term 'non-intrusive machine' refers to those designed to operate from a cleared or known safe area, with its mechanical tool working in the hazardous area.

8.2 Mechanical Operations

8.2.1 Mechanical Role

When conducting mechanical demining, machines are divided into three distinct roles:

a. Machines designed to detonate or disrupt hazards – Machines designed to detonate or disrupt explosive hazards are those whose stated purpose is the detonation or disruption of hazards. Regardless of the above, the necessity for follow-up clearance remains.

b. Ground Preparation Machines – Ground preparation machines may or may not be involved in the detonation, destruction or removal of landmines however they are primarily designed to improve the efficiency of demining operations by reducing or removing obstacles by:

- Vegetation cutting and clearing

- Removal of tripwires

- Loosening soil

- Removal of building debris, boulders, rubble, defensive wire obstacles and other hindrances

- Processing of soil and debris.

c. Mine Protected Vehicles for Detection and Survey (MPVDS) – MPVDS are specifically designed to protect the occupants and equipment from the effects of a mine detonation. MPVDS are commonly used during detection and survey operations, where they may carry equipment such as detector arrays, vapour sampling devices or in some cases push or pull a roller. While these operations are not strictly mechanical demining operations involving 'machines' and 'mechanical tools' some of the work carried out by MPVDS falls into the category of mechanical demining. For example:

- Heavy MPVDS using their wheel tracks to provide an access path for manual sampling teams.

- MPVDS pushing or towing rollers (a mechanical mine clearance role).

8.2.2 Operational Requirement

a. **Mine Clearance Machines:**

When machines are used for mine clearance operations follow up assets will always be used, before the area is released as cleared. During mechanical clearance where the machine cannot be employed due to the ground conditions these shall be referred to as "Skip areas". All skip areas shall be marked and follow up clearance shall be conducted before the area is considered cleared.

b. **Ground Preparation Machines:**

When machines are used for ground preparation, they shall always be followed-up by other demining clearance operations such as Mine Detection Dog (MDD), Mechanical Mine Clearance, Manual Clearance.

c. **100% Sub Surface Follow Up:**

Shall be conducted behind the machine and shall be detailed within the mine action organisation's SOPs. This procedure shall include the following details;

- How the teams shall deploy behind the machine and the methodology employed – MDD, Manual Clearance (Detector/Raking) or Mechanical Mine Clearance.
- Explain the marking system to be used when conducting the follow up clearance procedure
- The actions to be taken when a deminer locates an item in the CHA.
- Clearance procedures for "skip areas".
- A 1m safety distance shall be maintained between cleared and uncleared areas.

d. **Mine Protected Vehicles for Detection and Survey (MVPDS):**

When machines are employed for detection and survey operations, the information they provide shall be followed up as appropriate and determined by an information management process, e.g. leading to a decision to clear the area, mark the area or classify the area as non-hazardous i.e. 'no evidence of mines (EO)'.

8.2.3 Mechanical Land Release

a. Mechanical land release may be a part of a technical survey process or a part of a clearance operation. Mechanical land release involves a machine being used to indicate or confirm the presence of landmines (EO) within a suspected or confirmed hazardous area. The aim is to enable the deployment of other demining assets only in areas proven to contain landmines (EO).

b. The scope and extent of mechanical land release operations depends on factors such as the accuracy and completeness of existing information, terrain, vegetation, machine and tool type, mine (EO) types and area reduction procedures used. Generally, the less information available about a hazardous area, the more investigation is required by a machine in order to be able to confirm the location of landmines and define any hazardous areas.

c. Demining machines may also be used for other functions in support of technical survey and clearance operations. Such functions may include preparing tracks to permit access into areas for demining operations, excavation in support of deep search operations and the removal of debris to enable access to suspected hazards (e.g. under collapsed buildings etc.)

8.2.4 Systems Approach

a. In mechanical demining, a ‘systems approach’ is the application of machines with a combination of attachments, or a combination of machines with different attachments, or non-mechanical demining procedures applied at different stages during the demining process. The system's approach is about the use of demining machines being integrated with other demining assets (manual or MDD) to ensure the most effective outcome is achieved.

b. Both ground preparation and mine clearance machines may be used within the systems approach.

8.2.5 Tolerable Risk

a. Following mechanical mine clearance, a risk assessment shall be carried out to determine the type of follow up methodology required before land can be handed over.

8.3 General Requirements

a. Each machine shall be Tested and Evaluated (T&E) to determine its suitability for the task(s) it is expected to carry out in the conditions in which it shall work.

b. The operation of each machine shall be assessed and confirmed as safe for the operator and any other person on a mechanical demining worksite.

c. The protection level for machines shall be sufficient to meet the perceived threat following a risk assessment for the particular task.

d. SOPs shall be developed for each machine. These SOPs should include:

- General mechanical operating procedures.
- Specific operating procedures
- Procedures detailing the recovery of the machine and extraction of the operator in the event of a machine becoming stranded in a hazardous area.
- Procedures for the integration of the machine with other machines or demining operations.
- Procedures to be followed in the event of a fire on a machine covering immediate actions to be taken and ensure the safe extraction of an operator from a hazardous area. (Where an onboard operator is present, machines shall be fitted with fire extinguisher or fire suppression systems. On no account shall any person be permitted to enter an un-cleared area to fight a fire on a *burning machine.)*

e. On-site accreditation of a machine shall be determined after fulfilling specific T&E and before employment on operations. (Refer to Annex A)

f. Machines shall not be used with tools, or on tasks, or in conditions for which they do not have on-site accreditation.

g. Prior to the deployment of any machine to South Sudan, an assessment shall be made to ascertain that suitable in-country infrastructure and support systems are available to ensure that the machine is operationally deployable.

8.3.1 Test & Evaluation (T&E)

a. T&E of new machines shall be carried out to ensure that a machine is suitable for its intended use in the conditions in which it shall work. IMAS 03.40 should be referred to for guidance on T&E requirements and parameters but in summary the following are the minimum requirements.

- Performance test – A test to establish whether the machine and its tool(s) can perform the role for which it is intended under comparable and repeatable conditions and to evaluate the manufacturer's specifications.

- Survivability test – Proof of a test to verify that the machine survives the explosive forces used as design criteria (performed by manufacturer).

- Acceptance Test – A test to ensure that a machine can work in the environment it is intended to be used.

- T&E shall only be conducted in a safe / controlled environment and on authorisation from the NMAA/UNMAS-UNMISS.

8.3.2 Mechanical Records

a. Mine action organisations shall maintain detailed records of their mechanical and follow-up operations in order to build up a statistical database of information that can be used for an operational decision making.

b. Reporting on operational performance indicators, such as hours worked, land cleared and landmines (EO) found, is essential to maintain sufficient statistical records. Reporting on non-operational time, such as mechanical breakdowns, transport between sites and logistical delays, may help in understanding the operational constraints and/or in visualising performance trends of particular machines. This may subsequently help an organisation to improve the efficiency of its mechanical operations.

8.3.3 Machine Support

a. The mine action organisation shall ensure the following:

- Appropriate and sufficient provisions for the maintenance and servicing of machines.
- Machines are maintained and serviced in accordance with the manufacturers' recommendations.
- Maintenance and servicing are carried out by qualified personnel and authorised agencies.
- Firefighting equipment is available at all places where refuelling of machines is carried out.
- Routine checks are made on the working components of machines and where working components critical to the effective operation of a machine are damaged or lost, they are repaired or replaced before further work continues.

- Routine inspections of safety features on machines are carried out and where damage is identified, the damage is repaired before further work continues.

- Whenever a machine is subject to a detonation that may have affected the safety of the operation, the machine shall be immediately withdrawn from the hazardous area and inspected.

- Where damage to a machine may place personnel in danger from subsequent detonations, the machine shall not return to work until the damage is repaired.

- Mechanical operators shall be appropriately trained and qualified in the operation and maintenance of their machines, including accreditation of individual operators.

8.4 **Safety**

In addition to routine and normal safety practices employed during humanitarian demining the following safety precautions/procedures shall apply to all mechanical operations:

a. When using rollers or flails and inspecting the area afterwards through clearance or raking all located mines or mine parts that include the fuse shall be destroyed in situ. Under no circumstances shall these objects be remotely moved, neutralised or recovered because of the possible unstable nature of the mine, firing train or firing train components.

b. When using ploughs, mines may be remotely pulled to remove the danger of explosive kick-outs when attempting to destroy mines. Once pulled, the mines shall be destroyed by explosive means, either in situ or in a separate disposal area.

c. If during operations, a hazard is identified which a machine was not designed or approved to be used against, the mechanical operation shall cease, and a review of the task shall be carried out.

d. Machines shall be checked prior to moving from hazardous to safe areas to ensure that no landmines (EO) or hazardous components remain in the working or moving parts of the machine or are attached to the machine.

e. Communications between the site Team Leader, the mechanical operator, the Medic and the sentries shall be in place and always confirmed while a machine is working in a hazardous area.

f. The minimum safety distances as listed in Table 8-1 shall be adhered to.

Ser	Situation	Minimum Safety Distance (m)
(a)	(b)	(c)
1	Between Personnel **not** wearing PPE and a machine working in suspected AP blast mine areas	200
2	Between Personnel **not** wearing PPE and a machine working in a suspected AP fragmentation and AT mine areas.	300
3	Between Personnel wearing PPE and a machine working in suspected AP blast mine areas.	100
4	Between Personnel wearing PPE and a machine working in suspected AP fragmentation and AT mine areas.	200
5	Between Team Leader/Remote control machine operator wearing PPE and a machine working in suspected AP blast mine areas.	100
6	Between Team Leader/Remote control machine operator wearing PPE and a machine working in suspected AP fragmetation and AT mine areas.	150
7	Between Team Leader/Remote control machine operator behind an approved blast/fragmentation screen in suspected AP/AT mine areas.	50
8	Between working machines in anti-personnel and anti-tank mine areas.	100
9	Between Personnel **not** wearing PPE and a machine working in suspected UXO areas.	300
10	Between Personnel wearing PPE and a machine working in suspected UXO areas.	200
1. Any reduction to these distances shall only be authorised by the NMAA/UNMAS-UNMISS on a case by case basis and shall be required to be included in the detail of relevant Implementation Plans.		
2. These safety distances shall be increased when required in accordance with the mine / UXO threat.		
3. When operating a remote-controlled clearance machine, from inside a protected vehicle the minimum safety distance from a working machine shall be determined by the level of protection it provides. The manufacturer's guide for the vehicle should be referred to. In circumstances where this information is not available, the minimum distance for the maximum suspected mine/UXO threat at the task shall be enforced.		

Table 8-1 Minimum Safety Distances for a Mechanical Sites

8.5 Clearance Requirements

The following applies during all mechanical demining operations:

a. A minimum of 500mm overlap shall be required for all medium and heavy mine clearance/ground preparation machine attachments, 300mm for all mini machine attachments and 200mm on the lightweight GCS100 or equivalent during processing lanes.

b. The clearance lanes should be as straight as possible, which shall ensure a more precise overlap of lanes. If the machine cannot work in straight lines, the overlap should be increased to ensure the required overlap is achieved.

c. When mechanical clearance has been stopped the operator shall recommence flailing/tilling a minimum distance of 1m back from the location it stopped. This shall ensure an adequate overlap of the area where the flail/tiller operations were interrupted.

d. At all times 100% manual (sub-surface) follow up shall be required following mechanical operations conducted in South Sudan.

e. An external controller should carefully record all detonations and visible throw-outs of possible mines/UXO. This shall assist the quality assurance and ease the work of manual clearance follow-up afterwards. If the machine is used for technical survey, this information is important in order to determine the exact location of the mined area.

f. If mines are encountered in an area and the purpose of the clearance is technical survey, clearance should be undertaken from another direction or in another line in order to determine the extent of the minefield.

g. Prior to deploying machines, certain considerations such as the threat (type of ordnance and depth), the terrain (e.g., vegetation, rocks, slopes), and the purpose of clearance (e.g., 100% clearance to the required depth, area reduction, verification, removal of vegetation, loosening of soil) shall be considered. Machines may be adjusted accordingly to search for mines at varying depths depending on the task requirement.

h. The purpose, method and requirement shall be included in the Task Dossier and Implementation Plan. Any deviation to this shall be approved by the NMAA/UNMAS-UNMISS.

i. Soil expansion (the increase in volume of soil as a result of mechanical processing) shall be taken into consideration when planning follow-up demining. Depth of clearance shall be from the original undisturbed ground level.

Note: The overlap can be measured by doubling the width of either the flail/tiller drum then measuring the width of two flailed/tilled adjacent lanes that have been ground prepared and then subtracting the minimum required overlap for either machine/tool, the difference is the “Overlap”.

8.6 **Responsibilities**

a. The NMAA/UNMAS-UNMISS shall:

- Accredit mine action organisations' SOPs prior to carrying out on-site accreditation of machines and operators in accordance with the required standard.

- Develop and implement national standards for the employment of machines on demining operations.

- Implement QM systems to ensure the safe, effective and efficient use of machines on demining operations.

- Provide advice to prospective machine user

- Establish reporting systems and procedures for the gathering of data on mechanical and follow-up demining operations. Such data should be made available to all stakeholders.

b. Mine action organisations shall:

- Gain from NMAA/UNMAS-UNMISS accreditation to operate as a mechanical clearance teams.

- Apply the standards as laid down in the NTSG.

- Ensure that the organisation's SOP are in compliance with the NTSG.

- Maintain and make available documentation of clearance as specified by NMAA/UNMAS-UNMISS

- Apply management practices and operational procedures which aim to clear land to the requirements specified in the contract and agreements.

Annex A to Chapter 8 Tiller and Flail Accreditation Test

1. INTRODUCTION

1.1 NMAA/UNMAS-UNMISS in South Sudan are responsible for ensuring that all mechanical assets working within the South Sudan Mine Action Programme (South SUDAN MAP) are safe, efficient and fit for their intended purpose. NMAA/UNMAS-UNMISS achieves this by conducting an accreditation process to ensure that the mechanical asset meets the minimum standards as specified within the NMAA/UNMAS-UNMISS NTSG and/or contracts. The objective of the accreditation testing is to assess a mechanical asset for its intended role. Once the testing has been completed, a decision shall be made on whether the machine and the way it shall be utilised is acceptable or not.

1.2 These accreditation tests are designed to ensure that mechanical mine clearance assets used in South Sudan can work in accordance with the NMAA/UNMAS-UNMISS NTSG and/or contract. In particular, the tests are designed to ensure that T&E can penetrate soil to a minimum depth of 13cm.

1.3 There shall be three phases to the NMAA/UNMAS-UNMISS T&E accreditation process, which are;

a. Review of SOP and machine capabilities: A thorough review of SOP and manufacturers data shall be carried out by NMAA/UNMAS-UNMISS to ensure that the SOP and the intended use of the machine comply with South SUDAN MAP NTSG;

b. **Depth of Processing Test**: A test shall be carried out in a safe area to ensure that the tiller/flail can reach the required 13cm depth of processing from the original ground surface.

c. **On-site Calibration**: The final acceptance test shall be carried out under full field conditions and shall ensure that the tiller/flail can be used in the environment it is intended to be used.

1.4 These tests are designed so that NMAA/UNMAS-UNMISS personnel may confirm a machine's ability to operate in South Sudan and demonstrate its ability in safe controlled conditions. The purpose of the tests is to allow early identification of problems or

shortfalls which would restrict the deployment of the machine, it shall also show the assessing body where SOP may need to be amended.

2. DEMONSTRATION OF DEPTH OF PROCESSING:

2.1 Once the contractors/organisations SOP have been received and reviewed, it is possible to proceed with the Depth of Processing Test.

3. RESPONSIBILITY:

3.1 The contractor shall be responsible for supplying the profile boards and all other equipment required for the on-site calibration and the operational accreditation.

4. OVERVIEW OF THE DEPTH OF PROCESSING TEST:

4.1 The Depth of Processing test is designed to be a practical test involving tiller and flail operations carried out within a test area situated in ground conditions that are representative of normal ground conditions typically found in minefields. Normal ground means ground that is, dry and hard, undisturbed, consists of a clay/sand/rock fragment mixture, and is flat to undulating in contour. The test area shall be located in a known safe area.

5. TEST REQUIREMENTS:

5.1 The purpose of the accreditation test shall be to establish the depth of processing achieved by the tiller/flail. The test strip shall be marked in a manner that clearly denotes alignment, start, finish and marking every 5 meters. Narrow trenches parallel to the start/finish lines shall be excavated across the entire width of the test strip and located every five meters. In total there should be 6 trenches in the test strip.

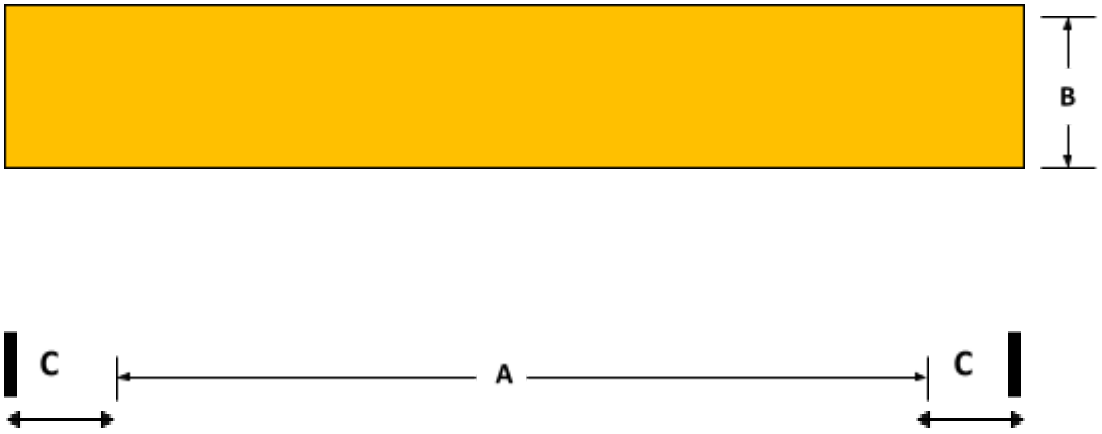
5.2 The trenches should be no wider than 100mm with a depth of 300mm (minimum) or deep enough to allow profile boards to be buried flush to ground level when emplaced. The test strip shall be marked at all 4 corners by markers (such as flags or painted rocks)

and be as wide as the flail or tiller drum of the machine being accredited plus a minimum of 10%.

6. EXAMPLE FOR CALCULATING BOARD WIDTH

6.1 According to the MineWolf technical data, the width of the MineWolf tiller is 3480mm, represented as A in the diagram below. It is recommended that the width of the profile board should be a minimum of 10% more than the width of the tiller or flail head. In this case 10% is an additional 348mm, so the minimum width of the profile board should be 3,828mm.

The profile board shall be made of 5 mm chipboard and shall be placed at 5m intervals.



A: = Width of the tiller or flail rotating drum.

B: = Depth of profile board, this shall be a minimum of 300mm.

C: = Minimum of 5% of the width of the tiller or flail rotating drum.

Figure 1: Showing dimensions of profile boards.

For comparison purposes, one extra profile board the same as the buried boards made of 3 – 6 mm chipboard or similar material should be placed on the ground outside the test strip.

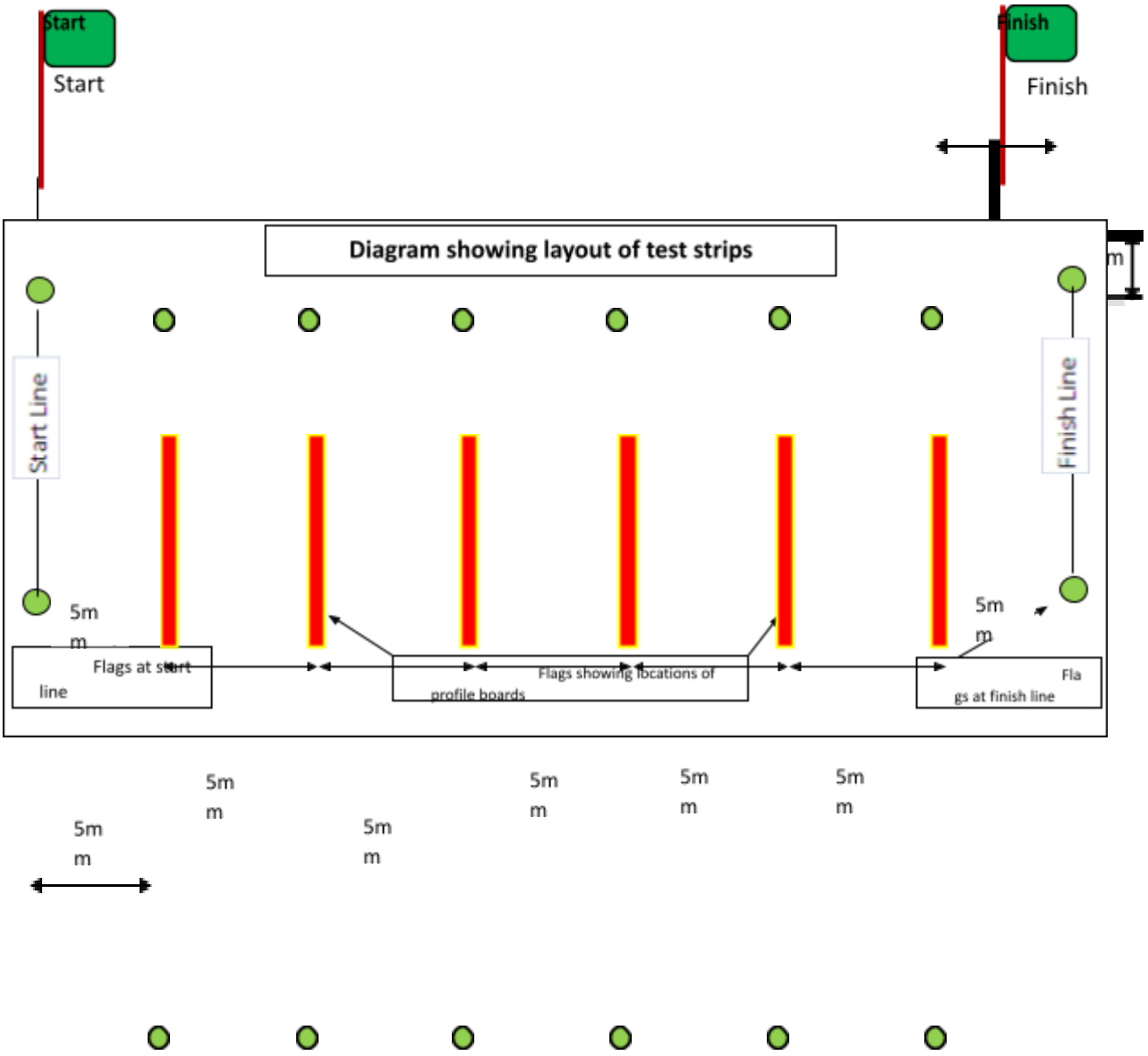


Figure 2: Plan view of test strips

Once the test area is set out and the profile boards are inspected, measured and inserted into the trenches. Before the operation commences the tiller or flail chisels or hammers shall be inspected and photographed for comparison purposes. The timing

of the flailing operation should also be timed, and the results reported as part of the test report so that these figures may be utilised for planning purposes. Once all ground test strips have been flailed, *Figure 4: Shows the condition of the soil condition on the test strip after one pass of the flail. After each pass the profile boards should be removed and examined to determine amount of cutting inflicted by the flail*

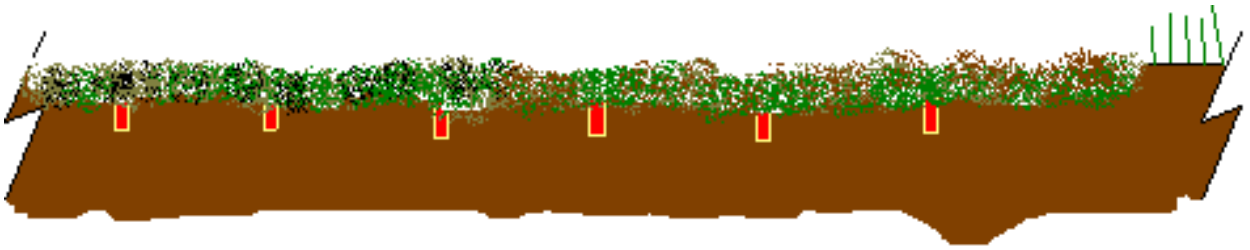


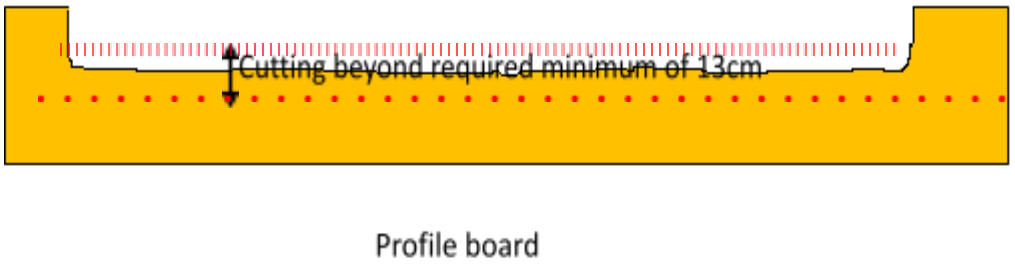
Figure 3: Layout of the test strips, each should be 35m long with trenches dug every 5 meters so that the profile boards can be inserted into the ground.

The profile boards to be removed and examined and compared with boards of the original size and dimensions. The profile boards should show cutting across the width of the board to a depth of a minimum of 13cm. If the cutting on the board is less than 13 cm then the test shall be repeated with the same boards until the cutting reaches the required depth, this shall determine the number of passes required by the machine to reach the required processing depth during clearance operations.

Adequate workers equipped with shovels should be available to bury/recover profile boards pre/post-test.

The test area should be of a size that allows unrestricted movement for the machine being accredited.

Figure 4: Shows the profile of a board which has been properly cut to 13cm.



C: = Depth of processing, this shall exceed 13 cm across the width of the profile board.

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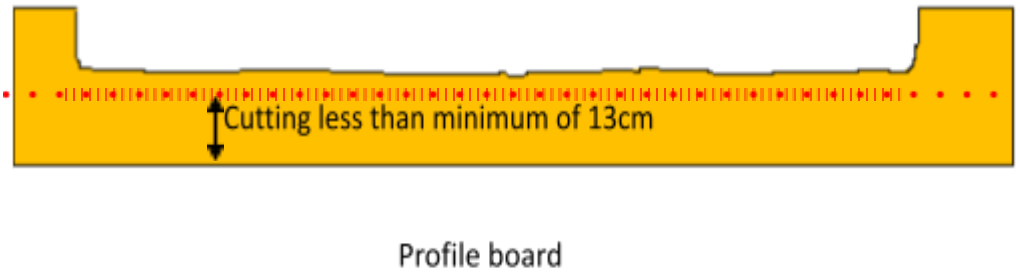


Figure 5: Shows the profile of a board which has not been properly penetrated to 13cm

Each time the machine tiller/flails a test strip the results are recorded with a pass or fail criteria. If the machine reaches the required 13cm depth on its first pass then the machine moves on to the second test strip and the process is repeated, if the machine again reaches the required depth then the machine moves on to the next stage of accreditation which is on site calibration.

If the machine does not reach the required 13cm depth on its first pass, then the process is repeated on the first test strip until the profile boards are cut to the required depth.

7. FINAL ACCEPTANCE:

7.1 The final acceptance test is conducted in 2 phases. Phase 1 involves analysis of documentation and results compiled during the Depth of Processing tests. This is required to determine if the minimum standards have been met or not, and whether it is necessary to carry on with the final test under field conditions. If the documentation or results are found to be lacking and/or minimum standards were not achieved during prior testing, discussions between NMAA/UNMAS-UNMISS and the contractor shall occur in order to rectify matters prior to proceeding with the final field test.

The final field test should be carried out in a safe area and should be a full simulation of field conditions, SOP shall be used to verify that equipment and procedures are being used as intended. Certification shall take place during this test.

8. ADMINISTRATION AND LOGISTICS:

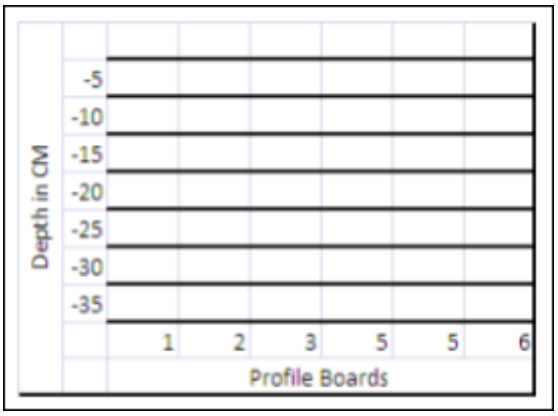
8.1 A successful outcome/completion of each test phase shall occur prior to the commencement of the next phase.

8.2 It is the responsibility of the contractor to complete all documentation to the required NMAA/UNMAS-UNMISS standards and organise all facets of the field testing.

8.3 The results of the accreditation test should be recorded in a table similar to the table below along with photographs showing each step of the process.

Test Strip Number ( )	Profile Board Distance (Metres)						**Time to complete (Minutes) 35m**	**Pass/Fail**
	5	10	15	20	25	30		
Pass 1 Depth								
Pass 2 Depth								
Pass 3 Depth								
Comments								

rofile tests should also be graphed showing the profile for each run of the tiller or flail over the test strip.



South Sudan

National Technical Standards Guidelines

Date: 03 October 2024

Chapter 9

Mine Detection Dogs

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9.1 Introduction

The use of Mine Detection Dogs (MDD) is an effective aid to humanitarian demining especially when used for Technical Survey or when used as an area reduction tool prior to deploying any other clearance assets. MDD may also be used as an alternative to manual clearance and mechanical demining when working in difficult conditions, for example, in areas that have a high metallic content or in areas where known minimum metal mines may be found.

9.2 General Principles

9.2.1 Roles of an MDD team

MDD teams may be tasked for the following operations:

a. Survey or verification of suspected hazardous areas.

b. Clearance of medium and low-density mined areas.

c. Technical survey (TS) and clearance on cluster munition remnants (CMR) contaminated areas.

d. Battle Area Clearance (BAC).

e. TS in support of non-technical survey (NTS).

f. TS in 'buffer zones'

g. Clearance of suspected mined roads.

h. Clearance in areas where handheld mine detectors are unable to operate (e.g., high metal contamination areas).

i. Quality Control (QC) on any clearance task provided that it is suitable for MDD operations.

9.2.2 General Safety

a. All MDD operations shall be conducted under the command and control of the site Team Leader who shall be responsible for all aspects pertaining to the work site requirements.

b. Testing of the MDD for obedience, motivation, and concentration and detection capability shall be carried out on-site each day prior to commencing work. The results shall be recorded within the MDD logbook. In this respect, the testing ground shall be prepared in such a way to contain ERW to replicate the threat in areas the MDD shall operate.

c. No forceful commands/actions and/or forceful equipment (such as e-collars/spike or choke collars, or else) shall be used during operations, nor during daily activities.

d. A handler who commits a serious violation of animal rights in the course of their deployment, shall be suspended and subjected to internal investigation. During the time of the suspension, the handler is not allowed to interact with any MDDs. This paragraph applies to any handler regardless of the phase of the contract period, provided that it is an in-country phase.

e. The MDD handler shall determine how long an MDD should work. This should depend on the temperature and prevailing weather conditions. The MDD shall not work for more than 60 minutes without having a 10-minute break; however, if at any time the MDD handler is not satisfied with the performance of their MDD then it shall be withdrawn from work immediately and corrective action taken. The reasons for the withdrawal and the corrective action taken shall be recorded in the MDD logbook. The immediate area where the MDD had been withdrawn is not to be considered searched.

f. MDD operations shall not be carried out during wind speeds that exceed wind speeds where reliable detection has been achieved during training/testing. Wind speed increases the inaccuracy of detection and a larger area may need to be investigated around indications during windy conditions.

g. MDD handlers shall not be permitted to carry mobile phones when deploying into the hazardous area (although the use of data capturing devices will be permitted).

h. Suitable and effective PPE shall be worn by MDD handlers as per the requirements of all other humanitarian demining operations, with the only exception being that 'half-visors' may be used. These visors shall conform to the specifications of IMAS.

i. Safety lanes shall be cleared to the required search depth to provide safe access for the MDD team when deploying to their work areas. The lanes shall be a minimum of 2 metres wide.

j. The site layout of the hazardous area, where the MDD shall be deployed, shall be so that the MDD is visible to the handler at all times during the conduct of operations.

k. The minimum safety distances when conducting MDD clearance shall be as per the NTSG Chapter 2, Site Preparation and Setting Out. MDD shall be regarded as 'Personnel' when using the Safety Tables of this chapter.

l. Safety lanes, which are confirmed as clear of hazards, are used to provide access to and around the worksite. Safety lanes should not be less than 2.0m wide to allow safe passage for the MDD team. The safety lanes shall be marked in accordance with the minimum requirements specified in IMAS 08.40.

9.2.3 Capabilities of an MDD team

MDDs are used for the detection of ERW. The use of MDD teams may offer potential benefits including:

a. Detection of ERW with low-metal and no-metal content;
b. Detection of ERW in areas with high metal contamination;
c. Increase the speed of search of an area;
d. Search roads and road verges;
e. Search pockets of land unreachable by mechanical demining equipment;
f. Search areas contaminated with metal restricting the use of metal detectors;
g. Creating safe lanes and control points;
h. Rapid sampling of cleared land – Quality Control (QC);
i. Signals mitigation and declutter.

9.2.4 Limitations of an MDD team

MDD teams cannot be used successfully under all circumstances and conditions. Limitations associated with environmental, contamination and practical aspects include:

a. Vegetation: dense or thorny vegetation may give rise to unsearched areas, or prevent the handler from maintaining continuous visual contact with the animal and controlling the search;
b. Weather: Hot, windy, snowy, wet and cold conditions may compromise the animal's comfort and ability to focus on the detection task, and may either restrict the dispersal of scents, or disperse them too widely. Mine action organisations' SOPs should stipulate the limitations of the aforementioned weather conditions.
c. Atmospheric conditions: High levels of pollution from smoke, exhaust gases, odours from petroleum products or industrial activity may prevent MDD from satisfying detection standards;
d. High concentrations of ERW: A high density of ERW may make it hard for MDDs to differentiate between targets;
e. Background contamination: Widespread background contamination, following mechanical or other processing of land containing many targets, as well as the contamination emerging from activities of people or animals may overshadow the scent from target objects;

f. Changes in working environment: Significant changes in working conditions, following a sudden shift in weather patterns or terrain features for instance, may require retraining to ensure that the animal remains capable of detecting and correctly indicating the specific targets that MDD units are likely to encounter.

9.2.5 Composition

An MDD team consists of one (1) qualified Mine Detection Dog (MDD) handler and two (2) Mine Detection Dogs (MDD).

9.2.6 Competencies

Mine action organisations should consider using the T&EP 07.31/02/2022 as a best-practice reference to assess an individual's professional competence as animal detection system (ADS) handler, team leader or instructor.

9.3 Training

9.3.1 Management of training

MDD team training shall be planned, delivered, monitored, reviewed in line with the principles set out in IMAS 06.10 and updated as necessary to ensure the continued competence and capability of all aspects of MDD support and operations including:

a. A minimum of one (1) supervised training session will be carried out per week by the mine action organisation's MDD trainer. The number of training sessions should increase if problems are identified;
b. Training should be tailored to each individual MDD and handler to ensure the required standard is maintained;
c. Established clear and relevant training objectives;
d. The relevant ERW threats should be taken into account when planning training;
e. Delivering training using authorised, competent trainers;
f. No forceful commands/actions and/or forceful equipment (such as e-collars/spike or choke collars, or else) shall be used during training;
g. Ensuring that training sites, targets and conditions correspond to those associated with operational sites;
h. Monitoring training performances through observation and the collection and analysis of data;

i. Updating training whenever necessary in response to changing circumstances, conditions and standards;

j. Organisations shall ensure they have access to sufficient training aids and areas.

9.3.2 Records of training

Training records shall be kept for each individual MDD and be available for inspection on request. Training records shall include but are not limited to:

- Date and time of training
- Type of training
- Instructor/handler details
- Environmental conditions
- Target object(s) including the type and amount of explosive contents.
- Laying details of target(s)
- Training objectives
- Results of training (including problems identified)
- Analysis of the MDD's performance
- Corrective action to be taken.

9.3.3 Training Aids

a. Training aids used shall conform to the different types of mines/EO likely to be encountered.

b. Targets should be buried at various depths depending on the threat.

c. The soak period of training targets shall be varied to replicate that of the targets likely to be encountered.

9.4 Operational Accreditation

9.4.1 General rules

a. All organisations intending to use MDD for mine/ clearance operations shall ensure that the MDD team has received the necessary accreditation and licensing from the NMAA/UNMAS-UNMISS. The operational accreditation assessment shall be conducted at the designated accreditation area.

b. Accreditation shall only be given on completion of the desktop accreditation and appraisal of the mine action organisation SOP and the on-site assessment of the MDD teams. The accreditation shall be valid for a period of 12 months from the qualifying date.

c. On application for accreditation, the mine action organisation shall ensure that the detailed CVs of each dog handler are submitted, as well as information about each of the dogs intended for deployment (see paragraphs d. and e.).

d. Mine action organisations should acquire training records, which prove that each dog intended for deployment is trained to the desired level (reliable indication, search patterns, target scent recognition, as a minimum). Satisfactory Internal Quality Assurance must be conducted and report submitted to NMAA/UNMAS-UNMISS prior to submission of the training declaration

e. Each MDD shall have a pet passport which shall include information about the name of the dog, the name and address of the owner, and the microchip number, breed, sex, date of birth, vaccination records of the MDD as a minimum.

f. Continuous External QA Evaluation shall be conducted by the NMAA/UNMAS-UNMISS to ensure that safe and effective MDD operations are being conducted. Failure to comply with the mine action organisation SOP, NTSG or IMAS shall result in a suspension of the accreditation.

g. The MDD operational accreditation shall be conducted by the NMAA/UNMAS-UNMISS QA Officer. The manager, in-country MDD trainer, or the senior Team Leader of the mine action organisation which is undergoing operational accreditation has the right to be present during the evaluation.

h. An example of the operational accreditation form shall on request be made available to all mine action organisations, prior to the operational accreditation period. This form shall be completed during the operational accreditation by the NMAA/UNMAS-UNMISS QA Officer and on completion the form shall be signed by the dog handler, organisation senior Team Leader (if present) and the NMAA/UNMAS-UNMISS QA Officer.

9.4.2 Operational Accreditation procedures

a. All MDD operational accreditation procedures shall conform to the minimum standards detailed in IMAS 07.31. The following provides pertinent details to be applied during the MDD operational accreditation procedures.

b. All MDD operational accreditations shall be carried out at an approved NMAA/UNMAS-UNMISS accreditation site that should mirror as closely as possible the

overall environment of the area where MDD operations are to take place. Details covering the exact location, design and overall size of this area shall be recorded in a 'hazardous area record' and kept by the relevant NMAA/UNMAS-UNMISS. It should be fenced and secured at all times and entry restricted only to those authorised to enter.

c. Operational accreditation of MDD teams should only be carried out if the weather is similar to that which the organisation would use the MDD during normal clearance. If the weather is not suitable then the operational accreditation shall be called off, to allow improvement in the weather conditions.

d. The accreditation site shall consist of ERW representative of target objects that will be encountered during operations. The type of ERW exact location, depth and any other relevant detail shall be recorded in the 'Accreditation Site hazardous areaRecord'.

e. The search area for each MDD will be a minimum of 400m² to a maximum of 800m². This may consist of panels, boxes or designated areas.

f. A training area outside of the accreditation site shall be available to allow mine action organisations to carry out internal 'work up' training before the operational accreditation commences. An organisation may expect a minimum of 2 weeks access to these training boxes prior to an operational accreditation. This area shall not provide the space to conduct any major training or to 'work up' new dog handlers. It is the mine action organisation's responsibility to construct a training field for these purposes.

g. Maturity: An operational accreditation area shall have mines that have been in the ground for minimum three (3) months in reference to IMAS 07.31. This will be determined by the threat and what is likely to be encountered during operations.

h. The area shall be searched in accordance with the SOP of the organisation to be accredited.

i. The MDD handler may ask for a search break at any time during the operational accreditation. If the MDD handler uses two dogs, he/she may let the first MDD rest and start the new test with the second MDD in another search area assigned by the MDD QA Officer. If an MDD team is not able to complete the search of all assigned boxes, during one day, then the search may be continued the next day.

j. The MDD handler may inspect the test area prior to the test, provided that the areas are not disturbed or physically entered.

9.4.3 Pass/Fail Criteria

a. Pass Criteria:

- A precondition for undertaking accreditation is that the MDD shall be in overall good healthy condition.
- The MDD team shall comply with the organisation's SOP's correctly.
- The MDD shall indicate all test items (minimum of three (3) test items per MDD) in the test area within an accuracy of 1m radius.
- The MDD should be able to detect the target to the depth prescribed by the NTSG.
- The MDD team shall provide no more than three (3) false indications throughout the test.

b. Fail Criteria:

- If the MDD scratches physically/actively manipulates the surface of the test item and/or the ground.
- The MDD carries out more than three (3) false indications.
- The MDD misses an item within the search area.
- The handler conducts the search in an unsafe manner.
- The MDD team doesn't fully cover the search area.
- The MDD team fails to comply with the organisation's SOPs.
- The handler is not able to control the MDD.
- The use of forceful commands/actions and/or forceful equipment (such as e-collars/spike or choke collars, or else).

9.4.4 Actions on a failure

a. A 'fail' result shall be treated as a nonconformity and managed in accordance with the requirements of IMAS 07.12 and 07.40. Root cause analysis (RCA) should be carried out, to identify any necessary corrective and improvement actions required.

b. Re-testing of the MDD team should only take place once the organisation has implemented and confirmed the effectiveness of correct/improvement actions. Training records and a successful IQA shall be submitted to NMAA/UNMAS-UNMISS prior to retesting.

9.5 Quality Assurance

Each mine action organisation shall comply with the following:

a. Routine regular training and internal QA processes shall be implemented and conducted by the mine action organisation in accordance with the detail of this chapter. These details shall be kept on record and presented to NMAA/UNMAS-UNMISS representatives on request.

b. Refresher training and an internal QA assessment shall be conducted and passed by the MDD team when returning from a block leave period, once every two (2) months and after more than two (2) weeks of no deployment (e.g. sick period). The report and results will be submitted to UNMAS-UNMISS prior to redeployment.

c. Every three (3) months the MDD team shall undergo external QA conducted by NMAA/UNMAS-UNMISS. This shall be conducted either on-site or in the NMAA/UNMAS-UNMISS accreditation field.

d. The QA shall be conducted to replicate the operational working environment as closely as possible.

e. The External Quality assurance assessment should be carried out as similar to the accreditation procedure as possible and/or in accordance to the implementation plan.

f. The area size may be reduced depending on the facilities available at the site.

g. The MDD team shall have training aids for training the MDDs in the field once they are deployed to maintain or improve their skills. The training aids shall replicate the target items/odour in areas the MDD shall operate .

9.6 Reporting

a. The mine action organisation shall ensure that a logbook is prepared for each MDD and that it is available at all times for inspection.

b. The records will include, but not limited to:
   - Daily/monthly health records
   - Veterinary records
   - Weight record
   - Daily food storage record
   - Training record
   - Operational work record
   - QA record.

9.7 MDD Operations

9.7.1 General requirements

Pre-deployment Requirements:

a. Prior to deployment, all MDDs shall be checked by a qualified, competent veterinarian to ensure that they are medically fit for deployment and are capable of working in the

environment required. A report of the veterinarian shall be submitted to NMAA/UNMAS-SS prior to deployment.

b. MDDs shall be checked by a qualified, international competent veterinarian as minimum every six (06) months to assess the dog's medical fitness and well-being. The MDD bi-annual check shall be done by a competent international veterinarian, and always in the presence of the NMAA/UNMAS MDD officer. The results of the examination shall be recorded and shared with UNMAS-UNMISS.

c. All MDDs shall be subject to accreditation prior to commencing operational tasks and shall only be tasked for the activities that they are accredited for.

d. MDDs shall only be deployed with the MDD handler who they were accredited with as a team. Should the team composition change, a new accreditation procedure shall be conducted, with respect to the nature and extent of the modification.

e. The MDD team shall implement and adhere to the accredited organisations SOPs.

f. When investigating an MDD's indication, the minimum area that shall be investigated is a 1.25m radius around the point of indication. This should be extended and/or offset depending on the wind direction and other variables that the handler is aware of.

g. The site Team Leader is responsible for the overall management and supervision of all assets deployed on the operation and shall ensure that all operations are conducted in accordance with the mine action organisation's SOP. However the senior MDD handler/MDD trainer is responsible for the MDD daily activities such as health checks, feeding, cleanliness of the kennels, walking the MDD, making sure that each and every MDD site folder is updated periodically and has all required documents etc.

9.7.2 Planning

a. The reconnaissance and survey results from the task and threat assessment shall determine if the task is suitable to MDD operations.

b. The layout of the area shall be managed to ensure that safety distances between each MDD and other humanitarian demining activities are adhered to.

c. The training and evaluation areas should be established as near to the operational site as possible to mirror the terrain and site conditions.

d. Adequate numbers of MDD teams should be deployed for each specific task.

e. Any preparation required shall be carried out in advance and shall comply with IMAS 9.41.; e.g. vegetation cutting/burning.

f. In case of injury or illness, suitable transport shall, at all times, be available at the task site for the evacuation of the dog to a more suitable health care centre. An evacuation plan shall be implemented for each task site.

g. CASEVAC exercises shall be conducted before starting MDD operations. Realistic exercises shall factor in injuries to the Handler at one hand and injuries to the MDD on the other.

9.7.3 Search procedures

a. The search procedures and search patterns shall follow those described in the mine organisations accredited SOPs.

b. MDD used as primary clearance asset – If MDD teams are used as a primary detection tool, then the area shall be subject to the QC procedure. If used in a primary role, an area shall only be considered cleared after it has been searched by 2 x MDDTs i.e four MDDs. In the QC role, 1 x MDDT shall be considered sufficient.

c. MDD during Technical Survey (TS) in accordance with IMAS 08.20 – A search with one MDD may be sufficient to confirm that EO is present or not, but if EO is found, two MDDs shall then be used.

9.7.4 Marking

a. Area marking prior to, during and after MDD operations shall be in accordance with the details in Chapter 3 of this NTSG.

b. When a mine (EO) is found, the handler shall mark the indication using the same materials and procedures in accordance with the organisation's SOPs. The marking system shall only be placed outside the search area (e.g. outside the boundaries of the box/panel).

9.8 MDD Welfare

9.8.1 General

a. General principles requirements and guidelines for MDDs are provided in IMAS 09.40 ‘Animal Detection Systems - Principles, Requirements and Guidelines’ and details on health are described in IMAS 09.44 ‘Guide to occupational health and general dog care’. These guidelines shall be adhered to at all times.

b. The MDD healthcare system shall include:

- maintaining adequate veterinary support;
- carrying out initial screening of animals. MDDs shall only deploy once a “fit for duty” certificate is awarded by a qualified, competent veterinarian;

- satisfying any applicable quarantine requirements;
- conducting periodic health checks, treatment and vaccinations;
- providing suitable food and water in appropriate quantities, as and when required to maintain the health and performance of the animals;
- appropriate food storage conditions: as a minimum a vermin free, temperature controlled environment. Food may be tested prior to consumption;
- physical and mental exercise every day to sustain the animals' wellbeing and operational performance. MDDs may not be left in kennels for long periods at a time;
- providing kennel/shelter facilities of an adequate size that maintain appropriate environmental conditions and enable access to daylight, exercise and human company;
- maintaining transportation facilities, equipment and procedures that keep animals safe and healthy;
- maintaining a high standard of hygiene at all times;
- providing on site medical knowledge, skills, equipment and procedures necessary to treat MDDs and evacuate them to a suitable veterinary facility in the event of an emergency/accident.

9.8.2 Daily health monitoring

a. Animals shall be subject to a health check each day before starting work, as required during work, and at the end of the day on completion of work. No animal, found to be suffering from illness, incapacity or other conditions that may affect its performance, shall perform MDD operations until a subsequent health check shows that it is fit to work. Daily health records shall be recorded and available for inspection.

b. Listed below are aspects that are to be monitored daily, which will assist the handler to understand the condition of his/her MDD team:
   - General - Check general character and willingness to interact. Look at the dogs' body weight. Are they gaining/losing weight? Was their appetite normal? Faeces and urine should be normal.
   - Skin & coat - Run hands over the dog's body. Check for ailments such as lumps, wounds, thorns, parasites, skin condition, matted hair or any abnormality.
   - Legs - Make sure there are no swollen or injured areas, swollen joints or hot spots. Check the dog's gait for lameness.
   - Paws & claws - Check pads for abnormalities, dryness, cracks, cuts and splinters. Claws must be checked and trimmed when needed. Dewclaws must be checked for

length and damage. Check paws, pads and between toes for fungal infections, interdigital cysts, parasites, foreign objects or wounds.

- Tail & genital area - Check tail for abnormalities, parasites and wounds. Check anal area for swelling or irritation. Check penis/vagina/testes for swelling, irritation or mucus.
- Facial - Check eyes for weeping, redness and abnormalities. The nose should be moist and cold but some dogs may vary. Know your dog. Check ears are clean and free from foreign objects like thorns, grass seeds, parasites or wax/dirt build up. Ears should not have a bad smell.
- Mouth and teeth - Check for inflamed gums, redness, swelling, foreign bodies. Look at teeth for any loose or broken. Monitor tartar build up. Breath should not be bad.
- Temperature - If there is any doubt about the dogs' health, check their temperature. Temperature range should be 101-102.5 °F or 38.3 – 39.2 °C
- Vaccination/treatment - Check Vaccination status. Check parasite treatment records. Vaccinations and treatments shall not be overdue.

c. Handlers are responsible for reporting to their Team Leader and medic any medical / health problems or any unusual out of character behaviour in their MDD team.

d. When a handler is on leave or not deployed, a handover/takeover shall be conducted with a competent, qualified person to transfer the responsibility for the continued daily health check. This will be recorded and kept with each individual MDD.

e. IMAS 09.44 The guide to occupational and general dog care further details the health and welfare standards of MDDs. These guidelines shall apply to all MDDs deployed.

9.9 Responsibilities

9.9.1 National Mine Action Authority and/or UNMAS-UNMISS

The NMAA, or an agency acting on its behalf, shall:

a. establish a clear and sustainable national policy on the use of MDD within the mine action programme;

b. develop and implement relevant national standards and other guidelines governing the use of MDD within the mine action programme;

c. accredit MDD organisations as fit to undertake MDD operations;

d. develop and implement procedures for the QM of MDD operations (including operational accreditation and the monitoring of performance in the field) within the mine action programme;

e. assist MDD organisations with the establishment of testing and training areas and other facilities to support the deployment of MDD teams.

9.9.2 Mine Action Organisation

The Mine Action Organisation shall:

a. gain accreditation from the NMAA/UNMAS-UNMISS to operate as an MDD organisation;

b. establish suitable training/assessment areas to ensure all training and IQA can be carried out;

c. establish SOPs for the use of MDD teams in land release operations. These SOPs are to be consistent with relevant NMAS, in the absence of national standards the MDD organisation shall apply the IMAS, or such standards as are specified in their contract or agreement;

d. maintain and make available documentation of MDD operations as specified by the NMAA;

e. establish places at each work site for daily on-site training/assessment where necessary;

f. ensure that testing of MDD teams is carried out on a regular basis under operational conditions;

g. cooperate with the appointed MDD operational testing authority in the management and maintenance of national MDD test sites;

h. establish systems, procedures and facilities to ensure the appropriate occupational and general health care of animals.

South Sudan

National Technical Standards Guidelines

Date: 03 October 2024

Chapter 10

Medical

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10.1 Introduction

a. Appropriate medical operational support with effective casualty management and timely evacuation are crucial principles of demining operations and shall always be a compulsory requirement. To this end, organisations should seek to achieve and maintain the highest possible standard of medical practice to reduce, as much as practical, preventable morbidity and mortality during and after demining incidents.

b. This chapter describes the minimum medical practice standards and coverage requirements by which organisations are to conduct operations in South Sudan as required by NMAA/UNMAS-UNMISS. Therefore, any organisation conducting humanitarian demining operations and other explosive hazard management in South Sudan is to be fully compliant with IMAS and the following standards and guidelines. For the purpose of simplicity, the term 'demining' is used in this Chapter to cover all non-military explosive hazard management operations.

c. The primary focus of an operational medical capability in support of all explosive hazard management operations is to provide a reasonable and adequate emergency medical evacuation chain for both emergency and non-emergent incidents. While this chapter is specific in detailing the requirements for medical coverage in support of ongoing explosive hazard management operations, the condition of maintaining medical coverage extends through all organisational field operations (e.g. technical surveys).

10.2 General

a. At all times, organisations are to have in place a robust, proven medical care capability which shall deliver safe and effective, immediate and prolonged care in the event of a Medical Emergency.

b. Demining personnel must fully understand and actively support casualty/medical incident evacuation plans.

c. If the medical coverage stipulated in this chapter is removed or unavailable, operations will cease immediately until it has been effectively restored.

d. Organisations must have appropriate insurance coverage and repatriation mechanisms for injured personnel regardless of the location of the incident.

e. All personnel providing medical care are to be aware of and perform within the religious, ethnic, and cultural considerations inherent to the management of casualties in South Sudan.

10.3 **Operational Medical Care**

a. The primary focus for medical response is to provide safe, effective medical care to those injured in the field as an extension of the direction and intent of the organisation's medical director. The following terms are provided to define key concepts that relate to this medical response:

b. Medical Direction: All aspects of provisioning and organising field capable emergency medical services (EMS) require the active involvement, participation, and oversight of a qualified medical professional. A demining Organisation's Medical Director (OMD) retains the responsibility for the review and approval of the entire medical response capability of the organisation, to include the following key features:

- The establishment of Medical Treatment Protocols (MTPs) that govern the practice of medical providers relevant to managing the medical and traumatic concerns of demining operations.
- The oversight of regular continued medical education and training for all demining personnel.
- The oversight of regular continued medical education and training for Primary Care Providers (PCPs), also known as "Team Medics".
- The oversight of issuance of organisational training certificates and qualifications
- The oversight of, where feasible, online medical direction, remote diagnostics and telemedicine at the national level with the organisation.
- The annual direct observation of at least one (1) complete practical field evacuation exercise to be conducted in compliance with this chapter and other relevant organisational and national casualty evacuation policies and procedures[1].

10.4 **Levels of Operational Care**

a. Basic Care Providers: Basic Care Providers deliver initial care and treatment that manages immediate threats to life including massive haemorrhage, airway

[1] E.g. *UNMISS Casualty Evacuation Policy* as amended from time to time

obstruction, respiratory arrest, hypothermia prevention and CPR. BCP also includes the extrication and movement of the injured casualty from hazardous areas to a provider capable of delivering the next level of care. Such techniques are listed in detail in Annex A to this Chapter.

b. Intermediate Care Providers/Team Medics: Intermediate Care Providers (ICP) provide stabilisation and Damage Control Resuscitation (DCR) where the severity of injury is such that stabilisation and management of a casualty requires more invasive and complex procedures than those provided by a BCP. These techniques are listed in detail in Annex A.

c. ICPs often serve to extend the capability of traditional hospital based (Level 1) emergency care into the field by bridging the gap between ”Basic Care”, that is inherent to all members, and the skills of Advanced Life Support providers. As a planning consideration, ICPs should be able to access a casualty within no more than 10-minutes and should have the necessary skills and knowledge to manage a patient for up to 60-minutes with or without the support of online remote Medical Direction.

d. Extended Care Provider (ECP)/team Medics: Extended Care Providers (ECPs) are Medics that are assigned to operations that have been identified as having an extended evacuation time or that may anticipate evacuation delays. ECPs are trained and certified above the mandatory level of an Intermediate Care Provider (ICP) in accordance with the organisations MTPs and assigned in accordance with the organisations risk management strategy.[2]

e. Advanced Life Support (ALS): Advanced Life Support (ALS) is provided by dedicated medical professionals assigned to both aviation and land based medical evacuation assets (eg. CASEVAC equipped helicopters). ALS includes complex, specialised and often invasive medical care which is crucial to the survival of a critical casualty.

10.5 **Medical Support of Demining Operations**

a. Medical support of demining operations shall be performed such that it ensures that those injured in or around ongoing operations receive immediate, prioritised and effective care to best of the ability of the demining team and the Team Medics. The organisation’s entire support capability, throughout the timeline of care, will be governed by these guidelines and the organisation’s own SOPs,

[2] IMAS 10.40 Technical Note on Mine Action, Annex A.

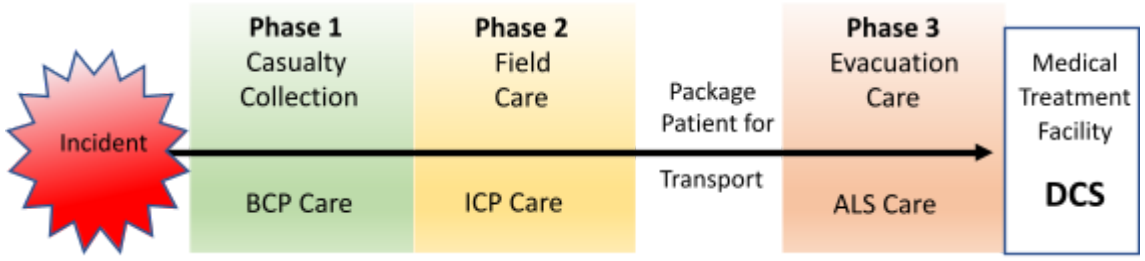
Medical Treatment Protocols (MTPs), and oversight of the Organisational Medical Director.

10.6 **1. Phases of casualty Care in Demining Operations**

a. The timeline of Casualty Evacuation care in the field, begins at the Point of Injury (PoI) and ends when the casualty receives Damage Control Surgery at an appropriate Medical Treatment Facility (MTF).). The evacuation is separated into three phases to clarify the intent and priority of supportive care with increasing requirements that ensure immediate, safe and effective care. The Phases of Care include:

- Phase 1: Casualty Collection and Life Saving Interventions by BCPs,
- Phase 2: Field Care, stabilisation and transport by ICPs
- Phase 3: Evacuation Care by ALS Providers

Figure 10.4.1 Phases of Care



b. <u>Phase 1: Casualty Collection:</u> The initial phase of care begins where an accident/incident results in an injury. Care of the casualty is initiated by the closest demining team (DT) members where and when it is safe to do so. The care rendered is limited to immediate life-saving interventions with a view to rapid casualty movement to a 'Team Medic' capable of providing intermediate care. Casualty Collection may also require the casualty themselves, to provide self-aid, applying tourniquets and or self-evacuation from a hazardous area or single lane. Additional considerations:

- Mine clearance capabilities must be able to immediately support the process of Casualty Collection such that demining team (DT) members are at minimal risk while supporting casualty care.

- The DT shall comply with organisational procedures for the safe recovery of casualties from active lanes before beginning Casualty Collection.
- The DT shall be able to initiate Life Saving Interventions as soon as it is safe to do so.
- The DT should place the equipment and material to support Casualty Collection and initial treatment forward of the hotline and near active lanes.
- DT members shall remain personally equipped with individual medical supplies in order to provide basic care whenever onsite where a central bag is not utilised and/or where a central bag is not located forward of the hotline and near active lanes.
- All DT members shall be trained and qualified as Basic Care Providers consistent with an ability to perform initial care in accordance with Annex A.
  c. DT members shall be able to move a casualty using organisation provided team equipment (e.g. litters, backboards) and be proficient at alternative casualty movement techniques.
  d. Phase 2: Field Care: The second phase of care commences where the Team Medic takes responsibility of a casualty in the field and that casualty is no longer directly threatened by the environment. Within the Field Care phase, the Team Medic will assume responsibility for the patient, the safe location for which care is to be rendered, and the assets that support that care (e.g. evacuation vehicles, medical and necessary communications equipment). Within this phase, care shall be provided to the casualty to stabilise life threatening injuries and the casualty will be prepared for movement.
  e. Additional considerations:
- At all times, where operations may include operations within a suspect or confirmed hazardous area the team shall have on site a dedicated Team Medic that has been accredited by UNMAS-UNMISS to perform

Intermediate Care (or where relevant, Extended Care) in accordance with Annex A.

- During ongoing operations, the PCP shall be equipped with and maintain control of at least one complete, dedicated Trauma Care Pack. Trauma Care Pack contents shall be in accordance with Annex B and remain functional, and serviceable.
- The Team Medic shall wear clearly marked and easily identifiable clothing.
- A dedicated Field Care area will be included in the location site plan to provide sufficient space to support the delivery of care and the preparation of casualties for transport. Locations should be unobstructed and based on their ability to rapidly serve the practical nature of delivering care and evacuation.
- The Field Care area and the components of medical support will be arranged and established at the site of demining operations in accordance with the organisation's SOP and will be ready for rapid movement and evacuation as necessary.
- Team Medics will have full authority to assign tasks to other DT members within their scope of practice and training. Such lawful directions must be followed by all DT members and support to the best of their ability by the Demining Team Leader.
- Casualties shall be readied for transport such that they are prepared to endure movement, transportation and delivery in a safe manner that precludes additional injury and any detriment to their condition.
- Treatments provided at the Field Care area will vary at the discretion of the Team Medic in accordance with relevant policies and procedures, with consideration to the anticipated evacuation transport time.
- While Evacuation Care will ideally be the responsibility of ALS Casualty Evacuation assets, the Team Medic must not delay the

evacuation of the casualty. In this regard, the Team Medic must ensure they maintain multiple evacuation plans, and the ability to execute them in the event that the primary casualty evacuation plan is not available (e.g. multiple routes to multiple Medical Facilities, and a plan to stay in place and manage the patient).

f. Phase 3: Evacuation Care: At this stage in the evacuation timeline, the casualty receives ALS care within the confines of a medium of active transportation (e.g. on board a helicopter, within a vehicle). Casualties need to be prepared for transport/evacuation such that they are protected from the elements, properly secured and as comfortable as possible. The patient shall continue to receive appropriate medical support during transportation to an appropriate Medical Treatment Facility (MTF).

g. Evacuation Care ends upon delivery of the casualty and the handing over of responsibility to a provider of equal or greater skill, at a Medical Treatment Facility capable of providing Damage Control Surgery (DCS). Additional considerations:

- The DT will maintain a dedicated driver to support the evacuation of emergent casualties.
- The DT shall have established effective communications with their HQ unit responsible for coordinating casualty evacuation.
- Organisations shall incorporate a defined evaluation process to determine the basis of priority for evacuation where more than one casualty must be evacuated. A priority assessment should be performed initially when examined by the Team Medic and again prior to making evacuation decisions to release evacuation assets.
- Organisations shall state in their Incident Plans (IP) the intended means of casualty evacuation for each site. The method will be reflective of the safest and most expeditious method available to an appropriate level facility.
- Organisations shall locate, visit and establish the necessary contacts and agreements with appropriate critical care facilities in the vicinity of demining operations prior to commencement of operations.

h. Support of casualties During Evacuation/transport: When considering methods of evacuation, the Team Medic must consider the prolonging and potential worsening of the patient's condition given the seasonal/normal state of the roadways in South Sudan.

i. Abandonment: Care providers at all levels are responsible for continuing care until either:

- A care provider of equal or higher level of care assumes responsibility for the patient, and
- The care provider assuming responsibility releases other care providers from responsibility to support patient care, or
- The cessation of care is instructed by a Medical Physician either in person or via online direction.

j. Given the possible prolonged evacuation times and critical injury patterns associated with blast injury, it is likely that a care provider, at any level, may be directed to continue providing care, even after responsibility is assumed by a higher qualified care provider. All DT members should be prepared to provide additional support at the Field Care area or during transport, to ensure the highest practical level of care is given to the patient.

k. Care Providers shall not cease care (i.e. abandon the patient) without express direction as outlined above unless the incident or environment becomes hostile to the degree that the care providers' personal safety is significantly threatened and there is no other reasonable alternative.

l. Medical Evacuation Exercises: Demining teams are required to formally exercise their casualty evacuation procedures. Additionally, exercises shall be recorded in the clearance task log and/ by inclusion in internal QA reports. Medical Evacuation exercises will be performed per the following schedule:

- Upon arriving at a new site and before the commencement of operations.
- Once a month during ongoing demining operations.

m. HQs, including UNMAS offices, are required to carry out at least one formal Table Top Exercise (TTX) once every three months. Records of these exercises are to be retained by the relevant senior management.

n. All exercises are required to use the current UNMISS 9 Liner, EGRA and ATMIST reporting formats.

o. 4-Liner Format of UN Casualty Evacuation in the Field

10.7 **Medical treatment protocols (MTP)**

a. Medical Treatment Protocols are standing orders and performance guidelines for the treatment and management of ill or injured demining team members. They are typically derived from methods of best practice and are formulated with algorithms, techniques and procedures best suited to manage the patient conditions expected during demining incidents. MTPs standardise the care provided by the demining team's Medic, when working independently; by guiding them through the most appropriate therapies for casualty care in the field.

b. MTPs must describe in necessary detail the treatment and management of clinically relevant diseases and conditions as well as those traumatic injuries expected in the presence of a demining incident. A list of required sections and skills to be defined is provided in Annex C

c. MTPs shall be written in the English language, reviewed and approved by the organisations OMD through the UNMAS-UNMISS (for endorsement of compliance with the NTSG).

d. MTPs shall be made immediately available to onsite Team Medics, in 'Aide Memoire/treatment flow' format; and will remain as part of the NMAA/UNMAS-UNMISS approved emergency medical SOP.

e. MTPs should be formally revised and updated on an 'as needed' basis and at least every 2-years to ensure continued compliance with industry best practice.

f. MTPs must include a programme to provide confidential, rapid access to HIV Post Exposure Prophylaxis (PEP) Starter Kit within no more than 72-hours and ideally within 2-hours of the identified need.

10.8 **Medical Support Personnel**

a. Organisational medical Director (OMD): The OMD shall be an accredited physician, or trauma specialist and have sufficient experience to manage the emergency medical requirements of a demining programme. Requirements:

- The OMD shall have primary responsibility for clinical practices and guidelines contained within the respective organisations MTPs.
- The OMD will serve as the senior medical advisor, for the respective organisation, on all matters of health and directly advise the organisation's -Country Medical Coordinator /Director/Program Manager.
- The OMD shall maintain the organisational MTPs and Formulary, authorising/ producing amendments reflecting medical policy changes or updates and ensuring NMAA/UNMAS-UNMISS endorsement. Furthermore, the OMD will be responsible for maintaining, and providing upon request, reference material to support clinical practice and guidelines outlined within the MTPs[3].
- The OMD shall assure the quality of any mine accident reporting documentation with respect to the injury and treatment of casualties through a comprehensive organisational policy including mandatory reporting through the UNMAS-UNMISS to UNMAS Headquarters.
- The OMD shall establish policies and procedures for the evaluation of Team Medics, prior to accreditation by the UNMAS-UNMISS.
- The OMD shall review in-field inspections of the competency of all Team Medics recording the review of their performance at least once annually.
- The OMD shall underwrite a programme of continued education of Team Medics, through the oversight of approved refresher classes, medical skills practice, and accountability of skills competency through the management of individual Performance Logbooks and assessment tools.
- The OMD shall oversee CASEVAC exercises initially and then at least once per 12-month period.

[3] Example: Joint Trauma System-Clinical Practices and Guidelines (https://jts.amedd.army.mil), or similar

- The OMD will approve organisational policies for maintaining the stock register of drugs, equipment and the accounting and management of controlled substances.
- The OMD shall certify Company Medical Coordinators (CMCs) to deliver ICP training courses and conduct assessments in accordance with national standards and organisational SOPs.
- The OMD shall be accountable for the establishment and maintenance of agreements with MTFs for casualty evacuation.

b. Company Medical Coordinator:

- Deliver medical training and qualification on behalf of the OMD
- Conduct in-field Quality Assurance (QA) at a minimum of once every calendar month per team. Inspections to ensure the organisation's ongoing compliance with IMAS, this NTSG and other organisations policies and procedures, including MTPs
- Facilitate delivery of routine skills maintenance training for all Medics and DT members
- Ensure comprehensive timely reporting of all casualty incidents to the OMD and the UNMAS Medical Coordinator including patient care records, treatments, outcomes, and electronic records/monitors.
- Monitor availability of medical equipment for all Medics and ensure timely procurement of medical stores
- Report deficiencies in Medical equipment to the Country/Programme Manager in a timely manner to reduce impact on ongoing operations.
- Manage the issuance and safe storage of all pharmaceutical products in-country using a single, bound and numbered log book.
- Where appropriate, facilitate remote online medical advice to Team Medics during patient treatment

- Support organisational management in the timely coordination of CASEVAC assets during patient treatment

c. Intermediate Care provider (ICP)/Team Medic: The Team Medic must be qualified by the organisation's OMD to perform skills within their scope of practice, as dictated by MTPs, following the successful completion of the organisation's relevant medical training course. The Team Medic will be available at all times during active operations and be equipped with the Trauma Care Pack and other approved medical support equipment. Requirements:

- All Team Medics must be accredited by UNMAS-UNMISS/NMAA in order to participate as Intermediate Care Providers in active operations.
- The UNMAS-UNMISS Medical Coordinator shall be provided a synopsis of the skill level and medical experience of potential Team Medic candidates prior to individual accreditation by UNMAS-UNMISS.
- Team Medics shall be governed through the directed use of organisational MTPs and this NTSG and will be able to direct deminers as appropriate to support the processes of casualty collection, providing care and CASEVAC support.
- Team Medics shall maintain responsibility for completing their individual Performance logbooks in order to denote ongoing skills maintenance and retention. Logbooks will be kept with the onsite records.
- Medical Health checks shall be conducted before the recruitment of clearance personnel that include sight, hearing exams and cardiovascular stress tests
- At a minimum, all Team Medics shall be capable of fast walking at a constant pace for a period of at least 10-minutes, while carrying their Trauma Care Pack, followed by a reasonable simulation of patient movement including bending, kneeling lifting.

- All DT personnel are subject to random screening which will affect continued employment.

d. Demining Team Member: Demining team members are the foundation of the organisation's medical response capability. A casualty's survival is based on the competent and timely reaction of a demining team that provides the immediate clearance of hazards, casualty collection, movement, and supportive care. This response is only possible with proper training, exposure and practice. Requirements:

- Medical Health checks shall be conducted before the recruitment of clearance personnel that include sight, hearing, cardiovascular stress exams and basic flexibility.
- All Demining Team members shall complete a NMAA/UNMAS-UNMISS approved BCP course prior to participating in demining operations as outlined in Annex A.
- All Demining Team personnel are subject to random screening which will affect continued employment.

10.9 **Medical Support Equipment**

a. Appropriate medical equipment that effectively supports the care of DT personnel and the Team Medic is compulsory to on-going demining operations. Minimum mandatory equipment for each level of care is outlined in Annex B
b. Only medical equipment and pharmaceuticals that are authorised by the OMD through the respective organisations MTPs may be carried by Demining Team members including Team Medics. The possession of unauthorised equipment or additional quantities of pharmaceuticals is strictly prohibited.
c. The use of any medical support equipment, be it consumable or non-consumable, must be documented and reported in a timely manner as outlined in the MTPs and in all cases to the UNMAS-UNMISS Medical Coordinator. Such documentation should include a copy of the respective Patient Care Report (PCR) as outlined in Annex D.

10.10 **Mandatory medical Training**

a. Basic Care Provider: BCP training is required for all demining personnel (e.g. deminers, drivers, and any management staff involved in clearance operations) prior to their involvement in operations. All demining personnel shall attend BCP training upon initial employment and further refresher training at least once every 6 months. BLS training attendance will be managed by the OMD or his/her representative. BCP competency requirements are outlined in detail in Annex A

b. BLS training and refresher course participants will be required to demonstrate proficiency in practical patient management scenarios that are reviewed and certified by the OMD or his/her representative and kept in the onsite documentation. Examples of such assessment records are attached in Annex E.

c. Intermediate Care Provider (ICP): Organisation based ICP training and certification is required for all Team Medics prior to their accreditation by NMAA/UNMAS-UNMISS. All Team Medics shall attend a refresher course at the start of each demining season. Those teams that work the full year shall conduct a period of refresher training during the year. Minimum ICP competencies are outlined in Annex A.

d. Additional Considerations: Team Medic training must include a minimum of 60 hours of training of which at least 60% must be practical skills and patient management scenarios. The Team Medic qualification shall include:

   - Documented theory quizzes and written examinations of summative assessment for each module of the curriculum.
   - Documented competency-based skills assessments in the form of Objectively Structured Clinical Examinations.
   - Documented practical patient management exercises.

e. Practical instruction shall be presented at a ratio of one instructor to no more than 10 participants.

f. Final patient management scenarios will include the following key features:

   - Performance will be evaluated at a simulated operational site, and shall be supported with all operational and medical equipment as appropriate.

- The OMD, or his/her representative, will preside over the assessment of the individual Team Medic being evaluated.
- Injury profiles must include the care and management of poly-trauma casualties through all three phases of care.
- Medical profiles must include the practical simulated use of relevant pharmaceuticals and IV/IO cannulation.

g. The OMD, or his/her representative, shall formally certify Team Medics prior to an organisation requesting UNMAS-UNMISS accreditation.

h. Where Team Medics have successfully completed organisational ICP/ECP training and qualification and operational accreditation but have not been involved in operations for more than 3-months, or after any stand-down period, they must attend refresher training and be re-accredited by NMAA/UNMAS-UNMISS.

i. Given the unique nature of individual organisational MTPs, where a Team Medic has moved from one organisation to another, they must attend a relevant refresher course to ensure competency in the new organisations MTP protocols/algorithms.

j. It is recognized that in addition to their trauma response functions as outlined in this NTSG, many Team Medics also provide routine sick calls and medical treatments for DT members. These treatments, including dispensary of medications, must only be conducted in accordance with approved MTPs or under express direction of the respective organisations OMD. Such treatments must be recorded on the respective Patient Care Report (PCR) and reported as outlined above.

k. Such additional treatments vary greatly from organisation to organisation and are therefore beyond the scope of the NTSG. The deployment of Team Medics to support demining operations should not be an alternative to host country medical facilities which should be used as a primary option where deemed feasible and safe by the OMD.

l. Continued Professional Development (CPD): Medical skill competency must be maintained through continued training, intermittent practical exercises and advancing didactic instruction. Organisations must account for this requirement by providing ongoing opportunities for Team Medics to continue developing their

skills through tailored experience and practice. A Performance Logbook must be maintained for each Team Medic and made available with onsite documentation.

m. Medical Log Book: To ensure that Medics maintain the required knowledge and to prevent skill fade it is essential that there is monitoring of their work and continuous professional development. To that end all medics working with demining organisations in South Sudan are issued by NMAA/UNMAS-UNMISS with a Log Book. The log book details a series of practices which must be demonstrated each month, under the supervision of the organisations Medical Coordinator or the Operations Manager. These log books will be inspected during external QA and signed by the visiting UNMAS officer.

10.11 Medical Support Operations

a. Effective communications between an organisation's headquarters and its onsite medical support personnel shall be established and maintained during clearance operations.
b. With respect to survey teams, a Team Medic shall be within 5 minutes of the team and shall maintain radio communication capability.
c. Communications equipment (e.g. VHF radio, cell phone, satellite phone, HF radios Codan) should be considered where it is able to facilitate indirect/direct communication with the CMC and relevant MTFs during evacuation while enroute.
d. A minimum of two independent forms of communication with evacuation assets must be maintained at all times during operations.
e. The driver of the evacuation vehicle must be able to clearly relay casualty injury details and clearly receive instructions in support of CASEVAC operations.

10.12 Patient Records

a. Accurate reporting is a cornerstone of effective patient care and a key feature of managing the quality of future care. Patient Care Reports (PCRs) must be produced timely and with the intent to effectively detail the care rendered in the field.

- The MTPs shall include a written policy for the production, retention, and distribution of PCRs with the acknowledgement that a PCR is a confidential and legal document. This policy will be approved by UNMAS-UNMISS/NMAA.

- In the performance of any medical care, Care providers will produce an accurate PCR while in the process of performing care in the field. A copy of the PCR shall be provided to the accepting MTF upon delivery of the casualty.
- The PCR will reflect the current UNMAS-UNMISS PCR standardised form using a triplicate carbonised copy document. Original copies will be provided at casualty delivery to an MTF. Additional copies will be retained by the organisation and a copy provided to UNMAS-UNMISS Medical Coordinator.

10.13 **Organisational Documentation**

a. The Medical Site Folder shall contain current and complete copies of the following documentation:
    - UNMISS CASEVAC Plan
    - Hospital Site Surveys (relevant to the site)
    - Relevant Points of Contact (Primary, Alternate, Contingency & Emergency)
    - Approved Medical Treatment Protocols
    - Treatment flow charts/Aide Memoires
    - Drug Calculation Reference Guides
    - Relevant Medical History of Team Members
    - ICP/ECP Medic accreditation documents
    - Helicopter Landing Site (HLS) Reference material
    - Physiotherapy Technician / assistants

10.14 **Requirements for the Commencement of Clearance Activities**

a. Effective operational medical support of mine clearance activities requires the addition of specific requirements that help prevent or otherwise reduce the risk of injury, infection, and individual harm to demining personnel. The following

requirements are compulsory to the commencement and continuance of mine clearance activities.

b. Occupational Health and Safety:

- Medical Health checks shall be conducted before the recruitment of clearance personnel that include sight and hearing exams
- Onsite documents shall include a medical record that contains the following information for each member of the DT: Blood group, known allergies and infections, and dates of vaccinations for Yellow Fever and Meningitis.
- Prior to commencement of demining operations, critical care facilities must be identified and the extent that they are manned shall be determined. Upon arrival at an operational location the Team Medic shall visit the accepting critical care facility and establish a point of contact.
- Team Medics will perform Health quality checks on a weekly basis and log their findings in the Performance Logbook.

c. CASEVAC Plan Requirements: Only when CASEVAC medical evacuation procedures that are consistent with the requirements in these guidelines, have been practised and have been effectively demonstrated through the participation and understanding of all involved, will mine/ERW clearance operations commence.

- Organisations shall establish agreements with the most appropriate MTFs in the vicinity through visitation/inspection and direct contact. The CASEVAC plan shall be comprehensive and at a minimum include the following:
- Organisations shall establish a valid and ongoing viable casualty evacuation (CASEVAC) plan to a Level 2 Medical Treatment Facility and as required a medical evacuation (MEDEVAC) plan to a level 3 medical support facility.

- A copy of CASEVAC/MEDEVAC planning documents shall be kept in the evacuation vehicle and in the onsite documentation and shall include:
- A Route Plan with a marked/identified land-based evacuation route from the clearance site to the nearest, most appropriate medical facility and the nearest HLS.
- When evacuating by road, a second vehicle should provide escort as support in the event of a breakdown.
- A HLS Survey of a site that has been marked, cleared, approved, and registered as appropriate by UNMISS Air-Operations.

10.15 **Accreditation of Intermediate/Extended Care Providers**

a. Prior to operational deployment and the involvement in demining operations, a Team Medic candidate must have been evaluated and accredited by the UNMAS-UNMISS Medical Coordinator secondary to completion of organisational training and qualification requirements.
b. Accreditation Process: It is essential that Team Medics candidates demonstrate a comprehensive understanding of the operational medical concepts associated with demining operations. Additionally, candidates must be able to demonstrate that they are confident and competent with the medical knowledge and skills that are referred to throughout this chapter. The accreditation process is an individual Team Medics opportunity to demonstrate their medical skills and knowledge base with respect to their operational medical responsibilities. Accreditation are proctored by the UNMAS-UNMISS Medical Coordinator or his/her representative and involve the following assessment process:
    - **Random Screening and Work Capacity Test** – All Team Medics are susceptible to random drug screening and physical work capacity testing in connection with accreditation
    - **Written Exam** - A comprehensive exam that assesses theory knowledge in all mandatory areas of the attached MTP template and pharmacokinetics.

- A score of 80% or higher on the written exam will be considered passing.
- **Oral Exam** – Candidates will be prompted to respond orally to a variety of questions with respect to those subjects and concepts where a level of understanding is best demonstrated verbally.
- **Practical Skill Assessments** – On site Objectively Structured Clinical Exams (OSCEs) will be conducted for a minimum of two treatment interventions and at minimum of two practical patient exercises as outlined in Annex E.

c. Candidates that have successfully completed the accreditation process will be notified along with their organisational representative and a record of the event produced for and filed with UNMAS-UNMISS. Accreditation will also be noted in the Team Medics Performance Logbook.

d. Candidates that have not passed any section of the accreditation process will be immediately notified and briefed on the issues that constitute unsatisfactory performance. They will be released from testing in order to be remediated by their organisation and a record of the event produced for and filed with UNMAS-UNMISS.

e. Retesting shall include all of the attached OSCEs as outlined in Annex E.

Annex A Medical Qualification Standards

Clinical Level of Competency	BCP	ICP	ECP
Safety			
Scene Size-Up (Tactical/HAZMAT/Rescue/Enviro/Access/Traffic)	Shall	Shall	Shall
Personal Protective Equipment/Body Substance Isolation	Shall	Shall	Shall
CASEVAC procedures	Shall	Shall	Shall
Diagnosis			
Recognition of catastrophic bleeding	Shall	Shall	Shall
Mechanism of Injury (MoI) assessment (incl. HAZMAT/CBRN)	Shall	Shall	Shall
Triage	Shall	Shall	Shall
Primary survey (Rapid Trauma Survey)	Shall	Shall	Shall
Cervical Spine evaluation	Should	Shall	Shall
Vital signs assessment	Should	Shall	Shall
Secondary Survey		Shall	Shall
Handover	Should	Shall	Shall
History taking	Should	Shall	Shall
Catastrophic Bleeding Control			
Pressure application (direct and indirect)	Shall	Shall	Shall
Extremity tourniquet application	Shall	Shall	Shall
Wound packing	Shall	Shall	Shall
Pressure dressing application	Shall	Shall	Shall
Junctional tourniquet application		Shall	Shall
Tourniquet assessment/repositioning/conversion		Shall	Shall
Pelvic assessment and splinting		Shall	Shall
Airway Management			
Casualty positioning (lateral/lean forward/casualty preference)	Shall	Shall	Shall

Head-tilt/chin-lift (for use in conjunction with chest compressions)	Shall	Shall	Shall
Jaw thrust	May	Shall	Shall
Nasopharyngeal airways	May	Shall	Shall
Oropharyngeal airways	May	Shall	Shall
Supraglottic airway devices (e.g. i-Gel)	May	Shall	Shall
Manual suction	May	Shall	Shall
Bougie assisted surgical cricothyroidotomy		May	Shall
Respiratory Management			
Oxygen therapy	May	Shall	Shall
Manual ventilation	Should	Shall	Shall
Rescue breaths (for use in conjunction with chest compressions)	Should	Shall	Shall
Thoracic sealing, venting and maintenance	Shall	Shall	Shall
Needle thoracostomy		Shall	Shall
Surgical thoracostomy and blunt dissection		May	Should
Circulatory Management			
Peripheral intravenous or intraosseous access		Shall	Shall
Chest compressions (de-emphasised in a trauma setting)	Shall	Shall	Shall

ACLS (including defibrillation equipment permitting)		May	Should
Establishment of a chest drain		May	Should
Fracture Management			
Splinting	Should	Shall	Shall
Femoral traction		Shall	Shall
Packaging and Transportation			
Lifting and rolling	Shall	Shall	Shall
Stretcher transport	Shall	Shall	Shall
Spinal motion restriction	Should	Shall	Shall
Eye Injury Management			
Irrigation	May	Shall	Shall
Eye dressing	May	Shall	Shall
Burn Management			
Burn dressing	May	Shall	Shall
Fluid replacement		Shall	Shall
Miscellaneous Injuries			
Bites and stings	Should	Shall	Shall
Wound Management			
Wound cleaning	May	Should	Shall
Wound closure (minor wounds only)		Should	Shall
Dressing of non-hemorrhagic injuries	Should	Shall	Shall
Metabolic Homeostasis Management			
Hypothermia/hyperthermia management techniques	Shall	Shall	Shall

Annex B Medical Equipment Standards

Casualty Collection Equipment

In direct support of the movement of casualties deminers shall have at their disposal the following equipment placed forward near the active lanes for ready access:

Trauma Care Pack				
Trauma Management		**Minimum**	**Better**	**Best**
Roll Gauze (preferably vacuum packed/rolled/'z' folded)	8			
Elastic / Crepe Bandage	6			
Arterial Tourniquet (with mechanical windless)	4	Improvised	SOF-T	CAT
Pressure Dressing with mechanical advantage	4	Elastic pressure	EPD (Izzy)	OALES
Pelvic Binder	1	Improvised	SAM	SAM JTQ
Large dressing (abdominal/chest)	2			
Cravats/Triangular Bandages	4			
Hemostatic Gauze	4	Hemcon	Combat Gauze	CELOX
Occlusive chest dressing	2	Asherman	HALO	HYFIN
Eye dressing	4			
Upper/Lower Limb Fracture Management		Rigid material	SAM splints	KTS
Airway Management		**Minimum**	**Better**	**Best**
Nasopharyngeal Airway and lubrication	2			
Supraglottic Airway Device (set of 3)	1	LMA	King-LT	I-gel
Definitive Airway Device		4.0 ET tube	Boogie assisted kit	CRIC Key
Handheld/Portable Suction		60cc Tumi Syringe	Balloon Suction	Hand Pump
Resuscitation Equipment		**Minimum**	**Better**	**Best**
Bag Valve Mask with face piece	1	Pocket Mask	Cyclone BVM	Cyclone w/PEEP
14g 3.25in chest decompression needle	2			
Intravenous IV Administration Equipment		**Minimum**	**Better**	**Best**
Intraosseous administration cannula		Illinois Bone Needle	EZ-IO	FAST
Intravenous IV NaCl Resuscitation Fluid 500ml	6	NS	FDP	FWB
Intravenous IV NaCl Resuscitation Fluid 0.9%, 100ml	4			
Intravenous IV 3% hypertonic Saline 500ml	2			

General Equipment		Minimum	Better	Best
Universal Precaution Equipment as necessary				
Tape 2”/ 5cm	2			
Trauma Shears	1			
Flashlight/Torch/Penlight	2			
Stethoscope	1			

Casualty Collection Equipment	Quantity
Stretcher	1
Spine Board	1
Spine Board straps or strapping system for containment	1
Cervical Collar	1
Blanket	1

Deminer’s BCP Individual First Aid Kit

Deminers shall have available to them at all times the contents of the IFAK positioned such that it is readily available in the case of an incident. Kit items shall be inspected on a daily basis to ensure that they are present and remain appropriate for use.

Deminer’s Individual First Aid Kit	Quantity
Gauze (preferably vacuum packed/rolled/‘z' folded)	4
Arterial Tourniquet (with windlass mechanical leverage)	2
Pressure Dressing with mechanical advantage	2
Universal Precaution Equipment as necessary including surgical gloves	1

Trauma Care Pack

Team Medics are to be supplied with their own dedicated Trauma Care Pack for official use. Trauma Care Packs shall be established with the intent to serve a minimum of two polytraumatic casualties simultaneously. This intent then governs the quantity of supplies where no specific amount is provided. Packs used to contain the following requisite items will be made of durable material suitable for field use and plainly marked.

Blood pressure manometer	1
Thermometer	1
Finger Pulse Oximeter	1
Triage Card Set	1
Space Blanket	2
Handheld Suction Unit	1
Prolonged Field Care Equipment	
Foley Catheter size 16 and size 14	4

Urine catchment bags	4
NG tube size 12f	2
Intravenous IV dial-a-flow	2
Rapid Diagnostic Tests (HIV, HBV, Malaria)	1
Adult Diapers	3
PCP Trauma Care Pack Pharmaceuticals	
Pharmaceuticals	**Recommended**
Localised injectable analgesic	Lidocaine Marcaine
Opiate based injectable analgesic for severe pain	Morphine
Non-Opiate based injectable analgesic for moderate pain/anti-inflammatory	Ketamine
Opiate based oral analgesic for moderate pain	Tramadol
Oral analgesic for minor pain/antipyretic properties	Paracetamol
Opiate antagonist/antidote	Naloxone
IntravenousIV Haemorrhage support/ tPA inhibitor	Tranexamic Acid
Antiemetic injectable (consider adding rectal)	Metoclopramide
Intravenous IV Antihistamine	Promethazine
Malarial Treatment	Cortem tabs
Injectable treatment for severe anaphylaxis	Epinephrine
Oral antihistamine	Benadryl
Broad spectrum IV antibiotic	Ceftriaxone

Mandatory Vehicle Equipment
Clear signage on all 4 sides (may be removable/magnetic)
Strobe style emergency lighting (e.g. red/blue)
Emergency siren
Oxygen Cylinder(s) to support 120min/10lpm
Oxygen connection lines (ET Tube/BVM)
Oxygen Regulator
Mechanism for securing stretcher to vehicle floor
Vital sign monitor (BP, HR, Res, ETCO2, SPO2)
Portable transport ventilator/Automatic BVM (e.g. SAVE-2, GO2VENT)

Annex C Medical Treatment Protocols

General	
Casualty Evacuation Planning	Aero Medical Evacuation Considerations
Incident / Scene Command	Force Health Planning
Notification and Communication protocols	Triage
Trauma Management	
Responding, Scene Arrival and Size-up	Fracture Management
Primary Survey (CABCDE/MARCH)	Focused Spinal Assessment
Recognition and Management of Severe Haemorrhage	Head Injury & TBI Management
ALS Airway Assessment and Management	Hemostatic Agents
Breathing Assessment and Management	Hemorrhagic Shock Management
Circulation Assessment	Hypovolemic Resuscitation
Disability Assessment	Improvised techniques
Abdominal Trauma Management	Intravascular Cannulation
Amputation	Lightning
Burn Management	Needle Decompression Process
Chest Injury Management	Transport Decisions
Corneal Abrasion and Eye Injury	Wound Care
Envenomation (Snake/Spider/Scorpion)	
Medical Treatment	
Abdominal Pain	Ear Infection
Altered Mental Status	Flank Pain (Renal Colic, Pyelonephritis, Kidney Stones)
Anaphylactic Reaction	Fungal Skin Infections
Asthma	Gastroenteritis
Back Pain	Headaches
Behavioral Changes (Psychosis, Depression, Suicide)	Heat Emergencies
Chest Pain	Malaria
Constipation	Meningitis
CVA / Stroke	Nausea Vomiting
Deep Vein Thrombosis	Pain Management
Dehydration	Seizures
Dental Pain	Urinary Tract Infection
Difficulty Breathing	Tick Transmitting Disease
Prolonged Field Care	
Foley Catheterization and Urine Output monitoring	Nursing Care
Gastric Decompression	Sedation
Head-to-Toe Secondary Survey	Telemetric/Remote Online Medical Consultation
Oral Hygiene	Ventilator Management (include. PEEP)
Special Considerations	
Death Determination Protocol	Oxygen Administration
Storage and Integrity of Medications and Fluids	Exposure to Blood / Bodily Fluids /HIV PEP
Patient Care Reporting Process	Drug Formulary and Dispensary Protocols

Annex D Patient Care Record

Annex 10A.16 - Medical Treatment Report							
Date: DD/MM/YYYY		HH:MM		Medic:			
Task ID:		Unique Report ID: ask ID - YYMMDD - MT - ##					
Personal Details							
Name:		Team # / Occupation:					
Primary Survey							
Safety	Tactical	Hazmat	Rescue	Enviro.	Access	Traffic	PPE
Massive Haemorrhage	Not Indicated	Spurting Blood	Blood Pooled on Floor	Amputations	Soaked in Blood	Decreased LoC + Blood	
	Direct Pressure	Indirect Pressure	Tourniquet	Wound Packing			
Spinal Immob.	Not Indicated	Mechanism of Injury	Penetrating Injury	Tenderness / Deformity	Neuro. Deficit	Distracting Injury	Decreased LoC
LoC	Alert	Responds to Verbal	Responds to Pain	Unresponsive			
Circulation	Spontaneous Carotid		Compressions		Defibrillation		
Airway	Not Indicated	Positioning	Suction	OPA	NPA	SAD	
	ET Tube	Surgical Cric.			mm		
Breathing	reathing Rate:		Clear	Rales	Wheeze	Stridor	
	Nasal Can.	60% Mask	98% Mask	Nebulise	BVM Ventilate	Decompress	

	SpO2: %	HH : MM	SpO2 Correlated	ETCO2: mmHg	HH:MM

Rapid Action Scan	Head	Crepitus	Pale / Dry Membranes	Abnormal Pupils
	Neck	Tracheal Deviation	Jugular Venous Dist.	Crepitus
	Thorax	Entry / Exit Wounds	Unequal Air Entry	Crepitus
	Abdomen	Rigidity		Distension
	Pelvis/Limbs	Crepitus	Motor Sensory Deficit	Tourniquet Assessment

Circulation	Radial (No Fluids)	Brachial (Fluids)	Femoral (Fluids!)	Carotid (Fluids!!)
		Regular	Regularly Irregular	Irregular
	Notes:			

Metabolic		HH:MM	Intervention	emp:	HH:MM	Intervention

Management

Decision	Backup Required	HH:MM	Died on Scene	CASEVAC Air	CASEVAC Ground
Management	Dress Burns	Dress Wounds	Splint Fractures	Stretcher Evac.	Immobilise Spine

Vascular Access	Drug Pathway		Fluid Replacement		IV Site:	BP: /
	N/A	Saline	Ringers	Colloid	Stopper	Administration Set
	20G	18G	16G	14G		Intraosseous
	Flush	Infusion	ml/hour	Bolus	Size/ml	ml

Drug Therapy	Drug Name:	Dose:	Route:	HH:MM
	Drug Name:	Dose:	Route:	HH:MM
	Drug Name:	Dose:	Route:	HH:MM
	Drug Name:	Dose:	Route:	HH:MM

SAMPLE History

Signs and Symptoms	HH:MM						
Allergies	List						
Medication	Drug 1	Dose 1	Drug 2	Dose 2	Drug 3		
	Respiratory	Cardiac	Endocrine	Neurological	Surgical	Natal	

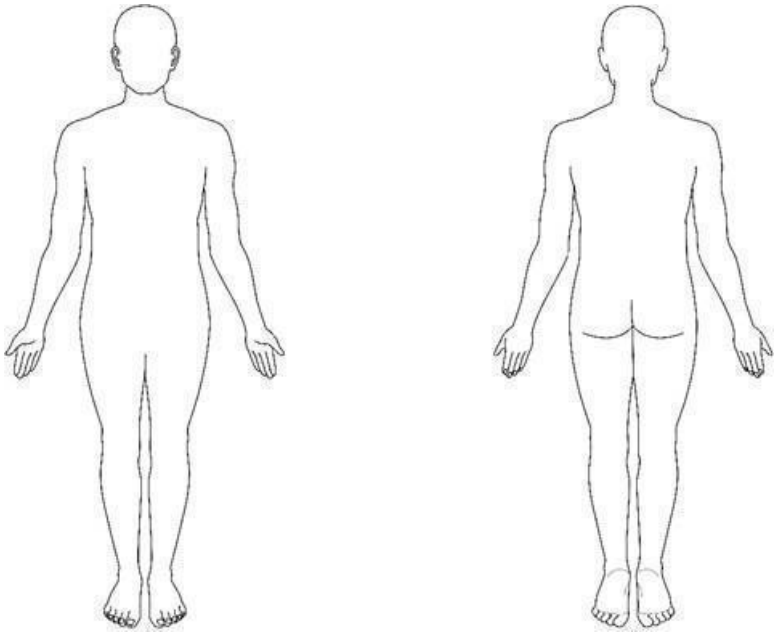
Prior Medical History	Describe	
Last Input	HH:M M	Describe
Last Output	HH:M M	Describe
Events Prior	HH:M M	Describe

Secondary Survey					
Vitals	Time: HH:MM	LoC: Alert	Verbal	Pain	Unresponsive
	R /min	Clarity Volume	HR: /min	Regularity Strength	
	Pupils: /mm	Reactive E	SpO_2 %	BP /	
	Time: HH:MM	LoC: Alert	Verbal	Pain	Unresponsive
	R R : /min	Clarity Volume	HR: /min	Regularity Strength	
	Pupils: /m m	Reactive Equality	SpO_2 %	BP/	

Head-to- Toe					
	Head / Neck	Crepitus	Nystagmus	P.O. Haematoma	Rhinorrhoea
		Otorrhea	Battle Signs	Jug. Ven. Dist.	Tracheal Dev.
	Thorax	Crepitus	Flail Chest	Subcut. Emph.	Pen. Wounds
		Dif. Resonance	Pulm. Oedema	Wheeze	Stridor
	Abdomen / Pelvis	Crepitus	Rebound Tend.	Pulsatile Mass	Rigidity
		Distension	Guarding	Anal Bleed	P/V Bleed
	Extremities	Crepitus	Distal Pulses	Neuro. Anomalies	Distal Strength
		Priapism	Pedal Oedema	Short & Rotate	TQ Conversion

Injury Location Diagram

Annotate injuries and treatment on the diagram below:



Provisional Diagnosis / Additional Comments

Triage Code	1 - Priority	2 - Urgent	3 - Delayed	4 - Dead
Handover	MoI	Injuries Sustained	Signs and Symptoms	Treatment Given
	Name	Position	DD/MM/YYYY HH:MM	Signature

Annex E Objectively Structured Clinical Examinations (OSCEs)

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	**Control Severe Haemorrhage**
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	September-2024

Participants Name:	**Date:**

Participant is requested to demonstrate the following:

Applies Arterial Windlass Tourniquet		
	Demonstrates correct placement and preparation of TQ on persons equipment	
	Correctly self applies TQ to dominant arm, 'high & tight' above clothing	
	Correctly applies TQ to another patient's arm using 2-handed technique	
Instructor verbalises "the wound continues to bleed"		
	Applies a second TQ immediately proximal to first TQ	
Instructor verbalises "the wound is no longer bleeding however the inguinal wound continues"		
Wound Packing		
	Exposes the injury by safety cutting away patient's clothing	
	Applies direction pressure to control bleeding while preparing gauze	
	Removes excess blood from wound using gauze or wound sweep (if necessary)	
	Packs wound cavity to the bone, beginning with a small ball of gauze	
	Applies direct pressure for a minimum of 3-minutes	
	Verbalises considerations for using hemostatic gauze	
Instructor verbalises "wound continues to bleed and Junctional TQ is now available"		
Junctional Tourniquet (SAM)		
	Ensures pressure is maintained on wound while Junctional TQ tested for function	
	Pelvic belt is applied correctly, below iliac crests	
	Compression devices are positioned correctly on inguinal crease	
	Pelvic belt is tightened with adequate pressure to 'lock' the buckle	
	Compression devices are inflated to adequately control bleeding	
Instructor verbalises "Bleeding is now controlled, and 20-minutes has passed"		
Reducing Tourniquets		
	Exposes, and inspects wounds	
	Applies a new TQ 2-inches above wound	
	Release TQs placed high and tight earlier, leaving them loosely in place	
	Records time of initial TQ application ((+/-10-minutes) on patient and record	
	Verbalises considerations and timelines for reducing TQ	
END EXAMINATION		

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	**Airway Assessment**
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	September-2024

Participants Name:	Date:

Participant is requested to demonstrate the following:

Positional Airway Techniques		
	Performs Head Tilt-Chin Lift	
	Performs Jaw Thrust	
	Performs Recovery Position	
Oral Suctioning		
	Tests suction device for function	
	Correctly measures suction catheter	
	Advances suction catheter into mouth under visualisation	
	Correctly applies suction	
	Verbalises limitations on suction (depth and duration)	
	Verbalises observation of chest rise	
Oropharyngeal Airway (OPA)		
	Verbalizes selection of appropriate size	
	Correct measures OPA	
	Insert OPA with tip towards roof or side of mouth	
	Rotates OPA into downward position during insertion	
	Verbalises observation of chest rise	
Instructor verbalises "Patient begins to gag. Replace OPA with NPA		
	Removes OPA following natural curvature	
Nasopharyngeal Airway (NPA)		
	Verbalizes selection of appropriate size (length and diameter)	
	Correctly measures NPA and lubricates tip	
	Retracts nose and verbalises selection of correct nostril	
	Inserts NPA perpendicular to face	
	Verbalises observation of chest rise	
Instructor verbalises "Remove the NPA and insert a Supraglottic Airway"		
	Removes NPA following natural curvature	
Supraglottic Airway (I-gel)		
	Select correct size of SGA	
	Lubricates SGA	
	Correctly inserts SGA	
	Verbalises observation of chest rise.	
	Secures SGA in place	
END EXAMINATION		

Annex E:Objective Structured Clinical Examination

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	**Chest Injuries**
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	September-2024

Participants Name:	Date:

Participant is requested to demonstrate the following:

Chest Assessment		
	Exposes the chest and visual examines for signs of injury	
	Palpates the chest for signs of injury (DCAP-BLTS)	
	Asks patient to take a deep breath	
	Observes bilateral chest and evaluates depth and effort of breathing	
	Auscultates lungs bilaterally at the mid-clavicular and anterior axillary lines	
Occlusive Dressings		
	Identifies open chest injuries and immediately seals them with a gloved hand	
	Prepares the occlusive dressing and dries the surrounding area of liquid	
	Applies the occlusive dressing while forceful exhalation of the patient (if possible)	
	Positions the responsive patient in the recovery position with injured side down	
	Monitors the patient for signs of tension pneumothorax	
	Verbalises signs of tension pneumothorax	
Needle Thoracentesis		
	Confirms side of pneumothorax and correct position for procedure iaw CPG	
	Sterilises area using circular technique	
	Prepares a 14g, 3.25in IV cannula with a 10ml syringe containing 2mls of NaCl	
	Inserts the needle at a 90° angle continuously aspirating as advancing	
	Stops advancing when air or fluid is aspirated into the syringe	
	Continues aspirating, removing the syringe plunger and observing for bubbling to stop	
	Removes needle and cannula and applies occlusive dressing	
	Records intervention on Patient Record	
END EXAMINATION		

Annex E

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	**Vital Signs**
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	September-2024

Participants Name:	Date:

Participant is requested to demonstrate the following:

Assess Level of Responsiveness (LoR)		
	Verbalizes explanation of the AVPU scale	
	Assesses responsiveness by 'Shake and Shout'	
	Assesses responsiveness by applying low level pain	
	Assesses alertness to person, place, time and event	
Evaluates Respirations		
	Correctly measures and evaluates respirations per minute (+/- 2 breaths)	
	Correctly evaluates depth and effort of breathing	
Evaluates Heart Rate		
	Verbalises correct pulse points for responsive and unresponsive patients	
	Correctly measures and evaluates pulse for rate and characteristics (+/- 10bpm)	
	Correctly records heart rate	
Evaluates Blood Pressure		
	Verbalizes explanation of presence of radial pulse related to blood pressure	
	Correctly positions BP cuff on patient's upper arm or lower leg	
	Correctly positions stethoscope over brachial or posterior tibial artery*	
	Inflates the BP cuff effectively and no higher than 200 mmHg	
	Correctly measures blood pressure (+/- 10mmHg)	
	Deflates the cuff and leaves it in place	
Evaluates SPO2		
	Verbalises considerations for the use of finger pulse oximetry	
	Tests function of finger pulse oximeter	
	Correctly applies pulse oximeter to patient's finger	
	Verbalises explanation of normal SPO2 range for adult	
Evaluates Pupils		
	Determines size of both pupils	
	Determines reaction of each pupil to light	
	Determines reaction of each pupil to light in the alternate pupil	
Interprets and trends vital signs		
	Verbalises normal ranges of each vital sign for an adult male and female	
	Repeats vital signs at least every 5-minutes for an unstable patient	
	Communicates effectively with patient	
	Correctly records vital signs and interprets trends	
END EXAMINATION		

Annex E

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	**Intravenous IV Access**
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	September-2024

Participants Name:	Date:

Participant is requested to demonstrate the following:

Preparation		
	Correctly inventories and identifies equipment	
	Explains procedure to patient and obtains consent (if appropriate)	
	Confirms '5 Rights' IAW CPG	
	Assembles & flushes IV fluid and administration line using aseptic technique	
	Positions the patient's arm in a comfortable extended position	
	Inspects the arm for a suitable vein	
	Applies venous tourniquet and palpates the vein	
	Cleans the IV site using circular technique and allows site to dry	
IV Cannulation		
	Ensures correct body substance isolation	
	Removes the cannula sheath and open the wings of the cannula	
	Secures the vein with non-dominant hand	
	Inserts the cannula at a 30°angle with bevel facing up until flashback is observed	
	Decreases the angle of the cannula and advanced a further 2-5mm	
	Secures the needle while fully advancing the cannula into the vein	
	Releases the venous tourniquet	
Confirming Placement		
	Applies pressure just proximal to the injection site to occlude flow	
	Removes the needle and disposed in sharps container	
	Connects the administration line while minimising loss of blood	
	Opens administration line and observes flow of fluid into the cannula	
	Lowers the IV fluid below the patient's heart and observes backflow into the line	
	Flushes the line and turns off the administration line	
	Secures the cannula and administration line in at least three places	
	Flushes the line and confirms patency every 5-minutes	
	Correctly records intervention on patient record	
END EXAMINATION		

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	**Pharmacology Administration**
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	September-2024

Participants Name:	Date:

Participant is requested to demonstrate the following:

Prepares Medication		
	Correctly identifies and inventories equipment	
	Explains procedure to patient and obtains consent (if appropriate)	
	Confirms '5 Rights' IAW CPG	
	Prepares syringe	
	Swabs medication bottle (if necessary)	
	Draws required medication dose using aseptic technique	
	Correctly dilutes dose (if necessary) IAW CPG	
Administers IV Medication under Medical Direction		
Examination begins with a patient IV site and administration kit		
	Obtains Medical Direction to administer medication IAW CPG	
	Cleans/swabs IV administration port	
	Safely inserts syringe and needle into IV port	
	Blocks IV administration set to prevent black flow	
	Delivered medication IAW CPG and/or Medical Direction	
	Removes needle and disposed in sharps container	
	Flushes IV line with at least 10cc of NaCl or water for injection	
	Records administration of medication on patient record	
Administers IM Medication under Medical Direction		
	Obtains Medical Direction to administer medication IAW CPG	
	Correctly identifies and cleans IM injection site	
	Applies pressure distal to injection site using 'Z technique'	
	Inserts needle at 90° and aspirates needle/syringe	
	Delivers medication IAW CPG and/or medical direction	
	Removes needle and disposed in sharps container	
	Applies pressure to injection site	
	Records administration of medication on patient record	
Administers Oral Medication		
	Obtains Medical Direction to administer medication IAW CPG	
	Confirms patient is alert and oriented to person, place, time and event	
	Assists patient to place medication on their tongue and swallow	
	Provides a small quantity of no more than 50 ml of drinking water	
	Records administration of medication on patient record	
END EXAMINATION		

Annex E

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	**Trauma Patient Management Scenario**
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	September-2024

Participants Names:	Date:

Participant is requested to demonstrate the following:

Scene Management		
	Evaluates Scene and dons appropriate PPE	
	Initiates alert message within 2-minutes of arrival on scene	
	Considers need for triage	
Massive Bleeding		
	Applies tourniquet/s correctly to extremity haemorrhage	
	Evaluates and treats torso wounds using wound packing	
	Applies junctional tourniquet correctly (as necessary)	
Airway		
	Evaluates airway	
	Suctions airway (as necessary)	
	Selects, measures and inserts correct airway adjunct	
Respirations		
	Evaluates respirations for rate, depth and effort	
	Observes for major chest injury	
	Treats major chest injury (as appropriate)	
	Evaluates SPO2	
Circulation		
	Evaluates level of responsiveness (AVPU)	
	Assesses presence of radial pulse	
	Gains IV/IO access	
Hypothermia/Head		
	Evaluates patient's pupils (PERLA)	
	Inspects head for 'battle signs' and/or CSF	
	Takes steps to keep patient warm	
Secondary Survey		
	Conducts rapid trauma assessment (head-to-toe)	
	Evaluates and records vital signs correctly	
	Selects and administers appropriate pharmacological interventions (as authorised)	
	Treats wounds and fractures correctly	
Tactical Considerations		
	Communicates effectively with patients and others	
	Provides mutual support to colleagues (if available)	
	Uses cover effectively	
	Maintains situational awareness	

END EXAMINATION

Annex E

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	**Triage Patient Management**
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	September-2024

Participants Names:	**Date:**

Participant is requested to demonstrate the following:

Scene Management		
	Evaluates Scene Safety and dons appropriate PPE	
	Initiates alert message within 2-minutes of arrival on scene	
	Identifies and establishes safe Casualty Collection Point / Advanced Medical Post	
	Establishes presence of Walking Wounded	
Patient #1		
	Identifies patient is not breathing	
	Opens patient's airway using a Head Tilt/Chin Lift	
	Identifies patient is breathing and attempts to illicit response (no response)	
	Applies patient's tourniquet to patient's leg (if appropriate)	
	Instructs bystanders to assist with wound packing and direct pressure	
	Categorises the patient as Priority #1 – RED	
Patient #2		
	Identifies patient is breathing and attempts to illicit response (pain response)	
	Applies patient's tourniquet to limb injuries (if appropriate)	
	Categorises the patient as Priority #1 – RED	
Patient #3		
	Identifies patient is breathing >30/min	
	Applies patient's tourniquet to leg (if appropriate)	
	Evaluates patient's radial pulse (radial pulse present)	
	Evaluates patient's mental status (alert)	
	Categorises the patient as Priority #2 – YELLOW	
Tactical Considerations		
	Communicates effectively with patients and others	
	Provides mutual support to colleagues (if available)	
	Uses cover effectively	
	Maintains situational awareness	
END EXAMINATION		

Critical Errors		
	Fails to take appropriate safety precautions	
	Fails to initiate an alert message within 2-minutes of arrival on scene	
	Fails to identify an immediate life threat within 10-minutes	

	Fails to accurately evaluate vital signs	
	Carries out an intervention that harms the patient	
	Moves the patient in an unnecessarily unsafe manner	

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	**Medical Patient Management**
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	September-2024

Participants Names:	Date:

Participants are read the scenario regarding a patient who complains of 'Chest Pain':

Scene Assessment		
	Evaluates Scene and dons appropriate PPE	
	Initiates alert message within 2-minutes of arrival on scene	
	Considered need for triage	
Patient Management		
	Places patient in a position of comfort	
	Provides reassurance	
	Gathers SAMPLE History and OPQRST	
	Assesses airway (verbalises)	
	Assesses Respirations	
	Considers administration of aspirin (if authorised)	
	Correct dose and method of administration	
	Considered GTN	
	Rules out contraindications with patient	
	Correct dose and method of administration	
	Monitors vital signs	
	Considered repeat dose of GTN	
Instructor verbalises "patient collapses and is unresponsive"		
	Alert message is upgraded – ALS requested	
	Opens airway	
	Assesses respirations (*Instructor provides information – not breathing*)	
	Two full cycles of CPR (with barrier device is available)	
Second Rescuer arrives and takes over compressions		
	Prepares BVM and suction	
	Selects, measures and inserts appropriate airway device	
	Administers oxygen at correct flow rate (if available)	
	Provides BVM ventilations at correct rate and depth	
AED is delivered by bystander		
	Instructs bystander to continue with compressions	
	Prepares AED and applies pads without disrupting compressions	
	Informs bystanders to stay clear of patient while AED analyses	
	Ensures compressions are carried out while AED is charging	
	Ensures all bystanders are clear before administering shock	
	Verbalises circumstances to stop CPR (STOP)	
	Verbalises contraindications and safety precautions for AED	

END EXAMINATION

South Sudan

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Chapter 11

Communications

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11.1 General

a. Mine action organisations shall ensure that an effective communications network is in place prior to and throughout all humanitarian mine action operations.
b. No mine action operations shall be undertaken if effective communications cannot be established between the personnel on site and the relevant support elements.
c. Mine action organisations shall clearly define in their SOP the details of their communications plan.
d. Communications shall be manned during all operational activities and shall also cover the travel periods to, from, and in between the sites.

11.2 Communication Network

a. Different levels of communications are operated to co-ordinate and control operations:

- National Network: This is the operational network between the NMAA/UNMAS-UNMISS and all mine action organisations.
- Regional Network: This network provides an UNMAS mine action frequency that shall enable all mine action organisations to communicate with each other.
- Local Network: This network provides a link on task-sites between the team supervisor, team leaders, deputy team leaders, clearance teams, team medics and other radio users at task-sites.

11.3 Communication Systems

a. In ideal circumstance the communication systems are:

System	National Network	Regional Network	Local Network	Remarks
HF Radio	Primary System	Primary System	n/a	
VHF Radio	n/a	Secondary System	Primary System	
VHF TETRA Radio	Secondary System when in range			
Satellite Phone	Emergency Back-up	Emergency Back-up	Emergency Back-up	The use of these systems is limited in so much as they only allow one-on-one communication and rely on the individual receiving the call being available and as such should only be used in the context of a 'national or regional communication system' when the primary and/or secondary systems have failed.
Mobile Phone	Emergency Back-up	Emergency Back-up	Emergency Back-up	
Dect Phone	A desk top national telephone system between UN agencies.			
Email	The recognised communication system used for sending text messages, reports and returns and other non-emergency and/or routine communication throughout the network.			

Table 11-1 Communications Systems for Mine Action Operations

11.4 Frequencies & Call-Signs

a. Frequencies are issued upon request to the South Sudanese Government. This ensures organisations do not cause conflict with national security channels. A current list of frequencies for each region/location is available on request from the NMAA/UNMAS-UNMISS.

b. NMAA/UNMAS-UNMISS shall coordinate the allocation of calls-signs for mine action organisations.

11.5 **Operational Requirements**

a. It is the responsibility of the mine action organisation to ensure that a suitable and sufficient communication system in place to control the on-going operations and that meets all the necessary requirements to ensure safe and effective operations. Mine action organisations shall implement the following general requirements:
b. Communication equipment shall be checked for serviceability on a daily basis prior to operations commencing.
c. Communications shall be manned, checked and if relevant confirmed prior to organisations teams/assets departing from bases.
d. Mine action organisations shall have primary and secondary communication systems, or back up established and functioning between the operational site and base camp and NMAA/UNMAS-UNMISS before any work commences.
e. Communications shall also be confirmed internally between the worksite team leaders, all medics, and all supervisory personnel physically supervising the work, ambulance/safety vehicle drivers and, where applicable, individual mechanical operators and other radio users prior to work commencing.
f. If communications at any level cannot be established and safety is to any degree compromised, then work shall not start or shall cease until the situation is rectified or resolved.
g. On completion of all operations for the day, teams shall advise their higher echelon HQ that work is finished and if relevant that they are returning to base.
h. The NMAA/UNMAS-UNMISS shall be informed at the start of the operations and of the net closing down.
i. Mine action organisations shall ensure that their assets deploy with suitable and sufficient communication equipment and that, where relevant, NMAA/UNMAS-UNMISS call signs have been allocated.
j. At all times when a mechanical asset is working in a hazardous area, the operator shall have radio communications with the task worksite team leader.
k. National and/or Regional communications systems shall be established using HF radio sets and/or satellite phones (mine action organisations shall make an assessment of the most effective, reliable and suitable

system and implement its use as the primary means and supplemented by a suitable back-up system).

l. On-site communications shall be established using VHF handheld radio sets.

m. Communications shall be appropriately tested at least once every hour.

n. A communications log of key (important) communications traffic shall be maintained at the task site Control Point.

o. Details of the mine action organisations communications systems shall be included in Implementation Plans.

p. Mine action organisations shall be aware of other organisations/agencies whereabouts within the region and should be familiar with their frequencies, channels, and call signs.

q. Mine action organisations shall ensure that operational locations shall have continuous effective communications with all other relevant organisations.

11.6 General Principles

a. The following general principles shall be implemented to establish a reliable communications network.

b. Use of voice procedure, discipline, clarity and brevity by users during radio transmissions.

c. Use the call sign letters provided by the NMAA/UNMAS-UNMISS.

d. If no such call sign has been assigned then the NMAA/UNMAS-UNMISS should be contacted for provision of a call-sign.

11.7 Training

a. Mine action organisations shall ensure that a suitable and sufficient communications introductory and regular refresher training programme is imparted to all its personnel. This as a minimum should include the following (to include all equipment likely to be used):

b. Basic maintenance and serviceability checks

c. Turning on/off of equipment

d. Tuning in to required stations and/or frequencies and changing of stations and/or frequencies

e. General voice procedure (to include the phonetic alphabet)
f. Sending/answering messages
g. Recording and/or logging sent/received messages
h. Accident/incident reporting
i. What to do in the event of an emergency if primary communication systems fail.

11.8 Organisation SOP

a. The minimum communication procedures to be included in mine action organisations' SOPs are:
b. Overall communications system (net diagram) to include details of the systems for all possible operations
c. Network station allocation by teams and call sign. This may be in the form of a net diagram.
d. Communication systems; primary and secondary, including channels to be used.
e. Types of radios held by each net station.
f. The requirement to use correct procedures and guidelines for its use.
g. Operational and specific-to-operation communication requirements.
h. Accident reporting procedures.
i. Daily routine communication requirement, responsibilities and routine
j. Refresher training requirements.

11.9 Restrictions

a. The following shall be implemented and adhered to by mine action organisations:
b. The carriage of radios and/or mobile phones into hazardous areas is restricted to team leaders and/or supervisors. At no time are deminers to carry radios or mobile phones into a hazardous area unless acting in a supervisory role.
c. During all operations where the hazard is thought to include electrically initiated EO, vehicles with radios mounted shall remain at least 160m outside the boundary of any unclear hazardous area. If vehicles have to move inside this distance, radios shall be switched off before doing so.

Handheld communication equipment shall be turned off within 20m of any electrically initiated or any unidentified EO.

11.10 **Responsibilities**

a. NMAA/UNMAS-UNMISS shall provide a communications link between mine action organisations and UN agencies during all hours of demining operations. They shall provide the frequencies for each organisation to operate.

b. Mine action organisations shall maintain check communications prior to starting any operations each day and shall maintain communications throughout the day. They shall ensure that each team has functioning communications equipment and is contactable at all times.

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Chapter 12

Storage, Transportation & Handling of Explosives

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12.1 Introduction

a. This chapter provides details of the minimum specifications and guidelines for the safe storage, transportation and handling of explosives and where applicable ERW, and is based upon guidance found in IMAS 10.50. It does not consider the storage of boxed ammunition or explosive quantities in excess of 250kg, should any agency wish to do so it should do so in accordance with the International Ammunition Technical Guidelines[1].
b. Whenever and/or wherever possible and/or practicable, these specifications and guidelines shall be followed, adhered to and implemented by mine action organisations. However at all times the operators are advised to make their judgements based on the safety and security of their explosives, rather than the intrinsic hazard it may pose.
c. When used within this chapter, the term explosives refers to mass detonating items including explosive charges, detonators and ancillaries such as detonating cord.

12.2 Requirements of Responsible persons

a. All persons charged with, responsible for or involved in the storage, transportation and handling of explosives shall have received appropriate training, shall be suitably qualified and experienced and shall be familiar with the details and guidelines of this chapter.
b. Persons responsible in whatever capacity for the storage, transportation and/or handling of explosives shall be fit for work, and the limits of their responsibility shall be clearly identifiable.
c. At all times a designated official shall be responsible for the storage or movement of explosives. All transportation and storage of explosives, temporarily or permanently, shall be recorded in a log book showing the amount of explosives transported or stored and the amount of explosives being used as well as the name and signature of the person receiving or using it.
d. All transfers must be clearly recorded in an auditable format (logbook), where appropriate a key lock register should also be maintained.
e. A designated official who is responsible and accountable for the storage, transportation and handling of explosives shall always be appointed by

[1] https://www.un.org/disarmament/un-saferguard/guide-lines/

mine action organisations. Records are to be kept and made available for inspection by UNMAS-UNMISS/NMAA or other inspecting agencies.

12.3 Environmental Requirements

a. Explosives and their packaging degrade when exposed to high temperatures, variances of temperature, moisture and excessive vibration. Minimizing the exposure of explosives to these factors will prolong its working life.
b. In general, explosives should be:
    - Kept dry and well ventilated.
    - Kept as cool as possible and free from excessive or frequent changes of temperature.
    - Protected from direct sunlight.
    - Kept free from excessive and constant vibration.

12.4 Storage Requirements

a. The storage of explosives in Mine Action is invariably a trade-off between safety and security. In the current security environment in South Sudan, the primary requirement should be that all times explosives are properly controlled and never left in an area where they cannot be supervised.
b. If Mine Action organisations construct their own explosive stores then the general requirements for the design of magazines and containers used for the storage and transport of explosives given in IMAS 10.50 shall be applied. In summary:
    - Separate containers are to be used for explosives (main charge and detonating cord) and for detonators.
    - Explosives should be secured in a lockable box that is wood or Kevlar/Twaron or other suitable blast resistant material lined.
    - Electric detonators shall be always kept in the secured metallic box.
    - In general, detonators shall be packed in such a way that they cannot move around inside the box.
c. Whenever practical and possible operators should seek to adhere to the quantity distances outlined in Annex A to this document.

12.4.1 Separation of Items

a. The following items should be stored separately. At a minimum a sandbag wall is to be used to divide them:
   - Detonators
   - Main charges and explosive ancillaries (detonating cord and safety fuse) containing primary explosives
   - If ERW is recovered to a team site it should be stored securely and separately from the above items and disposal of such items should take place in a timely manner.
   - Blind items should neither be moved or stored
   - Non-explosive material should not be held in the explosives store

12.4.2 Permanent and/or main storage facilities

a. Shall be fire-resistant, theft resistant, weather resistant and ventilated. Consideration should be given to ground and local features during the design and siting of such structures. Where possible the stores should be as far from residential accommodation as the site allows, but at all times the store should be in a place where it can be observed.
b. Storage facilities such as a skid-mounted container, trailer or semi-trailer shall be theft-resistant, fire-resistant and weather-resistant. The magazine should be constructed of steel with an interior lining of timber. Magazines of less than one cubic metre in size should be fixed to the ground to prevent theft of the entire magazine.
c. For main stores the separation distances outlined in Annex A should be used. However if concerns regarding the security of the explosives are such that there is insufficient space then reduced distances may be applied.

12.4.3 Minefield/Task Storage

a. A day box is used for the on-site storage of explosives required for daily mine/ERW clearance operations. It shall be:

- Weather resistant and able to be locked and secured to a ground anchor or secured to a fixed point within a vehicle.
- Wherever possible or practical it should be of steel construction but may be wooden boxes or other appropriate containers.
- The box shall contain no more than 10 kg of explosives and or (including) appropriate quantity of initiating means to fire the given quantity of explosives.
- Stored within the admin area amid an earth or sandbag surround in a point where they can be observed at all times that is **at least 15m** from the nearest Access or Working Lane.
- Detonators and/or other means of initiation shall be stored and carried in a separate box from explosives.
- Electric detonators should be stored and carried in closed metal containers to shield them from RF radiation.

12.4.4 Use of vehicles for explosive storage

a. There will be occasions where the most secure option for a demining team is to store its explosives in a vehicle. Vehicles may be used as overnight storage facilities provided:
   - The explosives are secured to a strong point within the vehicle,
   - The vehicle is locked, and preferably alarmed
   - The keys held remotely, and that
   - There is a guard posted close by.

12.4.5 Fire extinguishers

a. Fire is a primary cause of concern and teams should make all reasonable effort to protect their explosives from fire. As a minimum this means.
   - Removing all vegetation from within 5m of a proposed storage location.

- Maintaining serviceable fire extinguishers wherever explosives are stored. These must be outside of the store to allow first responders their use.
- Maintaining fire beaters on site to prevent bush fires.

12.5 Audit and Accounting

a. As a minimum, and at every location where explosives are stored, accurate records are to be made of the following:
    - All stocks of explosives and ancillaries.
    - All consumption of such items.
    - All transfers of such items, including the date of receipt or handover, and the agency or team to/from the explosives were transferred.
b. Records are to be maintained for a period of twelve months, and be available for inspection at all times, a paper record must be maintained, and an electronic record is an optional extra.
c. Monthly explosives usage shall be recorded in team site files and relevant Monthly Progress Reports by item, weight and quantity.
d. A designated official shall be responsible for managing the receipt, storage, guarding and issuing of explosives at all levels
e. Only authorised persons shall enter the storage facility and where appropriate and relevant shall be escorted at all times.
f. Rules regarding contraband at explosive storage areas should be maintained within an agency's SOPs but in general should prohibit the entry of all smoking materials, including cigarettes, matches, lighters etc. Any object or item that might cause fire from entering the storage facility. Or any object or item that may pose an RF hazard e.g. mobile phones or radios. Signage indicating prohibitions should be displayed.
g. The storage facility shall not be used for anything other than storing explosives. It should be kept free from any other tools, equipment or items and should at all times be kept as clean and tidy as is practicable.
h. Facilities should be constructed in such a way as to provide protection from static electricity.
i. In the event that the facility requires repairing, all explosives and explosive accessories shall be removed before repairs are started.

12.6 Transport of Explosives

a. The official responsible for the transportation of explosives shall ensure:

- That suitable communications systems are available that will allow for communication from the vehicle to the organisation throughout the complete journey.
- That an appropriate communication plan (covering as a minimum a radio check prior to leaving the start location and informing on arrival at destination) is in place for the journey.
- That the driver and drivers assistant are aware of all actions to be taken covering all likely eventualities during the journey i.e. breakdown, accident, robbery, etc. and that all other team members are briefed on their roles.
- Explosives are to be securely packed in appropriate boxes that shall be closed and which prevent any loss or spilling and moisture ingress during transport. If the vehicle is not a covered vehicle, boxes shall be covered with a waterproof cover.
- Detonators shall be securely packed in a separate metal box from explosives. Boxes containing detonators shall be carried in a separate compartment of the vehicle from boxes containing explosives.
- UNDER NO CIRCUMSTANCES ARE DETONATORS TO BE CARRIED IN THE SAME BOX AS EXPLOSIVES.
- Packages containing detonators and explosives shall be loaded on the vehicle in such a way that they do not move about during transportation.
- Vehicles employed to transport explosives shall be roadworthy, well maintained, and in good working order. Persons in charge of the transport of explosives shall check the following prior to any movement of vehicles carrying explosives.
- Appropriate fire extinguishers shall be carried.
- No smoking shall be allowed in the vehicle.
- The vehicle shall not be left unattended.
- A further breakdown of transport of serviceable explosives by air is detailed in **ANNEX B**.

12.7 Alternative Techniques

a. Whenever transport regulations do not permit the carriage of explosives, operators should consider the use of alternative disposal techniques and the provision of materials that can be safely transported.

12.8 Inert, Drill, Instructional or Replica Mine & Ammunition

a. Inert, drill and replica items are to be clearly marked that they are free from explosives and stored separately from live items.
b. A written log of all such items must be maintained and checked regularly.
c. All items shall also be marked with a unique serial number. This unique serial number should be in the following format: (Location/3 digits/type – For example JUB/001/AP No4).

12.8.1 Registration & Accounting for Inert or Drill Mines & Ammunition

a. The mine action organisation shall maintain a master register of all inert, drill, instructional or other replica mines and ammunition that it has responsibility for. This register shall include the following information:
    - Serial number
    - Type of mine/ERW
    - Current location.

12.9 Free From Explosive Items

a. The mine action organisation shall operate an appropriate accounting system to ensure accountability and traceability for all items certified as free from explosives in its possession. It is recommended that this is based on their live ammunition accounting system.

12.9.1 Free From Explosive (FFE) Certificate

a. All items to be declared FFE shall be visually inspected and physically examined by an official of the organisation who has been tasked to ensure that the item contains no explosive, pyrotechnic, lachrymatory, radioactive, chemical, biological or other toxic components or substances.

b. The Official shall then certify the item is free from explosive (FFE). The certificate shall contain the following information:
   - Unique serial number.
   - Date
   - Name of inspecting Official
   - Brief description of item
   - A declaration that the items is free from explosive

c. The statement should be written in English and Arabic.

12.10 Live training items

a. Agencies will from time to time need to hold explosive filled items for training purposes. Such items must be strictly recorded, and their whereabouts known at all times. These items must be subject to regular audits.
b. Mines left in the ground for the purposes of testing and training of mine detection dogs should have their detonators removed, be clearly marked on their exterior to indicate live training and have the firing train adapted in such a way that the mine cannot be reactivated.

12.11 Temporary storage of ERW

a. On those occasions when items that are safe to move cannot be destroyed on the day in which they are encountered, organisations will have a requirement to store items of ERW overnight. In such situations:
   - The items are to be individually registered with details of the date the item was first stored and the name of the official who designated it safe to move.
   - The date of destruction is also to be recorded.
   - The net explosive quantity of the items is to be detailed and, should this raise the total explosive held beyond the agreed threshold then the item(s) should be separated and suitably protected, usually by placing the item in a deep channel and covering it with earth filled sandbags.
   - ERW should be destroyed at the earliest practical opportunity.
   - Records of ERW held by Mine Action teams are to be submitted to UNMAS-UNMISS on the last day of the working week so that they can track the timely disposal of such item

Annex A to Chapter 12 Explosive Storage Limits (Informative)

Table of distances for the storage of explosive materials

Net Explosive Quantity (NEQ) (kg)		Distance (m)							
		Inhabited Building Distance (IBD)		Public Traffic Routes (PTR) (Traffic Volume)				Inter Magazine Distance (IMD)	
				Less than 3000 veh/day		More than 3000 veh/day			
Over	Less Than	Barricaded	Un-barricaded	Barricaded	Un-barricaded	Barricaded	Un-barricaded	Barricaded	Un-barricaded
0	3	21.3	46.6	9.1	19.3	15.5	33.6	1.8	4.1
3	5	29.4	56.1	11.7	23.3	21.2	42.4	2.6	5.3
5	10	34	68.9	13.9	27.7	25.1	50.1	3.7	6.2
10	15	39	79	15.6	31.1	29.0	57.9	3.4	6.5
15	20	43.6	87.8	17.2	34.5	32.0	64.1	3.8	7.7
20	25	48.2	93.9	19.5	39.1	35.6	71.3	4.4	8.8
25	35	53.1	105	21.6	43.3	39.5	78.9	4.6	9.3
35	50	58.2	118	23.0	46.0	42.7	85.3	4.9	9.9
50	65	62.8	129	25.0	50.0	46.8	93.7	5.6	11.2
65	80	70	138	28.1	56.3	52.0	104	6.2	12.5
80	100	74.8	148	30.6	61.1	55.6	111	6.7	13.4
100	120	79.6	158	32.6	65.3	59.1	118	7.1	14.3
120	150	84.5	169	34.4	68.8	63.0	126	7.6	15.2
150	200	92.3	186	37.5	75.0	69.0	138	8.4	16.8
200	250	100	201	40.2	80.5	74.4	149	9.1	18.2

Note: Barricaded means the effective screening of the magazine containing explosives from a building containing explosives, or other building or railway or roadway by a natural or by an artificial barrier. A straight line from the top wall of a building or magazine containing explosives to the eaves line of any other building or a point 3.5m above the centreline of any roadway or railway shall pass through such a barrier. It is also often referred to as traversing.

Note: Artificial barricade is an artificial mound or revetted earth wall not less than 90 cm thick.

Note: For small quantities (up to 18 Kg NEQ) a 68cm thick brick wall situated 1m from the ammunition/explosives and extending to 2° (but a minimum of 60cm) above the top of the ammunition/explosive (see IATG 05.30 for details).

Note: Natural barricade means natural feature of the ground such as hills or timber with sufficient density that the magazine cannot be seen from the building or features requiring protection when the trees are bare of leaves.

Note: These distances are intended for blasting explosives and the like. This table is therefore only for use with demolition stores where there is very little fragmentation hazard. This table shall not be used for APM, ERW , stockpiles or similar where military ammunition may be involved.

Note: When an operational EOD Demolition Box is being used away from the team's HQ location, it is regarded as being 'in use' at all times. The distances in this table apply between the 'in use' box and areas/facilities which are not connected with the team, e.g. houses, roads etc. **where practicable**. The distances should be applied between the 'in use' box and the team's temporary accommodation, garaging etc. where these distances are possible given the security climate of the area they are in.

Note: This table can be used to calculate safety distances for an organisation's main bulk holdings of demolition explosives and accessories up to 250kg NEQ as long as there are no fragmentation hazards from any of the items. Above 250kg NEQ IATG 02.20 is to be used.

Note: When storing APM, ERW, CM and stockpiles which include military ammunition, and therefore carry the risk of fragmentation, the quantity distance tables in IATG 02.20 are to be used.

Annex B to Chapter 12 Explosive Storage Limits (Informative)

Transportation of explosives by air within South Sudan Mission

When required to transport explosives in support of Mission activities the following processes should be adhered to;

1. Requirement. The requirements of the explosives move should be identified and information relayed to UNMAS and NMAA;

a. Type/s of explosive required for transportation.

b. Quantity/ies per type designated and identified and confirmed.

c. Packaging requirements.

2. Communication. Once the requirement and details of estimated dates and locations have been ascertained, JVMM should be notified through the central HQ, Juba via means of a letter. Once approved the letter should accompany documentation moving forward. This should detail the use of the explosives, where the explosive/s are being transported to and from, as well as the quantities and details (UN Serial, Hazard Classification Code etc)

3. Request. Concurrently two activities should take place;

a. IP should arrange for safe to move (STM) certification of the items for transport via air. Should a suitably qualified person not be available within the IPs structure, assistance may be sought through either UNMAS or Force (Force Senior Ammunition Technical Officer (SATO or another ATO).

b. IP should request a Special Flight Request (SFR) or Cargo Manifest Request (CMR) through UNMAS in order to arrange for a flight platform to be assigned and arranged. There may be a requirement to have items inspected by the Mission Movement Control (MoveCon) dangerous goods (DG) inspector as verification.

4. Once arrangements have been made and authorisation has been received by JVMM the move can then proceed.

ADDITIONAL NOTES

5. Packaging. Items should be transported and shipped within original manufacturer packaging. Where this is not possible, items should be packaged to the principles of the International Air Transport Association standards and guidelines and be safe and secure with adequate markings.

a. Detonators may be transported within metal containers.

b. Items should be packaged individually according to type and nomenclature.

c. Boxes/Containers should be annotated with the following markings. Additionally the package should be marked with suitable HCC labels denoting the hazard associated within.

i. Nomenclature

ii. Quantity held within

iii. Proper Shipping Name (obtained within IATG 1.50)

iv. UN Serial Number (obtained within IATG 1.50)

v. Net Explosive Quantity (NEQ)

vi. Gross Weight

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Chapter 13

Training Qualifications

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13.1 **Introduction**

a. Training is essential in order to ensure safe and effective operations therefore Mine action organisations are responsible for ensuring that their personnel have received suitable and sufficient training in any activities they are to be involved in and for ensuring they are competent, qualified and have sufficient experience, aptitude and proficiency to conduct their role in a safe and effective manner.

13.2 **General Requirements**

a. All mine action organisations are responsible for ensuring that the minimum training standards as outlined in this chapter are achieved prior to conducting humanitarian mine action operations.
b. Mine action organisation personnel shall receive suitable and sufficient training in all aspects of operations they are likely to be involved in.
c. Personnel shall not conduct any operations for which they have not received appropriate training.
d. Training shall be designed and conducted in such a way as to ensure that mine action organisations are able to assess an individual/teams competency in the role(s) they are likely to be involved in prior to being qualified.
e. As part of the accreditation process, mine action organisations shall be required to sign a Training Declaration confirming that all training has been in conformance and/or to a standard that ensures compliance with these NTSG (refer to Chapter 19).

13.3 **Standard Operating Procedures**

a. Mine action organisations SOPs shall contain, as a minimum, the following information:
b. Details of their training policy.
c. Types and schedules of training – to cover **all** activities the organisation is to be involved in.
d. Responsibilities and resources in the training.

e. Methods of quality assurance designed to evaluate the suitability and effectiveness of the training.
f. Details of assessments/testing for all courses.
g. Details of the activities that an individual/teams shall be competent in on successful completion of the training.
h. Provide details of requirements when additional refresher training or updating of training shall be necessary.
i. A policy on the recording of training and qualifications and the holding/storing of these records.

13.4 **Qualifications & Experience**

a. Mine action organisations shall have suitably qualified international staff members who are experienced in humanitarian mine action operations that they are responsible for or are to be involved in and who are capable of training national staff in their area of expertise.
b. Mine action organisations shall submit proof of these individuals' qualifications and experience to NMAA/UNMAS-UNMISS that shall substantiate that they are adequately qualified to conduct their respective role.
c. All personnel completing the training shall be able to perform at the level established by NMAA/UNMAS-UNMISS under the guidance of NTSG/IMAS/SOPs.

13.5 **Training Courses & Qualifications**

a. The majority of courses necessary for conducting safe and effective humanitarian mine action operations/activities at the various practical and management levels are well known and the syllabuses are generally similar for most organisations depending on the approach to the activity by that organisation.
b. Mine action organisations shall ensure syllabuses adequately cover all aspects of the activity (ies) the training course is designed to deliver. All courses shall include theory and practical lessons, assessments and/or examinations:

c. Mine action organisations shall conduct syllabuses that are modified to include specialised training specific to that organisations role.
d. Any organisation conducting any technical course shall issue a certificate of achievement to the qualifying students.
e. Mine action organisations shall record an individual's training, his/her qualifications, the period the qualification is applicable for prior to requiring refresher training and the achievements/awards/results. This information shall be forwarded to NMAA/UNMAS-UNMISS as per the details of Chapter 21, and kept as records by the organisation
f. The following are typical courses conducted. Course titles may vary between organisations and additional courses e.g. mechanical mine clearance, MDD etc. shall be conducted as required.
g. Surveyor: The following minimum training requirements apply:
   - Mine (EO) identification
   - Mine clearance procedures
   - Map reading
   - Sketch drawing
   - Land navigation and surveying techniques
h. Mine (Deminer) Training: The following minimum training requirements apply:
   - Mine (EO) identification
   - PPE
   - Equipment & tools
   - Minefield layout and marking
   - Manual clearance procedures to include: detector, investigating a detector signal excavation and full excavation, actions on: vegetation, trip-wires, high metal contamination, obstacles, locating mines, ERW, trip-wire, controlled demolition, animals or people entering minefield and pulling drills.
i. BAC Training: The following minimum training requirements apply
   - Mine (EO) identification

- PPE
- Equipment & Tools
- Site Layout and marking
- Clearance procedures to include: surface, shallow and deep and sub-surface clearance techniques

j. EOD: All personnel involved in EOD operations shall have received suitable and sufficient training in EOD applicable to the role and responsibilities for which they are appointed. Details of training and qualifications requirements are as per Chapter 5 and also in IMAS but should also include country specific training to ensure the person is fit for the role.

k. Team Leader Training: Personnel selected as a team leader shall have either successfully completed a leadership course applicable to the selected role or have been operating on the ground in the applicable role for a period of not less than 6 months. For all future or designated team leaders the following minimum training requirements shall apply:

- Basic Leadership
- Instruction techniques
- Supervisory roles and responsibilities
- On job training shall be conducted on the applicable tasks required of a team leader.
- DGPS or GPS if applicable.

l. Team Supervisor Training: Personnel selected, as a Team Supervisor shall have been employed as a Team Leader in the specific role on the ground for a period of not less than 6 months. They shall have successfully completed a training course reinforcing all of the Team Leader training and covering specific responsibilities and general supervisory responsibilities. Prior to being appointed they shall show competency and knowledge in all activities for which they are responsible.

m. Medical Training: All personnel shall receive medical training as per details in Chapter 10.

n. Refresher Training: Refresher training is designed to be a period of condensed revision of drills and theory after the following occasions:

o. Following a planned or unplanned break of 10-days or more.
p. Introduction of a new procedure or any significant changes to current procedures.
q. After an accident.
r. When requested by the NMAA/UNMAS-UNMISS after a breach of safety which results in a non-compliance being awarded and thus failing an External QA assessment.
s. Other circumstances specified by the mine action organisation.

When there are changes in the team appointments.

13.6 **Monitoring of Training Courses**

a. As part of the accreditation process, mine action organisation training shall be regularly and routinely monitored throughout its duration by relevant NMAA/UNMAS-UNMISS Ops/QA officers in order to provide advice and guidance as required and to assess compliance with SOPs and NTSG.

13.7 **Responsibilities**

a. NMAA/UNMAS-UNMISS shall:

- Establish and maintain national standards, regulations and procedures for the management of training within South Sudan.
- Ensure that capacity development forms an essential part of the work of each organisation.
- Perform periodic external assessment of training conducted by the mine action organisations to ensure the training is in accordance with the training plan and national standards.
- Maintain record of all accredited personnel and their past performance.
- Archive all operator's accreditation logbooks for personnel who left the program (this is currently being facilitated by NMAA/UNMAS-UNMISS).

b. Mine action organisations shall:

- Ensure that capacity development forms an essential part of their work and the work of Technical Advisors providing support to any training.

- Produce comprehensive training plans.
- Ensure that their training plan is in compliance with the organisation SOP and with the national standards
- Ensure that training is based on a Training Needs Analysis.
- Ensure training activities, whether formal or on the-job, are written into the strategic and work plans.
- Submit training plans to NMAA/UNMAS-UNMISS for approval prior to any training taking place.
- Conduct internal monitoring and evaluation as essential part of the training.
- Maintain records of training for the life of the programme.
- Ensure that any approved training course conducted is entered into the individual's EOD or Medical Log Book and is signed and dated by the respective organization or NMAA/UNMAS-UNMISS (where applicable).
- Ensure the training is being delivered by qualified and experienced trainers.

13.8 **Recruitment of Mine Action Organisation Staff**

a. All mine action organisations conducting de-mining activities in South Sudan shall comply with the rules and regulations of the Republic of South Sudan. The following minimum recruitment requirements shall be adhered to by all mine action organisations;
b. Positions such as team leaders, medics, logistics assistants, finance assistants, mechanics, drivers, cooks and cleaners shall be nationalised where possible.
c. Recruitment shall be in accordance to the NMAA rules & regulations.
d. The selection of mine action employees shall be fair and free
e. Recruitment of de-miners/EOD operators shall be conducted through the NMAA in collaboration with the SSPDF Engineering Corps
f. All mine action related training shall be conducted with the approval of NMAA/UNMAS-UNMISS.

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Chapter 14

Quality Management System

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14.1 Introduction

a. The South Sudan National Mine Action Authority has charged UNMAS-UNMISS with the development and implementation of a quality management system. This ensures that the standards of humanitarian demining activities, and the processes and procedures implemented whilst conducting them, are in accordance with IMAS, NTSG, and the mine action organisations' own SOP and/or implementation plans.
b. This shall be achieved through the appointment of a monitoring body responsible for developing and maintaining the programme's overall Quality Management (QM) system and the implementation of it, under the terms of their accreditation by all mine action organisations.

14.2 General Principles, Implementation and Conduct of the QM System

a. The overall objective is to provide the authoritative bodies and donors with the confidence and assurance that mine action organisations have applied and adhered to standards that are in accordance with IMAS, NTSGs and their own SOPs, and that safe, effective and efficient humanitarian demining processes and procedures are implemented.
b. The QM system comprises the following:

- Internal Quality Assurance (QA)/Quality Control (QC) processes throughout the life-cycle of a task.
- External QA processes and procedures carried out prior to the commencement of and during humanitarian demining activities.
- External QC processes when practicable and justified on the completion of humanitarian demining activities.

c. The system aims to scrutinise all aspects of a mine action organisation's processes and procedures prior to, during and on completion of humanitarian demining activities.

14.3 Levels of the QM System

The complete system process comprises of the following:

a. Accreditation:

This is the overall process of determining an organisation's, individual's or team's suitability, competency and ability to plan, manage and conduct humanitarian mine action activities safely, effectively and efficiently. For all information and detail concerning the accreditation process within South Sudan see NTSG Chapter 19.

b. Internal Monitoring:

Internal monitoring is conducted within a mine action organisation by its own personnel from outside the normal team structure. The process will include the completion of UNMAS-UNMISS IQA Monitoring forms that record the elements of the mine action process that have been reviewed. This shall be conducted on each team or asset at least once each calendar month and shall be conducted by a qualified organizational representative being either the senior company representative, Project Manager, QA Manager, Operations Manager or direct Line Manager.

c. External Monitoring:

Regular external monitoring visits shall be conducted aimed at examining the entire process. To achieve this, assessors shall audit the internal monitoring processes of the mine action organisation, conduct external QA checks and assessments of the mine action organisation's QA activities and monitor and remark where relevant on the processes, practices and procedure being carried out. This shall be done with reference to the information contained within the agencies' SOPs, within NTSGs and within any relevant Implementation Plans.

d. This shall be conducted on each team / asset at least once a month by an UNMAS-UNMISS EQA team.

14.4 Quality Management and Auditing of the QM System

a. A Quality Management Body shall periodically conduct reviews of external QM reports to assess the recommendations made and actions taken. The Quality Management Body will also periodically accompany

the external QA assessors during visits to monitor the style in which EQA is being conducted.

14.5 QM System Bodies - General Responsibilities

a. Mine Action Organisation - Internal Monitoring: It is the responsibility of individual mine action organisations to maintain sufficient management personnel to carry out the monitoring requirements detailed in this NTSG. Failure to maintain sufficient internal monitoring capacity may result in the withdrawal of an organisation's operational accreditation. Individual mine action organisations must also maintain and share sufficient documentation relating to their monitoring activities to allow external bodies to review the work that has taken place and understand the effectiveness of the monitoring.

b. UNMAS South Sudan / External Quality Assurance Office – External Monitoring: UNMAS South Sudan is charged with the conduct of external monitoring activities. This function may be carried out directly by UNMAS-UNMISS, delegated to a contracting organisation, or both.

c. Quality Management Body: This is a body comprised of senior personnel from UNMAS-UNMISS and the NMAA that has the responsibility to monitor and coordinate the implementation of the overall QM system and to ensure that it is implemented with integrity.

14.6 Specific Methodology

a. Internal Monitoring:

The aim of internal monitoring is to ensure that the activities being conducted are in accordance with the respective organisation's SOPs. This is part of the general management process and thus should focus on those areas of greatest concern to the management. To this end formal internal monitoring recording shall be done on the basis of constituting either a **FULL** or a **GENERAL ASSESSMENT**. Both assessments will result in the completion of the NMAA/UNMAS South Sudan IQA Monitoring form V2.2 (dated 1 September 2017). The requirements outlined below are the minimum obligation and may be complemented by additional checks in order to comply with them on quality management policies.

b. Full Assessments:

Whenever a full assessment is carried out all elements of operational activity shall be reviewed as per the applicable section/s in the IQA form.

c. General Assessments:

A General Assessment is a more discretionary form of assessment. It takes the same form as the full assessment, but it is up to the assessor to determine, in discussion with the respective headquarters, which aspects of the assessment will be undertaken.

d. For each team the completed Full and General Assessment forms, conducted during each month of the task's duration, are to be kept by the respective team in their task dossier and subsequently archived by the organization. Organisations are encouraged to do whatever additional internal quality assurance that they deem appropriate, including QC sampling.

14.7 Frequency of assessments

a. Assessments are to be carried out on a minimum frequency of one full assessment per demining team or supervisor per month.
b. General Assessments are to be undertaken on a minimum of one assessment per team or supervisor per week, and all elements contained within the General Assessment must be assessed at least once per month, in addition to the Full Assessment that must be undertaken.
c. Additionally, programme management should aim to also review all aspects of the demining process, and not be limited to those particular activities detailed in the reporting forms.

14.8 Critical and Non-critical Non-Conformities

a. During the conduct of the IQA process the assessor shall record all critical and non-critical non-conformities identified during Internal QA/QC (if a critical non-conformity is identified then work shall cease immediately and the NMAA/UNMAS-UNMISS OPS/QA officer shall be contacted immediately in order to confirm the non-conformity and to advise on the suitability of the rectifying action, as well as to discuss the underlying cause of the non-conformity).

b. Store hard copies of completed internal QA forms on site and make them available for inspection/review by the external monitoring body during external QA.
c. Ensure appropriate follow-up action is implemented and adhered to following external monitoring body's recommendations.

14.9 General Introduction to External Monitoring

a. External Monitoring in South Sudan will be done through a layered approach. The first review shall take the form of a desk review of daily progress reports, submitted IMSMA core forms through Survey 123 and Hazardous Area reports. These will be reviewed to see that the actions being conducted are in accordance with the Implementation Plans (IPs) and SOPs. The reviewer will also check for consistency and thoroughness in the documentation process and for patterns or inconsistencies (either good or bad) in performance outputs. Such inconsistencies should then be followed up by External Quality Assurance checks. The second layer of monitoring shall take the form of field assessments and takes place primarily to validate the IQA reporting.

14.10 Field Assessments

a. The NMAA/UNMAS-UNMISS Quality Assurance process will actively monitor the clearance agencies whilst they conduct their internal quality assurance, this will be by way of QA officers or other officials visiting clearance sites and observing the internal quality assurance process, checking on site documentation, and commenting and reporting to both the agency and to the UNMAS-UNMISS Chief of Operations the results of the visit. The essence being put on the external Quality Assurance of the Internal Quality Management process.
b. As a minimum it is expected that an External Quality Assurance (EQA) visit will consider the following:

    - Inspect the results of internal QA that has been conducted

      since the last visit, by ways of reviewing the details recorded on internal QA forms, hard copies of which shall be maintained on-site at all times.

- Conduct an external QA inspection that shall include the accurate and full completion of the IMSMA Core (Survey 123) External QA Monitoring form that shall be registered with a unique ID and shared with the respective organization within 24 hours of the assessment.
- Compare the recordings/results of completed external QA Monitoring forms against the most recent internal QA Monitoring forms for accuracy and take appropriate action dependent on findings.
- Identify any non-conformity and take appropriate action depending on the circumstances and severity of the non-conformity.
- Identify and recommend corrective actions through discussions with the mine action organisation and ensure they are implemented by agreeing and documenting a follow-up plan.
- Record all non-conformities and the general results of the visit.
- When an external QA inspection team conducts a site completion an external QA Form is also to be submitted with the IMSMA Core Completion Report.
- Ensure appropriate follow-up action is taken on the Quality Management Body's recommendations.

14.11 QC Sampling of cleared areas

a. The NMAA/UNMAS-UNMISS Quality Assurance teams during any visit can conduct Random Sampling of an area that has been subjected to clearance.
b. This sampling shall be conducted using the same methodology used to conduct the clearance with detectors and locators being used on the same settings as were used for the original processing of the ground.
c. Results of sampling are to be recorded within the EQA documentation, this should cover the following:

- Coordinates of sampling box recommended to be recorded using DGPS.
- Detector / Locator used, serial number and record of functional and calibration check prior to use.
- Area in m2 checked within the sampling box.
- List of items located.
- Supporting photographs.

14.12 On site documentation

a. The following documentation should be available for inspection “on-site” by the external Operations/QA officer;
    - Site visitors log
    - Detector log
    - Medics’ logbooks
    - Deminers’ logbooks
    - Explosive log
    - Daily reports
    - List of items found
    - Site attendance sheet
    - Stores lists including medical equipment etc.
    - Copies of all quality assurance reports
    - Quality assurance log – detailing dates of inspections, by whom and the results along with any recommended follow up action

- Casualty evacuation practice log
- Organisational SOPs
- NTSGs
- Task map showing the progress and deployment of each clearance asset
- Approved Implementation Plan
- Timeline Extension Requests

b. Additional documentation may be requested by the QA official.

14.13 Head Office Documentation

a. The clearance organisation shall also maintain within administrative "in-country" headquarters at least the following documents that will be available for inspection as part of the external quality management process.

- Copies of all the documentation that is on site
- The Organisation's signed Quality Management statement
- Quality Management /Control / Assurance schedule of events / program
- Copies of all reports as shared with the NMAA/UNMAS-UNMISS Operations office
- Copies of all reports sent to the organisation from the NMAA/UNMAS-UNMISS Operations office.

14.14 Outputs - External Monitoring Body

a. The external monitoring body shall deliver the following outputs:

- The NMAA/UNMAS-UNMISS sub-office OPS/QA officer shall provide a Weekly Summary based on the previous week's

external monitoring activities, to the NMAA/UNMAS-UNMISS National QA Officer/Chief of Operations.

- As part of the NMAA/UNMAS-UNMISS Quality Management process there will be monthly / bi-monthly meetings with all agencies / interested parties to discuss any Quality Management / Control / Assurance issues, and to evaluate and improve the process where necessary, these meetings would be subject to an agenda and shall be minuted, the minutes would be circulated to all attendees and to the NMAA/UNMAS-UNMISS Chief of Operations / Program Manager.

14.15 Outputs - Quality Management Body

a. The specific responsibilities of the individuals and/or the body as a whole are to:

- Ensure compliance with the QM system at all levels by reviewing completed IMSMA Core QA Monitoring forms.
- Accompany the external monitoring body whenever possible or practicable to ensure general standards and the details of this chapter are being adhered to and met.
- Identify shortcomings in individual QA skills, overall practices, non-conformities with the system at any level and improvements to the system.
- Identify and suggest corrective actions to the internal and external monitoring processes and ensure they are implemented
- Develop and keep a database in order to identify trends of performance by teams/mine action organisations.

14.16 Conduct of EQA

a. General Responsibilities of Mine Action Organisations: Mine action organisations have the following general responsibilities:

b. Accredited mine action organisations shall fully cooperate with any external QA process or inspection and shall provide access to all tasks/sites, personnel, buildings and other facilities which are visited in order to implement any stage of the QM system. Reasons for not wishing to do so should be verbally relayed to the external body senior representative and appropriately recorded in writing by the mine action organisation appointment in charge of the task/site and submitted to NMAA/UNMAS-UNMISS QA Coordinator within 24-hours.

c. In particular, the mine action organisation representative in charge of the task/site should record in writing on the completed external IMSMA Core QA forms any response to the written records of the external QA body prior to it leaving the task/site.

d. As a minimum requirement, the mine action organisation representative in charge of the task/site shall be required to:

- Provide a safety brief to the external QA body.
- Sign the relevant completed IMSMA Core QA Monitoring forms that record the results of an external QA inspection, prior to the departure from site of the external QA body.

e. It is the responsibility of the mine action organisation representative in charge of the task/site to inform their organisation of the results of or any concerns resulting from an external QA inspection.

f. Mine action organisations shall, on request, make available all original records and related documentation recording the details of the implementation of any aspect of the QM System to external QA bodies and to other appointed authoritative bodies i.e. internal investigation bodies, Board of Inquiry bodies etc.

g. All Internal QA forms are to be placed into the team's on site task dossier for inspection by relevant UNMAS-UNMISS sub – office during the next EQA visit.

h. Mine action organisations shall prepare and maintain records of all site visits/inspections, and any information needed to understand and

interpret them. All records shall be safely stored for a period of at least five years.

i. Mine action organisations shall ensure that appointed managerial and/or supervisory personnel of tasks/sites are fully aware of and have the documentation listed in paragraph 14.13.a available to assist external QA inspections.

j. General Responsibilities of External QA Bodies within QM System: The following guidelines should be followed:

k. When an external QA team arrive at a task site, the senior NMAA/UNMAS-UNMISS representative shall report to the Control Point and introduce him/herself to the mine action organisation representative in charge of the task/site and state the purpose of their visit.

l. A safety brief shall be given prior to commencement of the external QA inspection after which all safety instructions shall be adhered to.

m. The team should be firm, polite and objective when making any judgements. They shall remain impartial at all times and not let personal opinions; family ties, friendships, religion, gender, political views, and tribal influences affect their judgement and performance of their duties.

n. The body shall not make general commitments to any individual from within the mine action organisation on behalf of the NMAA/UNMAS-UNMISS.

o. The body shall not get involved in any argument with any member of the mine action organisation during the conduct of an external QA inspection. If a heated situation does develop the team shall leave the site and draft a written report detailing the incident to the Quality Management team.

p. The body shall not conduct a debrief of the organisation's site supervisor/team leader in front of the organisation's clearance staff, the body should attempt to conduct "positive criticism" de-briefing away from the team, possibly seated in a vehicle, these de-briefings should be conducted professionally, calmly and politely at all times.

q. Inappropriate or unjustifiable reason for denying and/or hindering any part of the external QA process shall be recorded in writing by the team's representative and submit to the Quality Management Body at the earliest opportunity.

r. The team shall not make changes to techniques that are in accordance with accredited SOPs. The team may only annotate recommendations or changes on the IMSMA Core QA monitoring form for possible subsequent further action.
s. The Operations / QA Officer will conduct the QA / monitoring visit using the UNMAS-UNMISS QA monitoring form.
t. At all times objective evidence shall be used to base decisions upon. Comments based on prior experience of the team may be made, however it is important that any decisions or recommendations subsequently arrived at are based purely upon factual observations.

14.17 EQA Reporting Process

a. The results of the EQA inspections shall be discussed with the mine action organisation representative in charge of the task/site in the way of a full debrief prior to departure from the site, drawing attention to any concerns, particularly those involving safety.
b. All conclusions, recommendations and the details of debriefs shall be recorded in writing by the body on the relevant IMSMA Core QA monitoring form. This recording shall be presented to the mine action organisation appointment in charge of the task/site for review and as confirmation of any discussion/debrief prior to departure from the task/site.
c. The mine action organisation appointment in charge of the task/site shall be encouraged to provide a written response on the IMSMA Core QA monitoring form to the aforementioned written recordings of the body.
d. Completed external IMSMA Core QA monitoring forms shall be signed by appropriate appointments prior to the departure from site of the external body.
e. Following the completion of the visit any completed and signed external IMSMA Core QA monitoring forms shall be submitted via Survey 123 within 24 hours.
f. The mine action organization appointed in charge of the task/site can download a PDF copy of the QA form via the Survey 123 PDF Generator for their own records.
g. Serious concerns resulting from the inspection, especially where the safety or wellbeing of any individual is concerned shall be brought to the

attention of the Quality Management Body as soon as possible. Appropriate further action shall then be implemented.

h. The external monitoring and Quality Management bodies shall on request make available applicable original documentation relating to and/or recording the details of implementation of any aspect of the QM System to each other and to other appointed authoritative bodies i.e. mine action organisations, internal investigation bodies, Board of Inquiry bodies etc.

14.18 Critical & Non-critical Non-conformities

a. General:

Internal and/or external QA inspections may identify non-conformities being conducted. All instances of non-conformities shall be appropriately recorded as previously described in this chapter. The circumstances and/or severity of non-conformities shall determine the subsequent actions taken. The following paragraphs provide guidance on non-conformities.

b. **Non-critical Non-conformities:**

Non-critical non-conformities may generally be defined, but should not be restricted to:

- Breaches of SOPs that are not considered as life threatening

  and/or:

- Breaches of SOPs that may be rectified immediately without

  further training or additional resources being required to be deployed.

c. **Critical Non-conformities:**

Critical non-conformities are generally defined as ‘breaches of SOPs that are considered to present significant safety, environmental or quality risk’. The following list, although not exhaustive, gives examples of critical non-conformities:

- When the prescribed communication network is not fully functioning.
- When there is no medical support in accordance with the organisation's SOP and/or NTSG.
- When there is insufficient or incorrect marking of hazardous areas where activities are being conducted.
- When any personnel within the hazardous area during operations are not wearing prescribed PPE.
- Where there is inadequate supervision in accordance to the clearance organisation's SOP.

d. There may be occasions when non-conformities outside of the scope of SOPs may occur. The following list, although not exhaustive, provides examples of such non-conformities that may be recorded:

- The repeated failure to apply accredited management systems
- Refusal to allow monitoring or inspection to take place
- Interference with monitoring or inspections
- The premature release of cleared land
- Application of processes known to place staff or the local population at unacceptable risk.

e. In all instances where non-conformities occur, effort should be made by both the operator and the QM staff to identify the root cause of the problem and that this is used to identify appropriate steps to remedy the failing and to use this knowledge to improve the manner in which operations are conducted.

f. It should also be recognised that not all failings are intentional and may well be the unintended consequence of otherwise benign and sensible actions, and that there is no obligation within the process to apportion blame.

g. NMAA/UNMAS UNMISS EQA officers shall, in writing, document the details of the non-comformity observed with the team being inspected before departing the team work site. An OPS Visit form annexed to this chapter shall be used to record the incident. The team supervisor shall counter sign the form. Further details shall then be entered in the Survey123 portal at the earliest opportunity.

14.19 Sanctions and Penalties

a. If and when an agency is found to be either showing trends within the quality reporting process that are indicative of potential failing or should the agency be found to not be following their accredited Quality Management /Control /Assurance processes, then this will result in action being taken by the National Authority/UNMAS-UNMISS which could include any or several of the following;

- Task suspension
- Placed on special QA monitoring
- Required to conduct remedial training
- Removal of identified staff from the project and their replacement by more suitable and competent personnel.
- Cancel/suspension of accreditation

b. Suspension of Tasks:

There may be cause to suspend tasks for safety reasons. The following list, although not exhaustive, gives examples when the relevant body may suspend a task on behalf of NMAA/UNMAS-UNMISS:

- Where a number of non-critical non-conformities are observed that either individually or as a whole either cannot be

adequately and effectively rectified immediately or that as whole constitute a threat to life.

- Where a critical non-conformity has been identified.
- Where there is a current or imminent threat from external factions to the security and safety of the body, mine action organisation or other personnel.
- When there is any encroachment into hazardous areas that cannot be resolved.
- Where there is a recurrence of non-critical non-conformity/ies within a team identified during separate visits.
- As a result of a demining accident/incident (refer to Chapter 15).
- In circumstances where it is considered the demining organisation is breaching the terms of its accreditation, or where there is concern for the safety or wellbeing of any individual, the team is authorised to immediately suspend mine action activities on that task/site. In such circumstances the team shall explain the reasons for this action to the mine action organisation appointment in charge of the task/site and shall record said reasons for later reference. The team shall notify NMAA/UNMAS-UNMISS Office of the decision and the reasons for it at the easiest opportunity. Further necessary actions shall then be addressed.

c. Following the suspension of any task, the UNMAS Chief of Operations shall be immediately informed and all relevant information shall be clearly and appropriately recorded. Only when the issues have been resolved/rectified and only on the authorisation of the UNMAS Chief of Operations shall suspended tasks be allowed to recommence.
d. As a general principle the suspension of tasks should be seen as an extreme measure and all parties shall collaborate to ensure that the disruption to mine action activities is minimized. The suspension of a

task may result in the suspension or termination of an operational accreditation.

e. Special QA Monitoring: Special QA Monitoring shall be conducted by the External Monitoring Body.

f. Special QA Monitoring aims to identify and confirm that problems, non-conformities and/or other such issues have been resolved. Such inspections shall be conducted in an open manner in consultation with the management of the particular clearance organisation. The Quality Management Body shall ensure objectivity and impartiality of conducting Special QA Monitoring evaluations.

g. If, after conducting QA Special Monitoring on at least two separate occasions, identified concerns have not been resolved, the Quality Management Body in consultation with the Chief of Operations shall review the accreditation licence.

h. It shall be appropriately and clearly annotated that Special QA Monitoring is being conducted on the particular asset in question.

i. The following are examples of circumstances when special monitoring may be required:

- After the suspension of a task as described in paragraph 14.20.b
- Starting a task in an unfamiliar area.
- Working on a difficult or hazardous task (e.g., undulating ground, rocky, highly vegetated, residential, tripwires and improvised mines).
- A change in supervisory personnel or when inexperienced personnel are managing a task.
- Handover to national staff as part of the capacity building process.
- Commencing operations after a lengthy period away from operations or after completing a training course.
- Introduction of new demining procedures or equipment.

- Conducting field trials with equipment and machines. Multiple assets working at a task.
-

j. Remedial training:

The Quality Management Body, or the UNMAS Chief of Operations, may instruct that (re-)training be carried out as a remedial action if a critical non-conformity indicates that a lack of knowledge or skills exists. Remedial training can be instructed for the entire team or to a particular individual such as the site manager. The extent of trainings will relate to the nature and severity of the identified non-conformity, and should only be conducted once it has been established that the drills being taught are no themselves part of the root cause of the problem that the training is attempting to rectify.

k. When a period of re-training is instructed the respective organisation's management shall submit a remedial training plan to UNMAS COO and to the NMAA for approval prior to the training commencing. Special monitoring will normally take place upon the completion of remedial training with the number of special EQA visits dependent on the severity of identified no-conformities.

l. Removal of staff:

In extreme cases, such as those of gross misconduct, one or more employees of an organisation may be identified as being unsuited to either work or supervise activities in the Mine Action sphere. In such cases the Quality Management Body, or the UNMAS Chief of Operations may recommend to the individual's employer that his (or her) employment be terminated or that he be demoted within the management structure of the organisation. Any such termination or demotion must be carried out in accordance with the labour laws of South Sudan.

m. Suspension and cancellation of accreditation:

The suspension of accreditation shall normally be considered as a temporary sanction that is applied when the performance of an individual or team has shown critical irregularities that require additional training or the advancement of technical resources. When corrective measures have been tried and have not resolved an identified failing, then the accreditation or an individual, a team or an entire organization may be applied.

n. The suspension of accreditation may be extended to an entire Mine Action organization when critical irregularities are identified in more than one demining team that indicate systemic problems at the organizational level.

o. The decision to suspend or remove the accreditation of a demining organisation can only be instructed by the Quality Management Body.

14.20 IMSMA Forms for Internal and External QA Inspection

a. Internal and External QA shall be documented using the relevant UNMAS-UNMISS QA evaluation reports. Specialist reports relating to specific disciplines such as Risk Education shall also be used when appropriate.
b. External Quality Assurance forms are to be completed by the UNMAS-UNMISS/NMAA staff on the IMSMA Core system via the Survey 123 platform.
c. Each mine action organisation shall be required to complete the form in full in Full Assessments and those sections that have been assessed where relevant on General Assessments.

14.21 Summary

a. The NMAA/UNMAS-UNMISS QM system has been designed to ensure that an appropriate, suitable and sufficient QA monitoring process that consists of regular monitoring visits and auditable processes at all stages of operations is implemented. If implemented correctly at all levels it shall enhance the safety, effectiveness and efficiency of operations whilst not impinging on or disrupting operations in any way.

b. The NMAA/UNMAS-UNMISS QM system is aimed at confirming that mine action organisations are applying their accredited management processes and operational procedures in a safe and efficient manner.

15 Annex A to NTSG Chapter 14 'Operations Visit Form'

Operations Visit

16 TASK DOSSIER: HA ID Number:

Date:

Brief narrative of the site

☐ 1. Clearance proceeding as per clearance plan without any changes

☐ 2. Amendments to clearance plan

Tick which box is appropriate

Reasons and explanations.

3. Size of area cleared m²:-

   Number of Items found:- Type Type:

   Size of area remaining without any further findings……N/A……m²

   Estimated time remaining to completion of task……days

-

Operations Officer
NMAA/UNMAS

Site Supervisor
(Org Name)

South Sudan

National Technical Standards Guidelines

Date: 03 October 2024

Chapter 15

Investigations Mine/EO

Accidents & Incidents

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15.1 Introduction

Effective reporting and the thorough investigation of mine/EO accidents and incidents play an essential part in mine action management. Information collected and presented in a clear and accessible format will contribute to the 'lessons learned' process and assist in any future emergency response, improving the quality of the demining process and reducing the likelihood of future demining accidents and incidents.

The aim of this NTSG is to provide standards and guidelines on the minimum requirements for the reporting and investigation of mine/EO accidents and incidents within the South Sudan mine action programme. This NTSG is based on the guidelines and principles outlined in IMAS 10.60.

15.2 Reporting of Accidents/Incidents

Accidents and/or incidents shall be reported to the NMAA/UNMAS-UNMISS accordingly, in the following circumstances:

- When an event involving mine/EO or explosives results in harm to a mine action organisation employee, a site visitor or a member of the local population at a demining workplace.
- When an event involving mine/EO or explosives results in damage to equipment or property.
- At all times when a mine/EO is located in an area previously cleared, recorded as cleared or marked as cleared.
- Where mine action organisation employees, site visitors or the local population are exposed to intolerable risk that results from a lapse in the application of the SOP or the failure of equipment issued to employees.
- When any unplanned detonation of a mine/EO or explosives occurs irrespective of the cause or outcome.
- If a non-mine/EO or non-explosive related accident occurs that requires the urgent evacuation of a casualty to an advanced medical facility for treatment, involving UN personnel, contractor or sub-contractor of the UN, or UN-issued vehicles or equipment.
- The NMAA/UNMAS-UNMISS on receiving reports of mine/EO accidents and/or incidents, that highlight inadequacies of equipment, standards or approved SOPs, or that indicate the presence of new types of hazard, shall disseminate a general warning to all mine action organisations

applying the same equipment, standard or SOP, or likely to meet the same new hazards.

a. Immediate Report. Provides essential information about the accident/incident, which permits the NMAA/UNMAS-UNMISS Headquarters to assist with any emergency response and if necessary to provide a general warning to other mine action organisations. Submitted via appropriate in place communications system to the NMAA/UNMAS-UNMISS Headquarters within 30 minutes of the mine/EO accident/incident occurring. The minimum information required is:

- **WHEN** – Time of accident.
- **WHERE** – Location, Payam, Boma Task ID, lat / long coordinates.
- **WHO** – Organisation, C/S and/or name, nationality and blood group of casualty .
- **WHAT** – Brief summary of available information (cause and injuries).
- **CASEVAC INTENTION** – What is intent at this time
- **ASSISTANCE** – Is immediate assistance required and if so what
- **CONFIRM** - VHF/HF radio channel / telephone number for further contact.

b. Initial Report. Upon receipt of the Immediate Report the NMAA/UNMAS-UNMISS Headquarters shall continue to monitor the situation and to provide support where required. As soon as the casualty is successfully transferred to a hospital and is in suitable medical care, a more detailed report shall be made by the mine action organisation to the NMAA/UNMAS-UNMISS Headquarters. This is generally made via telephone. A confirmation e-mail shall be sent within 24 hrs of the telephone call that includes the information that was discussed. The telephone correspondence and the confirmation e-mail shall include the following:

- Confirmation that the casualty is in suitable medical care and that no further immediate assistance is required.
- Confirmation of the details contained in the Immediate Report.
- Confirmation that all other mine/EO sites where the same organisation is operating are shut down and that the scene of the mine/EO accident/incident is as secure as possible, pending the arrival of the Internal Investigating team .

- In addition to the above, the follow-up confirmation e-mail shall include the name of the persons on the telephone call, and the time and date of the call.

c. Detailed Report. The mine action organisation shall complete an IMSMA Database Demining Report and attach as much relevant detail as possible and submit it to the NMAA/UNMAS-UNMISS Headquarters within 48hrs of the incident. If this form is not relevant to the incident/accident then an appropriate written report covering all details shall be drafted and submitted.

15.3 **Investigation Requirements**

All employees of mine action organisations shall provide complete and accurate information about the circumstances surrounding the accident/incident and opinions on ways to improve procedures that may assist in preventing a recurrence. The NMAA/UNMAS-UNMISS shall have the final decision on whether an accident/incident warrants or requires an investigation. However, the following provides details of occasions and/or circumstances which should result in an investigation:

- An accident resulting in injury or death.
- An incident resulting in damage to property.
- An incident causing damage that may result in a major claim for compensation from a member of the public.
- An incident involving a major event causing significant damage.
- An incident involving the discovery of a mine or ERW in an area previously cleared, recorded as cleared or marked as cleared.
- An incident where mine action organisation employees, site visitors or the local population are exposed to intolerable risk that result from the application of approved standards or procedures including the failure of equipment.
- An incident involving the unplanned detonation of a mine, ERW or explosives.
- An incident which could attract media attention or media report.
- When considered necessary by the NMAA/UNMAS-UNMISS a non-mine, ERW or explosive related accident, involving UN personnel, contractor or sub-contractor of the UN, or UN-issued vehicles or equipment.

15.4 **Investigation Types**

An accident/incident formal investigation may consist of one of three levels of investigation:

I. **Board of Inquiry (BOI):** Ideally any BOI should shall be comprised of a principal member from the NMAA/UNMAS-UNMISS, a member from a third party mine action organisation and one member from the mine action organisation involved in the accident/incident but this shall not be any person directly involved in the accident/incident. In light of both the transition process of mine action from NMAA/UNMAS-UNMISS to the national authorities, and the importance of capacity building, the BOI Convening Order shall include one representative as a member from the relevant national authority (i.e., NMAA representative). Additionally, it is recommended that a lawyer should be a member of each BOI.

II. **Independent Investigations:** An appropriately qualified and experienced independent investigation officer appointed by the NMAA/UNMAS-UNMISS Headquarters shall carry out the independent investigations.

III. **Internal Investigations:** An appropriately qualified and experienced member of the mine action organisation involved shall carry out the internal investigation, but this shall not be any person directly involved in the accident/incident.

15.5 **Investigation Procedure**

On the initiation of any formal investigation NMAA/UNMAS-UNMISS shall ensure that:

a. The investigation commences as soon as practicably possible.
b. The personnel selected to conduct a formal investigation had no involvement with the accident/incident and have the qualifications, experience and skills needed to conduct a full and thorough investigation.
c. The accident/incident site is preserved as far as possible, until released by the BOI or Investigating Officer, in order to prevent loss of valuable information.
d. When an investigation team is to examine or extract evidence from an accident site, under no circumstances shall personnel enter an accident/incident area prior to a cleared access lane being opened.

e. Photographs of the accident/incident site are taken immediately.
f. Unless exceptional circumstances exist, the investigation report is submitted on time and that it is complete, clear, concise and accurate (including conclusions and recommendations for improvement).
g. The Convening Authority subsequently on reviewing the findings, shall consult with necessary parties within the national authorities, the programme, UNOPS, and UNMAS for their respective comments, as required.
h. Should the senior in-country appointment of the mine action organisations involved wish to have any additional comments annexed to the report, he or she shall submit them in writing and they shall be added to the report subsequent to distribution.
i. The senior in-country appointment from the mine action organisation, in consultation with NMAA/UNMAS-UNMISS, shall ensure that recommendations are implemented without delay. The NMAA/UNMAS-UNMISS shall ensure that summaries of lessons learnt are distributed to all mine action organisations as soon as possible.
j. Within three months of the BOI report findings, NMAA/UNMAS-UNMISS shall produce a follow-up report that describes how the recommendations were applied. If some of the BOI recommendations were not applied, it should explain the reasons for this decision.

15.6 Investigation Reports

The following reports shall be produced as applicable:

a. **Internal Investigations and Detailed Investigation Report:**
Detailed Investigation Reports shall be automatically initiated for all known accidents/incidents by the mine action organisations involved. The Detailed Investigation Report is the result of an Internal Investigation carried out by the mine action organisation involved in the accident/incident. An Internal Investigation Officer shall complete the report, but this shall not be any person directly involved with the accident/incident. It shall be completed as soon as practically possible after the accident/incident and passed to the NMAA/UNMAS-UNMISS Headquarters within 2 working days of its completion. A Detailed Investigation Report should precede a BOI and/or an independent investigation if required and should then form part of the formal BOI Report or Independent Investigation Report.

b. **BOI and Independent Investigations:**

BOI or Independent Investigations are initiated by the NMAA/UNMAS-UNMISS. For both investigations a Convening Order shall be issued and personnel shall be appointed to carry out the investigation.

c. **BOI and Independent Investigation Report Findings:**

On completion of the BOI/Independent Investigation, the investigation report shall be presented to the Convening Authority (CA). The CA shall discuss with the BOI/Independent Investigation Team matters of report writing and whether they have answered the questions posed in the convening order. Following this it shall be signed, bound and produced as four copies for distribution as follows:

- 1 x copy (each) for the NMAA/UNMAS-UNMISS Headquarters.
- 1 x copy for the mine action organisation in-country senior appointment.
- 1 x copy for the mine action organisation parent HQ.
- NMAA/UNMAS-UNMISS Headquarters shall hold an additional electronic copy.

15.7 Reporting of Accidents to Local Authorities & Immediate Family

The senior in-country management of the mine action agency/agencies involved in the accident shall ensure that the accident is reported to local authorities and immediate family.

In addition NMAA/UNMAS-UNMISS shall confirm that the accident is reported to local authorities and immediate family.

Cultural and religious beliefs shall be considered when informing the immediate family of the deceased/injured and dealing with the repatriation.

15.8 Procedure Following an Accident

Subsequent to an accident, the following procedure shall be adopted:

- Account for all personnel and make sure no one else is injured.

- Support those personnel shocked by the accident.

- Account for all equipment and stores.
- Close off all lanes and the area of the accident.
- Photos shall be taken of the accident area and submitted with the reports.
- List all the people who witnessed the accident or worked in the immediate area, where possible separate them and assist them to write their statements.
- Return to the base and assist the headquarters staff to conduct an investigation.
- Start preparations for the Accident Investigation according to Chapter 15. As soon as possible implement the accident investigation.
- A debrief shall be conducted with all people that were involved in the accident.
- Make available professional counselling services to those shocked by the accident who request professional psychological assistance
- An IMSMA Mine/ERW Incident/Accident Report shall be completed and submitted to the NMAA/UNMAS-UNMISS within 48 hours after the accident occurred.
- All on-site documentation shall be collated and held for the BOI investigation.

15.9 **Responsibilities**

a. NMAA/UNMAS-UNMISS Responsibilities

- Establish and maintain procedures for the reporting and investigation of mine/EO accidents and incidents in accordance with this NTSG.
- Appoint personnel to investigate mine/EO accidents and incidents in accordance with this NTSG. Only one Point of Contact (POC) shall be

the focal point for relaying correspondences between the investigation team and relevant HQs. This is to control the flow of information and avoid confusion and contradictory statements.

- Disseminate the findings of all investigation reports to all mine action organisations operating in South Sudan, and importantly to UNMAS-UNMISS, who may then extract information for other National Mine Action Authorities.
- Coordinate with NMAA/UNMAS-UNMISS in the reporting and investigation process.

b. **Mine Action Organisation Responsibilities**

- Report all known mine/EO accidents and incidents to the NMAA/UNMAS-UNMISS in a timely manner.
- Take immediate photographs of the accident/incident site, and then preserve it until the site is inspected and released by the Board of Inquiry (BOI) or investigating officer.
- Provide access and necessary administrative support to BOI personnel.
- Make available for the investigation the original worksite records, SOPs, training records, radio log and any other pertinent documentation as requested.
- Assist personnel that have been appointed by NMAA/UNMAS-UNMISS to investigate mine/EO accidents and incidents in any way requested in order for them to meet their aims and objectives.

- **c. Mine Action Organisation Employee Responsibilities**

- Apply appropriate standards and SOPs designed to prevent mine/EO accidents and incidents from occurring.

- Report perceived weaknesses in equipment training and procedures that may lead to a mine/EO accident/incident to appropriate managers.
- Report any known mine/EO accidents and incidents; and assist in the investigation as required to appropriate managers.

Annex A - Formal Investigation Guide

	Type of formal investigation		
	Board of Inquiry	Independent Investigation	Internal Investigation
1. A Demining Accident resulting in:			
a. Minor injury to a demining worker.			
b. Serious injury to a demining worker.			
c. Death of a demining worker.			
d. Any injury to a non-demining worker.			
e. Death of a non-demining worker.			
2. A Demining Incident:			
a. Resulting in damage to demining organisation equipment of value less than US$ 5,000.00.			
b. Resulting in damage to demining organisation equipment of value from US$ 5001.00 to US$50,000.00.			
c. Resulting in damage to demining equipment of value more than US$50,000.00.			
d. Causing damage that may result in a major claim for compensation from a member of the public.			
e. Involving a major event that caused significant damage.			
3. A Demining / Mine Incident:			
a. Involving the discovery of a mine or ERW in an area previously cleared, recorded as cleared or marked as cleared. (Due to historical records not being available, NMAA/UNMAS-UNMISS can use the most appropriate type of investigation to resolve such incidents)	Note: Depending on task history and the availability of historical information, NMAA/UNMAS-UNMISS will select the type of investigation needed on a case by case scenario.		
b. Where demining workers, visitors or the local population are exposed to intolerable risk that results from the application of approved standards or procedures including the failure of equipment.			
c. Involving the unplanned detonation of a mine, ERW or explosives on a demining worksite.			
d. Which could attract media attention or media report.			
4. A non-mine, ERW or explosive related accident:			
a. On a demining worksite that requires the urgent evacuation of a casualty to an advanced medical facility for treatment.			
b. On a non-demining worksite, involving UN personnel, contractor or sub-contractor of the UN, or UN-issued vehicles or equipment			

Annex B Detailed Investigation Report Guide

MINE / ERW ACCIDENT AND INCIDENT DETAILED INVESTIGATION REPORT

From: Date report submitted:
To: NMAA/UNMAS-UNMISS

Subject: **MINE/ERW ACCIDENT AND INCIDENT DETAILED**

INVESTIGATION REPORT
Serial Number: (Year/Report Number[1])
References:
To Include:

- Initial Report.
- NTSG's and / or IMAS.
- Demining organisation SOPs.
- Map References.

Part one – INTRODUCTION

To Include:

- Demining organisation name.
- Organisation sub unit, site office/project number, team name/number.
- Name of Worksite Supervisor.
- Location of Accident / Incident (province, district, village, task no, grids etc).
- Date and time of Accident / Incident.
- Type of Accident / Incident.
- Executive Summary of Accident / Incident, to include main conclusive findings (Preventable / Non-preventable).

Part two – DETAILS OF ACCIDENT / INCIDENT
To Include:

- General description of how the Accident / Incident occurred including locations; timings; demining personnel (demining teams, MDD teams and mechanical teams) and any non-demining personnel involved.
- Details of mines, ERW or explosives involved.
- Details on past history of area, to include military units, positions, area usage, known mining activities etc.
- Details of vehicles / equipment involved.
- Photographs, diagrams and plans (location plan and detailed site plan).
- Post-Accident / Incident Investigatory Activities by Investigating Officer.

Part three – ACCIDENT / INCIDENT SITE CONDITIONS
To Include:

[1] E.g., if it's the tenth Investigation Report of 2014 then the number will be 2014/10

- Describe the conditions on the Accident / Incident site at the time of the Accident / Incident in terms of worksite layout and marking, ground and terrain, vegetation and weather:
- Worksite layout and marking. Describe the layout of the worksite in relation to the location of the Accident / Incident covering control areas, general worksite markings and specific worksite markings in the location of the Accident / Incident. Include dimensions and cross reference to SOPs where appropriate.
- Ground and terrain. Describe the ground in terms of type of soil, density or hardness and moisture content. Describe the terrain in terms of flat, undulating or hilly. If required use slope ratios (i.e. 1 in 25) to identity maximum/minimum slopes.
- Vegetation. Describe the vegetation in terms of type, density, size and root structure. Provide dimensions such as height of grass/crops/bush and maximum size of the vegetation stems. Indicate if the roots had an effect on the work or if the vegetation had been burned or cleared in any way.
- Weather. Describe the weather at the time of the Accident / Incident.
- Provide photographs of the site to highlight the Accident / Incident site conditions.

Part four – TEAM AND TASK DETAILS

To Include:

- Team Composition. Provide details of the size and composition of the team (deminers, section leaders, team leaders, supervisors, medics etc), including MDD and mechanical teams.
- The qualifications and experience of personnel directly involved in the Accident / Incident.
- Original Statements of personnel directly involved in the Accident / Incident.
- The results of recent QA monitoring (both internal and external) carried out on the team; and any known problems with the team.
- Task Documentation, Sequence and Procedure of Tasking details. Provide details of the task to include the survey work carried out (general and technical); Implementation / Clearance plan for the task, which should include area to be cleared and depth of clearance.
- Any known mine laying techniques or patterns; the planned use of the land after clearance; time worked on the task; progress in terms of area cleared as a percentage of the total area to be cleared; types and numbers of items found and any problems encountered with the task.
- Include copies of survey reports, Implementation / Clearance plans, task progress reports or any other relevant demining organisation or demining worksite administration documentation.

Part five – EQUIPMENT AND PROCEDURES USED

To Include:

- Equipment used. Provide details of the equipment being used on the site relevant to the Accident / Incident. This may cover detection equipment, Personal Protective Equipment (PPE), deminers toolkits, demolition equipment, communication equipment, medical equipment, vehicles and mechanical equipment. For electronic detection equipment provide details of on-site testing requirements.
- Procedures used. Provide an overview of any procedures used related to the Accident / Incident with reference to SOPs and NTSG's.
- Work routines. Provide details of the work routines being followed on the task at the time of the Accident / Incident and the number of hours worked by personnel (including those involved in the Accident / Incident) on the day prior to it occurring. If work routines involve handovers between personnel, provide details of when the last handover occurred prior to the Accident / Incident and the details of what is covered during handovers for example, detection equipment checks, briefings etc, with reference to SOPs.

Part six – EXPLOSIVE HAZARDS INVOLVED

To Include:

- Details of any mines, ERW, explosive devices or explosives that were involved in the Accident / Incident, such as common names, a detailed description of the components (name, type, size or weight) and construction details.
- For items located also include the position in/on the ground (i.e. surface or buried and if buried depth and attitude in the ground) and whether item was trip wired, command detonated or booby trapped.
- For incidents involving a detonation provide details of blast holes (size and depth); mine/EO or other debris located and any known or suspected items involved.
- Photographs for any items located or photographs of blast holes and debris.

Part seven – DETAILS OF INJURIES

To Include:

- Details of all personnel (including non-demining workers) injured as a result of the Accident / Incident. Include names, occupation, details of injuries and cross reference the names to the activities that the personnel were carrying out at the time of the incident. All injured personnel no matter how minor the injuries they received are to be included.
- The location of the injured personnel, immediately after the Accident / Incident occurred, should be shown on the Accident / Incident detailed site plan.

Part eight – EQUIPMENT/PROPERTY/INFRASTRUCTURE DAMAGE

To Include

- Details of all equipment, property or infrastructure damaged as a result of the incident:
- For equipment include detailed descriptions to include owner, make, model, age, serial numbers (where applicable), current value (if known), details of

damage, insurance held by the owner/organisation and if possible an assessment of the cost of repair/replacement.

- For property and infrastructure provide details of the owner(s), damage incurred, insurance held by the owner(s) and if known the cost of restitution or repair.
- Details of any PPE involved in the Accident Incident by type/function, make, model or any other identifying details. Describe any damage to the PPE and provide comment as to the effectiveness or otherwise of the PPE in preventing injury (or more serious injury) to personnel involved in the Accident / Incident.
- Photographs of damaged equipment, property or infrastructure and copies of any other supporting evidence (ownership papers, property deeds, insurance details, repair quotes etc).

Part nine – MEDICAL AND EMERGENCY SUPPORT

To Include:

- Details of the medical and emergency support (communications and evacuation transport) available at the incident site prior to the Accident / Incident occurring. This may be cross referenced to SOPs. Also if applicable to the Accident / Incident, include details of the frequency of demining Accident response plan practices and the date the last practice was carried out.
- Provide timings for key activities during the casualty evacuation for example the evacuation of the casualty(ies) off the Accident / Incident site, the arrival at the initial medical facility, departure from the initial medical facility and arrival at the final medical facility.
- Comment on the effectiveness or otherwise of the medical and emergency support in terms of planning and preparation, medical equipment and supplies, communications, evacuation transport, medical treatment facilities and external support (from other mine action organisations) to the casualty evacuation. Where deficiencies were identified provide details and recommendations for improvements.

Part ten – REPORTING PROCEDURES

Comment on the effectiveness or otherwise of the initial Accident / Incident reporting procedures carried out.

Part eleven – SEQUENCE OF EVENTS.

Provide a sequential list of events (timings and dates), from the initial time of the Accident / Incident through to and including the casualty evacuation procedures; also to include actions of the Investigating Officer.

Part twelve – CONCLUSIONS AND RECOMMENDATIONS

Based on the Accident / Incident findings, sequentially detail full and detailed conclusive comments on all salient findings.

Based on the Accident / Incident conclusions, sequentially detail full and detailed recommendations on all conclusions.

Signature of Investigating Officer
Name of Investigating Officer
Position of Investigating Officer

Annexes:
To Include:

- Copy of the initial Accident / Incident Report.
- Witness statements.
- Accident / Incident map location and detailed site plans.
- Site photographs.
- Training records, QA monitoring reports, survey reports, Implementation / Clearance plans, task progress reports or any other demining organisation or demining worksite administration documentation required.
- Photographs and technical details of items located, blast holes or mine/EO debris.
- Medical records or injury data sheets.
- Photographs of damaged equipment, property or infrastructure.
- Copies of equipment/property ownership documentation (ownership papers, property deeds, insurance details etc).
- Damage repair quotes/estimates.
- IMSMA Demining Accident / Incident Report and Casualty Report.

Annex C Formal Investigation Convening Order & Terms of Reference

EXAMPLE OF A FORMAL INVESTIGATION CONVENING ORDER AND TERMS OF REFERENCE

CONVENING ORDER FOR ACCIDENT / INCIDENT INVESTIGATION BOARD OF INQUIRY

File reference (incident serial number): (Year/Number[2])

Date:

References:

A. Demining Organisation Accident/Incident Detailed Investigation Report

B. National Technical and Safety Guidelines (NTSG)

C. Demining Organisation Accredited SOPs

1. The Head of the South Sudan NMAA/UNMAS-UNMISS hereby appoints the following members to form a BOI / Independent Investigation Team to investigate the [insert brief description of Accident / Incident] that occurred on the *DATE*.

Chairman- *NAME AND POSITION HELD*
Member- *NAME AND POSITION HELD*
Member- *NAME AND POSITION HELD*
Member- *NAME AND POSITION HELD*

2. The BOI / Independent Investigation Team shall carry out a full investigation and provide a written report to the undersigned by *DATE*. In the event that the completed report is not able to be submitted on the date indicated, an interim report outlining progress with the investigation and the reason for the delay shall be submitted on that date and further interim reports provided every day until the completed investigation report is submitted. The report shall be written in the English language.

3. The Report of the BOI / Independent Investigation Team shall consider the details as specified in Annex A and those annotated at Appendix 1 to this Convening Order. It should be noted that these details however are by no means exhaustive and are not intended to limit your investigation.

4. The BOI / Independent Investigation Team shall also review Reference B and C as they relate to this incident/accident, in particular as they may relate to the actions taken leading up to the incident/accident. The BOI shall comment on the adequacy and effectiveness of Reference B and C, and where appropriate make recommendations for amendments.

5. The BOI / Independent Investigation Team shall comment on the adequacy of the relevant IMAS and make recommendations for review as appropriate.

[2] e. g., if it's the tenth Convening Order of 2014 then the number shall be 2014/10

6. The BOI reports to the Convening Authority (CA). The CA shall discuss with the BOI matters of report writing and whether they have answered the questions posed in the convening order. Following this, it shall be signed by the BOI/Independent Investigation Team and distributed by the CA.

NAME
POSITION
DATE

Appendix 1 to Convening Order *DATED*

CONTENTS OF REPORT FOR ACCIDENT / INCIDENT INVESTIGATION

The Report of the Board of Inquiry should consider the following details, if applicable:

Introduction.

Documentation, Sequence and Procedures of Tasking.

Geography and Weather.

Priority and Type of Task.

Site Layout and Marking.

Management, Supervision and Discipline on site.

Quality Assurance and Quality Control.

Communications and Reporting.

Medical, including injuries sustained.

Personalities, Team Identity Numbers and Interviews.

Training and experience of personnel involved.

Equipment and Tools.

Details of the Mine/ERW involved.

Evidence of re-mining.

Dress and Personal Protective Equipment.

Use of Dogs.

Use of Machines.

Particulars of Deminer(s) Insurance.

Detailed chronological account of the activities on the day of the Incident.

Summary.

Conclusion.

Recommendations.

If applicable, the following documents should also be included with the report:

- A copy of this Convening Order.
- A copy of the Demining Organisation's Detailed Investigation Report.
- Witness statements.
- Sketches, diagrams, location and site plans as appropriate.
- Photographs highlighting important aspects of the incident for example site conditions; mines, ERW, explosive devices or explosives involved; blast holes and blast debris; injuries to personnel; and equipment, property or infrastructure damage.
- Task documentation, which may include survey reports, clearance plans, demining worksite plans or demining worksite documentation.
- Extracts from Reference B and C where applicable.
- Medical records or coroner's reports.

Any further documentary evidence gathered during the investigation.

Annex D: Sample Board of Inquiry Report Format

The South Sudan NMAA/UNMAS UNMISS

Ref No. Year/BOI Number[3]

BOARD OF INQUIRY (BOI) INVESTIGATION REPORT

Report Category

Incident: DEMINING ☐ MINE ☐

Accident: DEMINING ☐ MINE ☐

Cause

Uncontrolled detonation of mine/EO by:

Human ☐ MDD ☐ Vehicle ☐ Machine ☐ Animal ☐

Missed mine/EO by:

Human☐ MDD ☐ Machine ☐ Other: ☐ (survey only conducted)

Report Compiled By

Agency: NMAA/UNMAS-UNMISS Name: Position:

Location of Accident/Incident: **Date of Accident/Incident**:

Casualty(s): Human ☐ MDD ☐ Other ☐ None ☐

Agency Involved:

[3] e. g., if it's the tenth BOI of 2014 then the number shall be 2014/10

BOARD OF INQUIRY REPORT

FOR ACCIDENT/INCIDENT INVESTIGATION

Table of Contents

No.	Title	Page
1.	Introduction	
2.	Accident Details	
3.	Location of the Accident	
4.	Casualties	
5.	Witnesses	
6.	Details of Activities on the Day of the Accident	
7.	Details of the Mine/ERW involved	
8.	Evidence of Re-mining	
9.	Particulars of Insurance	
10.	Relevant Documentation	
11.	Conclusions and Recommendations	

Annexes

A. Convening BOI Order dated _____

B. A copy of the Demining Organisation's Detailed Investigation

C. Report dated _____ __

D. Sketches, diagrams, location and site plans as appropriate.

E. Photographs highlighting important aspects of the incident for example site conditions; mines, ERW, explosive devices or explosives involved; blast holes and blast debris; injuries to personnel; and equipment, property or infrastructure damage.

F. Quality Assurance Evaluation Report (most recent to the time of the

G. accident/incident)

H. Relevant Standard Operating Procedures of Organisation(s) involved

I. Task documentation, which may include survey reports, clearance

J. plans, demining worksite plans or demining worksite documentation.

K. Medical Reports of Those Injured in the Accident, if applicable

L. Statements of Witnesses, if applicable:

i. Name of Witness

ii. Name of Witness

M. MEDEVAC/CASEVAC Training Records, if a person was injured

N. Add any other relevant information as annexes to the BOI.

The above order of the annexes should be the same in every report. If an annex is not relevant to a particular report, insert a page in that Annex section that states it is not relevant.

Add any other relevant sections to the table of contents. Other relevant sections may include, but are not limited to:

- Geography and Weather
- Priority and Type of Task

- Site Layout and Marking
- Management, Supervision and Discipline on site
- Quality Assurance and Quality Control
- Communications and Reporting
- Training and experience of personnel involved
- Equipment and Tools
- Dress and Personal Protective Equipment
- Use of Dogs
- Use of Machines

(Please number all paragraphs accordingly)

1. Introduction

1.1 [Insert a brief description of the event leading to this investigation, including the date of the accident/incident]. In accordance with the National Technical Standards and Guidelines (NTSG), the Programme Manager of NMAA/UNMAS-UNMISS issued a written convening order on [DATE] for a Demining Incident Board of Inquiry (BOI) to explore the findings of the preliminary investigation. (See Annex A)

1.2 The Board members are:

- Chairman: Name, NMAA/UNMAS-UNMISS
- Member: Name, Organisation
- Member: Name, Organisation
- Member: Name, Organisation

1.3 The entire Board convened in [insert location] on [DATE].

2. Accident/Incident Details

2.1 *Provide a detailed account of the events leading to the accident/incident and the actual accident incident. Also, include an analysis of the situation.*

Add additional paragraphs as necessary and number accordingly.

3. Location of the Accident/Incident

3.1 *Provide the history of the location site, such as the time it was identified as a dangerous area, etc. Include a detailed description of the location of the accident/incident. If possible, list the approximate coordinates of the accident/incident.*

4. Casualties

4.1 *List any persons who were injured or fatally injured in the accident. Include a short description of the injuries.*

5. Witnesses

The BOI interviewed the entire list of witnesses provided below.

Name	Title	Remarks

Other Witnesses

Name	Title	Remarks

Details of Activities on the Day of the Incident/Accident

6.1 *All timings listed below are estimated times with a margin of error of plus or minus 5 minutes.*

	Time	Description of Event

Details of the Mine/ERW involved

7.1 *Include a description of any mine/EO involved in the accident/incident.*

Evidence of Re-mining

8.1 *Explain any evidence of re-mining. If the investigation concludes that it is not the case of re-mining, describe the evidence that led to this conclusion.*

Particulars of Insurance

9.1 *Describe the particulars of the insurance that is relevant to the accident/incident. For example, if a person was injured, describe the health insurance that was available for that person.*

10. Relevant Documentation

10.1 *Explain which documentation was considered and any necessary documentation that was missing.*

11. Conclusions

11.1 Conclusion *X*

11.2 Conclusion *Y*

Add additional paragraphs as necessary and number accordingly.

12.2 Recommendations

12.1 *Recommendation X*

12.2 *Recommendation Y*

Add additional paragraphs as necessary and number accordingly.

Please note that each recommendation should have a direct correlation to the conclusion and should be ordered accordingly.

This report is the complete, final record of the Board of Inquiry into this accident

Signature

Name

Position

Chairman of BOI

Date

Signature

Name

Position

Member of BOI

Date

Signature

Name

Position

Member of BOI

Date

Signature

Name

Position

Member of BOI

Date

- **Annex E Responsibilities for Reporting Accidents / Incidents**

Demining Organisation	Chief of Operations NMAA/UNMAS-SS	Head of NMAA/UNMAS-SS
Initial Contact Report: Immediately provide essential information about the accident/incident to NMAA/UNMAS-SS	Follow-up Report: Upon receipt of initial contact report should inform NMAA/UNMAS-SS Headquarters and National Authorities	Communicate with UNMAS and UNOPS about any accident or incident as soon as possible
Written Report: Within 48 hours, shall complete an IMSMA Database Demining Report and attach as much relevant detail as possible and submit it to NMAA/UNMAS-SS	E-mail Confirmation must be sent within 48 hours, confirming the information discussed via telephone for the follow-up report	Determine whether a BOI or Independent Investigation shall be conducted
In the case of an accident, senior in-country management shall ensure that it is reported to local authorities and immediate family.		In the case of an accident, confirm that it is reported to local authorities and immediate family.
Conduct an internal investigation and draft a report to be submitted to NMAA/UNMAS-SS within two working Days	Collate the initial information of the accident/incident	Initiate an Independent Investigation or BOI, if appropriate under the NTSGs
Provide any documentation and assistance to the Independent Investigation/BOI in a timely and efficient manner	Provide any documentation and assistance to the Independent Investigation/BOI in a timely and efficient manner	Review the report findings and distribute copies to appropriate offices. Also, ensure recommendations are implemented and distribute lessons learnt to the mine action community.

South Sudan

National Technical Standards Guidelines

Date: 03 October 2024

Chapter 16

Health & Safety, Social & Environment (HSSE)

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16.1 **Introduction**

a. Several of the components of mine action are inherently dangerous and pose threats to the environment as well as personnel. However, by ensuring that mine action personnel are well prepared, that safe work practices are applied, and that due consideration is given to environmental impact, the level of risk to personnel and the environment can be greatly minimised.

b. It is to be noted that HSSE for Mine Action organisations is only applicable to activities where land will be processed or disturbed during clearance of explosive ordnance contamination which may include Technical Survey, Manual Mine Clearance, Mechanical Mine Clearance, Battle Area Clearance and EOD Spot tasks. HSSE for mine action organisations is not applicable to Explosive Ordnance Risk Education, Non-Technical Survey and Victim Assistance.

b. NMAA/UNMAS-UNMISS as the authority for mine action within South Sudan, are charged with the responsibility for establishing the requirements for occupational health & safety (H & S) and social & environment (S & E) management systems for mine action and for ensuring that mine action organisations correctly apply them.

16.2 **Scope**

a. This standard describes the requirements for HSSE management systems in mine action in South Sudan and the key elements of those systems.

16.3 **Work Routines**

a. The urgency of humanitarian demining places strong pressures on mine action organisations and individuals to achieve results quickly. Such pressures are understandable, however they shall not be allowed to override the controls and monitoring necessary to ensure humanitarian demining is conducted as safely as possible.

b. In recognition of this need, all mine action organisations shall conform to the work routines described below. These routines apply equally to humanitarian and development demining.

1.1 **Daily Work Routines:**

c. Personnel employed on humanitarian demining activities shall not ‘work’ more than a total of 10 hours in any workday of which no more than 6 hours, excluding breaks, shall be physical demining. For the purposes of this standard, the

term ‘work’ does not include travel times to and from the task-site, set-up/pack-up processes, briefings/debriefings, organized breaks, movement to and from the control-point to/from the place of work and any other activity prior to the commencement of works signal/order or cessation of works signal/order. Personnel employed on demining, including supervisors, shall be given a minimum break of 10 minutes for every 60 minutes of demining work.

1.2 **Rest Days:**

d. Personnel employed on demining operations shall not work more than 21-days without a break. Breaks should be applied on a minimum ratio of 1-day off for every 6-days worked.

1.3 **Long-Term Routines:**

All personnel employed on demining, including supervisors, shall have a break of at least 7 consecutive days for each four-month period worked.

16.4 **Staff Insurance Cover**

a. All national staff employed by mine action organisations in South Sudan shall be provided, at no cost to the individual, with insurance cover.

16.5 **Health & Safety Requirements**

1.4 **Risk assessment:**

The site Implementation Plan (IP) acts as a risk assessment. When conducting Non-Technical Survey (NTS) for the task all hazards are to be identified for both the worksite and the team accommodation location for the duration of that specific task. The format for IPs is described in Chapter 22 to this NTSG.

1.5 **Mitigation measures:**

Mitigation measures for all hazards identified for that specific site are, in normal circumstances, stated as part of the organisation’s SOP. In cases when a hazard is identified and there is no SOP, a Site-Specific SOP or Technical Note shall be produced either as an annex or as an enclosure to the IP and is reviewed by the UNMAS-UNMISS sub office before work can commence.

1.6 **Amendments:**

The IP shall be amended as necessary in the event of a new hazard being identified or as a result of any team member applying the 'NO-STOP' policy as described in the introduction to this NTSG. This amendment shall be labelled as an Amendment to Implementation Plan (AIP) and shall undergo the same quality controls as the IP. In the event of the No-STOP policy being applied the organisation's in country senior management must be inform of the identified unforeseen risk.

1.7 **Implementation Plan records:**

The IP and any subsequent AIPs are to be retained in the work site file and archived once the task has been completed.

1.8 **Management of hazardous materials:**

Occupational diseases may occur as a result of exposure to hazardous substances in the form of particulates, ingested materials or skin contact with substances. It is the responsibility of the organisation to identify any hazardous materials or chemicals at the procurement stage and shall ensure that the relevant Material Safety Data Sheets (MSDS) are obtained from the manufacturer. MSDSs shall be available to any employee, sub-contractor or visitor who may interact with the materials/chemical substances on site. Copies of the MSDS shall be kept in the main site file and inspected as part of internal and external quality assurance inspections.

1.9 **Access and site security:**

It is the site supervisor's responsibility to ensure that all site security requirements identified in the IP are fully implemented.

1.10 **Site Induction briefings:**

Prior to work commencing an induction briefing for all team members and visitors to the site is delivered by the site supervisor on a daily basis. The format for the brief is at Chapter 22 to this NTSG and forms part of the Site Daily Operations Brief.

1.11 **Site inspections:**

The criteria for regular and ad hoc site inspections in the form of IQA and EQA is described in detail in Chapter 14 to this NTSG. Such inspections shall not be limited to the work site and shall include periodic inspections of the accommodation site and HQ locations.

1.12 **H & S awareness:**

H & S awareness shall be included in all training programmes and then maintained during daily safety briefings and specific hazard Toolbox Talks where necessary.

1.13 **Emergency and Evacuation procedures:**

At all times the team shall have a written Emergency response Plan (ERP) which enhances the site CASEVAC plan. The ERP shall be submitted and retained by the in-country HQ and shall state as a minimum:

- Date of last review.
- Team location and alternate location.
- Evacuation Plan.
- Liaison carried out with local authorities and contact details.
- Compound security description.
- Vehicle security.
- Communications.
- Explosives security.
- Cash security.
- Water management.
- Packed fuel, oils and lubricants.

1.14

1.15 **Communication and Information sharing:**

HSSE reporting to UNOPS shall be through the relevant contractual reports.

1.16 **Consultation with the workforce:**

All employees shall be encouraged to raise any concerns on H & S management during meetings, briefings, toolbox talks or at time by applying the 'NO-STOP' policy.

1.17 **Accident and incident reporting and investigation:**

The processes for investigations is detailed in Chapter 15 to this NTSG. High potential near misses are to be reported to the relevant UNMAS-UNMISS sub office at the earliest opportunity. The event and subsequent corrective actions shall be listed in Monthly progress reports and summarised as part of the Final Report.

16.6 Social and Environmental Requirements

a. Humanitarian demining activities shall be carried out in a manner that ensures, where practicable, that:

b. Previous hazardous areas are left in a state in which they are suitable for their intended use.

c. Non-hazardous areas affected by demining operations are left in a similar condition to that before demining operations commenced.

d. At the Implementation Plan stage, teams shall carry out an environmental risk assessment of both work site and camp site which will outline the site specific social and environmental risks and opportunities within the site IP alongside planned actions to either mitigate the risks or enhance the opportunities. Examples are provided for guidance purposes only.

e.

Issue	Social/Environmental Aspect	Impact (positive/negative)	Significance (H/M/L)	Planned Actions (mitigation or enhancement) - referencing relevant standards where applicable.	Responsibility
Biodiversity	Removal of vegetation and topsoil in area xxx, estimated m2 to be removed: yyy	Erosion, acidification	M	- Return of XX% or removed soil to the affected area. Local community was made aware of impact of demining to vegetation/topsoil where applicable. - where applicable, local community involved in the process to ensure revegetation is successful on the longer term	Contractor Team leader
Water Pollution	Destruction on explosive devices close to a river embankment	Contamination of surface and ground water by chemicals released during the operation	H	- Ensure destruction in line with relevant mine action standards related to distances to water sources. - if contamination occurs, a water contamination specialist to be contracted for carrying our mitigation activities (including information to affected communities on the contamination, its expected duration, etc); provision of alternative water access points to affected communities	Contractor Team Leader
Social/Community	Clearance of xxx m2 land	Xxx m2 land made available to local communities	opportunity	- Engage with local communities throughout the task to encourage land is used appropriately following clearance by all relevant members of the community (dependant on planned land use - defined prior to task)	Contractor Team Leader

f. An Environmental and Social Risk Register shall then be compiled and retained in the task Site File and inspected as part of the Quality Management process as stated in the National Standards. A template for this register is annexed on this chapter as Annex 'B'. This requirement will only impact sites that are directly managed by UNOPS or through a UNOPS contractor.

16.7 **Worksites & Accommodation Facilities**

a. Worksites and Accommodation Facilities: The following should be considered and wherever practicable be implemented:

i. Preservation of the environment shall be considered in the site selection and layout for worksites and accommodation facilities.

ii. Temporary accommodation facilities shall be located in consultation with local communities to ensure that they do not affect local economic activities or social and cultural values. They shall comply with all national or local regulations concerning the construction of temporary facilities.

b. **Waste management and erosion**: A waste management plan for UNOPS contracted teams should be developed and a copy be available at the team site folders. The waste management plan should outline the types of waste that will be produced, the estimated amounts and critically how each type will be managed and disposed of. The template of the waste management plan is found on Annex C to this chapter. Deviations to the plan on a specific site can be outlined within the Site IP. Alternatively, Programmes can instead opt to add the Waste Management Plan into the site IP (rather than having a contract wide plan).

c. Temporary accommodation sites shall be well drained and, if necessary, have sufficient soil depth to permit the digging of toilets, wastewater soak pits and rubbish pits.

d. Toilets and ablution facilities shall be properly constructed and shall be used on all demining worksites and temporary accommodation facilities. If cultural norms require, separate toilets and ablution facilities shall be constructed for male and female team members.

e. Personnel shall not deposit human waste on the soil surface or in water courses.

f. Toilets shall be provided at a minimum of one for every 20 persons and they shall be located at least 20m from any demining worksite control point, accommodation or food preparation areas, watercourses or wells.

g. Where toilets are dug into the ground, the depth of the hole shall be sufficient to allow 0.5m of earth cover over the toilet pit when it is filled in.

h. All domestic rubbish shall be removed from the site, buried or burned on a daily basis.

i. Solid waste and ash left over from burning shall be either removed from the site or buried.

j. Containers used for storing domestic rubbish shall be vermin proof and constructed to contain spilled liquids.

k. Rubbish removed from the site shall be appropriately disposed of.

l. Any rubbish spilled during the removal process is to be cleaned up.

m. Rubbish shall only be buried with the approval of the local communities and then in locations agreed to by them.

n. Rubbish pits shall be properly located away from accommodation and food preparation areas, watercourses and wells, and shall be located and constructed so as not to contaminate groundwater.

o. Rubbish pits shall be deep enough to allow at least 1m of earth cover over the rubbish when they are filled in and shall be constructed large enough to take all the rubbish from the site.

p. Where possible, rubbish in pits shall be burned or covered over on a regular basis.

q. Burning: The burning for cooking, domestic heating and for rubbish disposal shall only be carried out provided the burning is supervised, firefighting equipment is provided and adequate precautions are taken to ensure that fire does not spread. As a minimum, firefighting equipment shall be serviceable and should comprise of a suitable fire extinguisher.

r. Waste water: Water from washing, bathing or kitchen areas shall be drained into properly constructed soak pits constructed large enough to take the amount of wastewater generated.

s. Waste water shall not be released if it may enter watercourses.

t. Water supply: The supply of domestic water shall be carried out in a manner that does not affect the supply of water to the local communities; unless the local communities have been properly consulted on this matter and have agreed to any arrangements made.

u. Water course management: Watercourses shall not have the flow of water obstructed during operations unless it is necessary to divert or dam the watercourse to allow demining to be conducted. If it is necessary to divert or dam a watercourse, the landowner or local community shall be consulted and their agreement obtained before the dam is constructed.

v. Vermin and disease carrying insects: As far as practically possible, mine action organisations shall implement preventive measures for the control of vermin and disease carrying insects.

w. Remediation: On completion of operations all buildings, equipment, surplus materials, fencing (except that marking hazardous areas) and other such items shall be completely removed. Toilets soak pits and rubbish pits shall be filled in, covered with soil and the surface stabilised to prevent erosion and to allow natural regeneration of vegetation. As far as is practicable, all disturbed areas shall be restored to their original condition.

x. Debris, rubble and wire and any other remains of obstacles removed from a demining worksite shall be dumped in a cleared area adjacent to the worksite. When applicable, local communities shall be consulted when locating this dump site.

y. Any toxic waste products of demining operations shall not be buried. They shall be collected and removed to an approved disposal area.

z. Air Degradation: When mine action organisations are conducting operations, they are to remain aware of the location of local communities, the prevailing wind conditions in the area and the ability of these prevailing winds to carry smoke, dust and toxic fumes to local communities. They shall ensure that the impact on local communities of any degradation of air quality is minimised.

aa. Mine action organisations shall liaise with local communities and authorities to explain the scope, scale and duration of any likely air degradation and the long-term benefits to be achieved as a result of this short-term inconvenience.

16.8 **Environmental Considerations during Mechanical Operations**

a. When mechanical operations are conducted, the ground over which the operations were conducted should be left as close as possible to its original state such that it is suitable for its intended use. Where vegetation is removed from ground that is subject to erosion, measures are taken to stabilise the ground on completion of mechanical operations.

b. When mechanical assets are serviced or repaired in the field, any used parts or by-products from the work shall be collected and disposed of in an environmentally acceptable location and manner.

c. The dumping of oil or other materials onto the ground or into any watercourse is prohibited.

d. Drained oil or other materials shall be contained using a drip pan or other suitable receptacle and disposed of in an environmentally acceptable manner.

e. Mechanical assets shall only be operated within the designated demining worksite, within the boundaries of any temporary accommodation facilities or any other areas approved by the NMAA/UNMAS-UNMISS for training or testing purposes.

f. Mechanical assets shall be properly maintained. Any fuel or oil leaks that occur shall be promptly repaired.

16.9 **Environmental Considerations during EOD Operations**

a. Mines, ERW and AXO shall be disposed of without creating any danger to people, property or infrastructure. If mines, ERW or AXO must be destroyed in-situ and there is a risk to property or infrastructure, protective works shall be used. If, even with protective works, there is still a risk of damage to property or infrastructure, the NMAA/UNMAS-UNMISS shall be informed and local communities or authorities consulted about the operation.

b. When carrying out EOD operations involving potentially toxic or hazardous components, consideration shall be given to the contamination of the surrounding area by toxic or hazardous substances, for example, white phosphorus.

c. When EOD operations cease, the area used shall be refurbished in accordance with the requirements of the local communities, and if necessary, the land formally handed over. As a minimum, the refurbishment shall include the recovering and disposal of all large items of scrap; the filling in of any pits and craters made by bulk disposal operations; and the fencing of and marking of any areas where there may be residual non-explosive hazardous material left in the ground.

d. Mine action organisations shall ensure that previously safe areas are not contaminated through the unauthorised or unplanned movement of mines or ERW.

e. Mine action organisations shall ensure all personnel are aware of, and comply with, the prohibition on the movement of mines and ERW from work sites unless as part of a disposal activity.

f. When moving mines or ERW as part of a disposal activity, take an accurate count of the items moved and confirm that they have all been destroyed in the new location.

g. Conduct thorough ‘Free From Explosives’ (FFE) inspection of any packaging material moved from a worksite or any mines or ERW that are to be used for training aids.

h. Thoroughly check the immediate environs of all mechanical clearance or disposal worksites to ensure that no of mines or ERW have been ‘thrown’ into these areas.

i. Where it is necessary to establish fuel storage facilities, proper precautions shall be taken to ensure that fuel, oil and lubricants are stored safely and does not contaminate the soil or groundwater.

FFE Scrap from TCC Unserviceable Ammunition

In order to conduct environmentally compliant disposal, in line with the UN Environmental Policy for field missions; UN military or police peacekeeping contingents (T/PCC) are required to deposit the scrap from the disposed unserviceable ammunition with the Mission Property Disposal Unit (PDU). Therefore, implementing partners involved in disposing unserviceable ammunition belonging to the T/PCCs are obligated to handover the FFE scrap to the respective T/PCC soon after the disposal. Where possible, the FFE scrap should not exceed three (03) working days at the disposal site after the final disposal has been completed.

16.10 Environmental Considerations for Vehicles

a. No fuel storage facilities shall be positioned closer than 30m to a watercourse.

b. All storage tanks, containers and fuel dispensing equipment shall be regularly maintained to ensure that there are no leaks.

c. Vehicle and equipment fuelling should be undertaken on a hard surface or over drip pans to ensure that any spilled Fuels, Oils or Lubricants are contained.

d. Adequate fire fighting equipment shall be positioned at the fuel storage facility. As a minimum, this shall be a serviceable CO2 fire extinguisher.

e. When maintenance, repair or washing of vehicles and equipment is required on worksites, specific areas shall be designated for this activity.

f. Waste water from vehicle washing shall not be released so that it may enter watercourses. If necessary, soak pits shall be constructed.

g. The dumping of oil on the ground is prohibited. Drained oil shall be contained using a drip pan or other suitable receptacle and disposed of in an environmentally acceptable manner.

h. Any used parts, by-products of the maintenance or other rubbish (except waste oils) shall be disposed of as for domestic rubbish.

i. During the transportation of any hazardous, toxic or flammable materials with the potential to damage the environment, the precautions that shall be taken to ensure that risk is minimised.

j. All materials shall be transported in containers that will minimise or prevent spills or leakage.

k. Materials shall be securely loaded in the transport.

l. Appropriate fire precautions shall be taken relevant to the materials being transported.

m. Vehicles carrying hazardous material shall be driven in a safe and careful manner.

16.11 Cultural Considerations

a. Prior to commencing operations, mine action organisations shall investigate the immediate vicinity of the worksite to identify any areas of cultural or historical significance. They shall also liaise with local communities and authorities to aid in the identification of such sites.

b. Having identified any areas of cultural or historical significance, mine action organisations shall take all possible steps to prevent damage to these sites. Such action may dictate that any mines or ERW found at the work site are removed to another area for destruction. If these items are unsafe to move and in-situ demolitions are necessary, protective works shall be used.

c. If any article is located during mine action operations and is suspected of being of cultural or historical significance, work in that area shall cease and the matter shall be immediately reported to the NMAA/UNMAS-UNMISS.

16.12 Environmental Incident Register

a. At each worksite, mine action organisations shall maintain an ‘Environmental Incident Register’. This register shall record the details of any environmental incident that may occur, the action taken to remedy the situation, the likely lasting results of the incident and the liaison carried out with the local communities or authorities in relation to the incident. The register shall be made available to NMAA/UNMAS-UNMISS on request.

b. All significant environmental incidents shall be reported to NMAA/UNMAS-UNMISS along with details of results and action taken, as soon as practicable after the incident.

16.13 **Reviews**

a. The HSSE management systems of individual mine action organisations shall be reviewed by NMAA/UNMAS-UNMISS during the accreditation process.

b. NMAA/UNMAS-UNMISS reserves the right to review the current HSSE system of any mine action organisation at any time to ensure it remains valid for current conditions. Should deficiencies be found, the mine action organisation shall be given a suitable period to remedy them.

16.14 **HSSE Responsibilities**

a. NMAA/UNMAS-UNMISS should establish a system to issue or approve regulations, codes of practice, SOPs or other suitable guidance on HSSE in the working environment in order to:

i. Provide information and advice in an appropriate manner, to employers with a view to eliminating hazards or reducing them as far as practicable.
ii. Co-ordinate activities concerned with HSSE which are exercised nationally.
iii. Undertake or promote studies and research to identify hazards to safety and health and find means of overcoming them.

b. Mine Action Organisations: Each mine action organisation shall develop a detailed, comprehensive and suitable HSSE management system prior to receiving accreditation to conduct mine action in South Sudan. The organisation shall:

i. Provide a written policy covering HSSE detailing the key responsibilities, commitments and procedures.
ii. Provide and maintain safe work places, machinery and equipment, and adopt safe work practices and procedures with a view to eliminating hazards or minimising them as much as practicable.
iii. Provide adequate supervision and training, including development and refresher training where appropriate.
iv. Provide, at no cost to the individual, adequate Personal Protective Equipment (PPE) and protective clothing, including High Visibility vests for personnel conducting traffic control operations.
v. Provide, at no cost to the individual, adequate health care and emergency medical support in case of accidents.
vi. Set out the HSSE system in writing and ensure this information is delivered to all staff in a language or medium each individual readily understands.
vii. Verify the implementation and application of the HSSE system and periodically conduct systematic, detailed and comprehensive audits of the HSSE system.

viii. Appoint a designated HSSE officer and ensure that all staff have access to this person.

ix. Ensure that all accidents and incidents concerning HSSE are reported, recorded and investigated by the HSSE officer, and that the findings of such investigations are promulgated to all staff and acted upon.

x. Road traffic accidents at work sites and in transit are now HSSE reportable.

xi. Notify NMAA/UNMAS-UNMISS of all demining incidents in accordance with Chapter 15.

xii. Ensure that adequate insurance cover against death, disablement and injury is provided for all staff, including a complete designation of beneficiaries form for any accident or death insurance policy payout.

xiii. Develop and implement work practices that minimise unnecessary detrimental impact on the environment.

xiv. Each mine action organisation shall conduct an annual review of its HSSE policy to ensure it remains valid for their particular operating environment. Additionally, the organisation shall review, and amend as necessary, its HSSE system each time it introduces new methodologies or technologies.

c. HSSE Responsibilities of the Individual: Along with the mine action organisation, each individual staff member has a responsibility for his or her own health and safety. Each individual shall:

i. Take all reasonable care for their own safety and that of other persons who may be affected by their acts or omissions at work.

ii. Comply with instructions given for their own conduct and safety.

iii. Use safety devices and PPE consistently, correctly and as directed and take all due care of these items.

iv. Immediately report to their supervisor or superior any situation which they have reason to believe could present a hazard and which they cannot themselves correct.

Annex A To NTSG Chapter 16 Prevention and Mitigation of Pandemics during Mine Action Operations

16.15 Introduction

a. The needs to reduce risk and to provide a safe working environment are fundamental principles of mine action.

b. To clarify the term ‘safe’ in the respect of mine action, to say that a situation is ‘safe’ does not necessarily imply that all risk has been removed. It merely assumes that the risk has been reduced to a ‘tolerable’ level.

c. Managers of mine action projects are to achieve a safe working environment by providing effective management and supervision, by developing work practices that contribute to risk reduction, selecting equipment with inherently safe design, providing appropriate training, and making available effective Personal Protective Equipment (PPE), including hand sanitizer, face mask and gloves and protective clothing for both male and female employees.

d. The aim of this Annex is to issue guidelines for prevention and mitigation measures against pandemics

16.16 HQ Locations

a. HQ locations shall be fully conversant with the most current entry requirements and other restrictions issued by the Government of South Sudan (GOSS).

b. Organisations shall maintain a pandemic-related Business Continuity Plan (BCP). The BCP should be considered as a living document and updates shall be submitted to UNMAS-UNMISS/NMAA.

c. Operations plans, task dossiers and IPs shall take into consideration WHO guidelines on reducing transmission in terms of the number of personnel on site, travel times, transport restrictions, productivity and the impact on casualty treatment and evacuation.

d. All medics shall receive specific pandemic training and shall be informed of updated guidelines issued by the WHO and UNMAS-UNMISS/NMAA. Team medics are to be responsible for the health of team personnel and be capable of providing necessary advice to team members.

e. Entry-control points to compounds shall be strictly controlled and in cases where entry-controlled points are manned, the personnel responsible for entry/exit are to be fully conversant with the entry control processes. A booking in and out systems should be in place.

f. Hand wash stations should be provided and hand washing before entry enforced.
g. When available, all staff shall be issued with individual hand sanitizer and instructed on how and when to use it in accordance with WHO guidelines.
h. HQs and teams can be considered a self-contained unit however all staff shall wear face masks if they are less than 2m from a person from outside that unit.
i. A medic should be available to take the temperature of persons requiring entry. Thermal thermometers should be used as much as possible.
j. All staff shall have their temperature taken twice a day. Recorded temperatures shall be classified as 'medical in confidence'.
k. Posters reminding personnel of preventative measures may be displayed in offices, accommodation and social areas.
l. Isolation areas: When self-quarantine periods are required for new personnel and nominated isolation hotels are not being used, specific isolation areas shall be designated within compounds. These areas shall have:
    - Individual tents/rooms.
    - Separate ablutions.
    - Sufficient life support mechanisms including hand sanitizer.
    - Temperature monitoring mechanism.

–

16.17 Vehicles

a. 2m social distancing is not practically possible in most vehicles, therefore face masks shall be worn at all times and the number of passengers kept to a minimum. For security reasons vehicles shall not be driven outside compounds with less than two people on board.
b. Hand sanitizer shall be available in all vehicles.
c. Surfaces are to be wiped with alcohol-based wash before and after use.
d. Use of a face mask shall be mandatory for all occupants when travelling in a vehicle.

16.18 Team Camps

a. The systems stated in para 16.15 shall also apply for team camps. In addition:
b. Teams shall be self-sufficient as far as practically possible. Local cooks, cleaners and other camp admin staff shall be integral to the team and not recruited locally.
c. Team members' accommodation shall be single units and not shared.
d. Signs may be displayed around the camp boundaries to discourage non-essential entry.

e. Team medics, supported by the team supervisor are responsible for enforcing precautionary measures within the camp area.

16.19 Demining Worksite

a. Social Distancing: Social distancing shall be maintained at all times during briefings, breaks and administration periods.
b. One-man drill: One-man drill should be encouraged wherever possible.
c. Deminer equipment: Demining equipment shall be issued to individual deminers and not shared. This equipment shall be visibly marked in a way that the owner can be easily identified without the equipment being touched.
d. In the case of equipment which requires more than one operator or pooled equipment e.g. LLMDs, strimmers, wheelbarrows etc, the equipment shall be wiped with an alcohol-based sanitizer before and after use.
e. Temperature checks: The team medic is to conduct a temperature check for all visitors, including QA officers, and the visitors log annotated accordingly.
f. QA Monitoring: QA processes shall be maintained within the guidelines of this document. In the context of external monitoring, QA visits shall only take place within the law of that local area. In the cases where external QA monitoring cannot take place, HQs and Sub offices are to closely monitor internal QA reports. Use of photographs and video may be used to demonstrate processes and operational challenges.
g. Task Completion: The minimum number of people from the local community shall be invited during handover and briefed on the concept on social distancing prior to arrival.

16.20 NTS and EORE

NTS:

a. NTS activities shall be designed in such a way that there is the minimum exposure with local communities.
b. Interviews should be conducted using the minimum personal and community leaders and social distancing rules shall be observed.
c. Prior to the interview commencing, preventative measures should be communicated to interviewees.

EORE:

d. In addition to the above, the gathering of large groups shall be discouraged.
e. EORE teams shall conduct activities by ‘household’ rather than by community groups.
f. A reduction in beneficiaries is to be expected.

16.21 CASEVAC

a. Physical contact during CASEVAC should be avoided with the exception to the administration of First Aid.
b. The team spine board and stretcher shall be cleaned with an alcohol-based sanitizer prior to work commencing.
c. With the exception of team members carrying a casualty and carrying out treatment actions, social distancing shall be maintained at all times during the CASEVAC process.
d. In the case of a pandemic infected casualty, PPE shall be worn by the CASEVAC team.
e. CASEVAC rehearsals may be carried out without physical contact.

Annex B to NTSG Chapter 16: Social and Environmental Risks and Opportunities Register

Social and Environmental Risks and Opportunities

The table below outlines the site specific social and environmental risks and planned mitigation measures, it also outlines opportunities and planned actions to capitalise upon them[1].

Issue	Social/ Environmental Aspect	Impact (positive /negative)	Significance (H/M/L)	Planned Actions (mitigation or enhancement)	Responsibility

[1] Include management of any hazardous materials present at site. Consider the transport, use and storage of hazardous materials, planned controls to reduce likelihood of contamination and plan in event of contamination.

Annex C to NTSG Chapter 16 _ Site Waste Management Plan

Site Waste Management Plan

Project title	
Teams**ite**	
Team Leader	
Officer responsible for environmental planning – waste management	
Brief outline of the project scope	

The table below lists the type of waste that is anticipated to be generated by the project, estimates the quantities of waste expected and establishes the appropriate waste mitigation measures that will be put in place for reducing and controlling the waste.

From data collected throughout the project duration, monitor the actual quantity of waste generated, calculating the difference and identifying the reasons for any variance.

The plan should be regularly reviewed and progress recorded to evaluate performance against planned targets/assumptions.

Waste Materials	Estimated Quantity	Reused/recycled on site		Reused/recycled off site		Landfill disposal		Notes (mitigation/control/ actions)
		Planned	Actual	Planned	Actual	Planned	Actual	
Non-Hazardous Waste								
Hazardous Waste								
Organic Waste								

Additional Items for Waste Management Consideration	Action
Landfill/Disposal Site: Has the site been identified? Approved? Licensed? Acceptable to local authorities etc?	
Are hazardous material disposal facilities available and identified?	
Will a waste removal contractor be appointed? If so, are they aware of requirements of this plan?	
Have all staff and workers been made aware of requirements of this plan for waste processing, included in the project site Induction?	
Will there be an audit and or review process of the waste management project plan? Provide details.	
Are there any specific training issues that should be undertaken to implement this plan?	
Other issues:	

Annex D to NTSG Chapter 16: Personal Protective Equipment

Personal Protective Equipment (PPE) requirements

D.1 General

The primary means of preventing explosive injury in the workplace is by the supervised use of demining tools and processes that reduce the likelihood of an unintended detonation. This is generally effective and unintended detonations are rare events. PPE is provided as a secondary safeguard to protect against the small risk remaining. It is important that the PPE provided should not restrict the application of demining tools and processes in any manner that increases the risk that an unplanned detonation will occur.

The levels of PPE provided for use in suspected hazardous areas must be decided after considering the local risk(s), operational procedures and tools, and local environmental conditions, and after making a written risk assessment. It is possible that different levels of PPE may be appropriate for use during different activities at different parts of a workplace. (Guidelines on the process of risk assessment and risk reduction are given in ISO Guide 51. Guidelines for assessing risk to determine the appropriate working distances for a demining worksite are given in IMAS 10.20.) Guidelines on conducting Field Risk Assessment are given in TNMA 01.20-02/2009.

Training shall be provided on the proper use, maintenance and storage of all PPE provided and in use within the demining organisation. Facilities should be provided for its proper storage, carriage, cleaning and maintenance. Equipment shall be examined on a regular basis to ensure that it is suitable for use.

D.2 Suitability and appropriateness

PPE provided shall fit the employee, male or female, and be designed to provide reasonable comfort and protection against the predictable risks present at a demining worksite. Other clothing provided shall be suitable for the prevailing weather conditions and include footwear with suitably slip-resistant soles. Cultural practices should also be taken into consideration. If the predictable risk is from AP blast mines, and EO containing greater than 240g of TNT, and there is a high risk that the mine(s) or EO may be initiated during the procedures that will be used, the use of other procedures or enhanced protection shall be considered.

While staff are inside the safety distance for the hazards anticipated at a suspected hazardous area, the minimum requirements under Clause D.3 below apply. The minimum

PPE requirement given below shall be increased if the worksite risk assessment determines that the risk warrants greater protection.

Note: Although this standard gives distances at which the PPE must be effective, this does NOT imply that the wearer will be safe at such distances. Distance reduces the severity of blast effects, so the further away the wearer is, the safer the wearer will be.

D.3. Minimum PPE requirement

PPE shall be capable of protecting the parts of the body that are covered against the blast effects of 240g of TNT at distances appropriate to the wearer's activity.

The amount of PPE provided shall be determined as a result of a field risk assessment and management decision. The minimum PPE inside the safety distance of a suspected hazardous area or when engaged in any activity that involves being close to mines and ERW, shall be:

a) body armour capable of satisfying the ballistic test outlined in STANAG 2920, achieving a V50 rating (dry) of 450m/s for 1.102g fragments. It shall also be capable of protecting the chest, abdomen and groin area against the blast effects of 240gm of TNT at 60 cm from the closest part of the body; and

b) eye protection that is held over the eyes in a frame that prevents blast ingress from beneath. The eye protection shall be capable of retaining integrity against the blast effects of 240 gm of TNT at 60 cm and shall provide protection equivalent to not less than 5mm of untreated polycarbonate. However, it is recommended that eye protection should be a part of frontal head protection capable of protecting against the blast effects of 240gm of TNT at 60 cm and providing full frontal coverage of face and throat.

Note: Commonly available industrial safety spectacles do not meet the minimum requirement of this standard and shall not be used as demining PPE.

D.4. Fragmentation protection

The fragmentation danger from most fragmentation mines and unexploded sub-munitions cannot be protected against with lightweight and practical PPE. This emphasises the need to minimise risk through the use of inherently safe procedures. Although the level of protection may not be sufficient, PPE provided to reduce the risk from fragmentation mines shall be at least that used as protection against blast hazards described under Clause D.3 above.

D.5. Hand tools

Hand tools should be constructed in such a way that their separation or fragmentation resulting from the detonation of an AP blast-mine incident is reduced to a minimum. Hand tools should be designed to be used at a low angle to the ground and should provide adequate stand-off from an anticipated point of detonation. The use of gloves can provide protection against non-explosive injury and should be considered.

D.6. Explosive Ordnance Disposal (EOD) clearance sites

When engaged in the clearance of EOD clearance sites, an enhanced level of protection may be necessary. This should be defined in Standard Operating Procedures (SOPs), and may include conventional body armour or other specialist PPE ensembles.

Responsibilities

D.7.1. General requirements

NMAA and mine action organisation employers shall establish and maintain standards and guidelines on the minimum requirements of PPE for use in different situations in South Sudan.

D.7.2. NMAA responsibilities

The NMAA shall:

a) establish and maintain national standards to be applied for PPE;

b) monitor the application of standards; and

c) undertake periodic reviews of the national standards for PPE and the technologies available to reduce risks.

D.7.3. Mine Action Organisations' responsibilities

The mine action organisations shall:

a) apply the documented NMAA standards for PPE;

b) provide PPE for each activity undertaken that meets, or exceeds, the minimum requirements and is appropriate for the wearer, male or female. In this regard, PPE should be provided to employees which is serviceable and appropriate to the risk, local operational procedures, culture and environmental conditions;

c) provide training and supervision in the selection of appropriate PPE and the correct use and maintenance of PPE;

d) establish and maintain SOPs that specify care and maintenance requirements;

e) provide suitable facilities for the storage, carriage, cleaning and maintenance of PPE; and
f) establish and maintain documented SOPs to undertake periodic reviews of PPE.

D.7.4. Mine Action Personnel' obligations

Employees of mine action organisations shall:

a) use PPE in accordance with the requirements specified by their employers and the manufacturer's specification for the PPE, including the use of facilities provided for storage and carriage of PPE;

b) clean and maintain the PPE in accordance with the mine action organisation's SOPs and/or the manufacturer's specifications or guidelines; and

c) report to the employer, problems with the equipment or suggested improvements to SOPs, which may reduce the requirement for PPE, or improvements in the design or application of PPE.

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Chapter 17

Management of

Mine Action Operations

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18.1 Mine Action Activities Process

a. The practice of managing mine action Operations may not always be linear and the activities may not always be consecutive however there will always be a general sequence and logical progression involving the four stages of the mine action activities management process:
   - Planning
   - Preparation
   - Clearance
   - Post-clearance

b. For further details concerning the conduct, processes, procedures, requirements and standards the relevant Chapters in this NTSG should be referred to for specific mine action activities i.e. technical survey, clearance, EOD, MDD operations etc

18.2 Planning

a. Planning is the collection, assessment and processing of information to determine an appropriate way to proceed and subsequently formulate a detailed method by which a task shall be carried out. This requires accurate and timely information on the form, scale and impact of the threat posed by mines and other ERW.

b. A national mine action programme shall generally commence with the Non-Technical Survey (NTS). The processes, procedures, requirements and standards for conducting NTS are detailed in Chapter 1 of this NTSG and should be applied accordingly. In summary the aim of an NTS assessment is:
   - To assess the scale and impact of the landmine problem on the country and individual communities;
   - To survey all reported and/or suspected locations of mine or ERW contamination, quantities and types of explosive hazards;
   - To collect general information such as the security situation, terrain, soil characteristics, climate, routes, infrastructure and local support facilities, to assist the planning of future mine action projects.
   - To provide an indication of the size and scope of the problem, the resources needed to meet it, the national capabilities and potential to

address the problem, and the need for external assistance including financial, human skills, material and information.

- The information collected should be sufficient to enable the **N**ational **M**ine **A**ction **A**uthority (NMAA), with assistance as necessary, to establish priorities and develop a coherent national mine action programme.

18.3 **Preparation**

a. Preparation includes all enabling activities that help to clarify the clearance requirement and develop the capacity of a mine action organisation and its sub-units to carry out a clearance task.
b. At the national level preparation should also include:
    - Equipment preparation;
    - Establish methods of victim reporting;
    - Establishing a network of community volunteers, or linking with existing community volunteer networks;
    - Coordination activities;
    - Links with other sectors;
    - The management of the NTS assessment.

18.4 **Clearance**

a. Clearance when referred to in the context of humanitarian demining is the location, identification, removal and/or destruction of mines and E**O**, and for EOD may also involve access, diagnosis, render safe procedures and final disposal and (where appropriate) protective works.
b. The clearance requirements should be achievable and affordable and should be consistent with the clearance requirements being applied to similar categories and current or future uses of land.
c. Clearance covers and/or includes many phases, aspects and activities including but not restricted to manual clearance, use of MDD and/or mechanical means, EOD-activities, BAC, quality assurance and other.

18.5 **Funding**

a. The funding of demining programmes may be provided by the government of the mine-affected country, from donor governments, the United Nations or other international organisations, benefactors, philanthropists or from many other sources.
b. It is important that the funds match the true cost of demining and that a long-term commitment is provided by the donors in order for major projects that require the mine action organisations to make major investments in staff, equipment and training.

18.6 **Contract Preparation**

The definition of the work to be undertaken (Implementation Plan in South Sudan) should ideally be in the form of a contract, task, or other such formal agreements. The preparation of a contract enables the national government of the mine-affected country, together with the donor agency, to specify the clearance requirement in detail. The contract should give details of the risk and quality management processes to be adopted during the clearance work. It also should outline the reporting requirements, and the progress and financial milestones to be achieved.

18.7 **Training**

Mine action organisations shall employ appropriately trained and qualified managers, deminers and other required personnel as appropriate. Although some centralised training for senior national managers and technical advisors may be appropriate, the majority of training should be conducted in the mine-affected country, not only for cultural and linguistic reasons, but also for access to details of the mine and ERW threat.

18.8 **Information**

The effective management of demining programmes requires accurate, appropriate and timely information. National mine action authorities and mine action organisations should establish and maintain effective management information systems. The UN's Information Management System for Mine Action (IMSMA) has been developed to provide the facility to collect, collate and distribute relevant information at field and headquarters levels in a timely manner. IMSMA is available to all mine action programmes.

18.9 **Equipment, Tools & Assets**

a. It is the responsibility of the NMAA/UNMAS-UNMISS to allocate the proper teams/assets in the most effective manner to ensure that priorities may be achieved depending on the clearance situation.

b. Demining programmes have traditionally relied on manual practices, procedures and drills and in many cases these methods may be the most appropriate and effective means of detecting, removing or destroying mines and ERW. However, in some programmes the greater use of equipment may enable clearance (and other elements of demining) to be conducted more safely, effectively and efficiently.

c. Demining technologies may be grouped in three general categories according to their technical maturity and availability:

- Equipment that has been fully developed, tested and evaluated (T&E), and may be introduced into demining programmes without any major modification or changes;
- Those technologies that have been proved to work but require further development and formal T&E
- Those technologies that may have an application in mine action activities but have yet to mature and have not yet been formally demonstrated.

d. Mine action organisations should focus their equipment procurement on the first category, but whenever possible should assist in the development and fielding of those technologies in the second category. Some new technologies have the potential to generate major improvements in safety and cost-effectiveness. Donors should provide assistance and encouragement to those mine action organisations fielding new technologies, and their T&E.

18.10 **Accreditation & Licensing**

All mine action organisations shall be required to undergo the full accreditation process in order to be formally recognised as being competent and able to plan, manage and carry out relevant mine action activities safely, effectively and efficiently.

18.11 **Community Liaison**

a. Community liaison is a specialist function of the mine action organisation and plays a major part in:

- Confirming the correct area for clearance;
- Ensuring a high level of confidence from the community in the quality of the finished product (i.e. cleared land).

b. The general requirements of the community liaison function may be filled by specialist members of the demining team, or the capacity may be subcontracted to a specialist EORE agency. This should also be addressed at a national level.

18.12 **Safety & Occupational Health**

a. Mine action organisations shall achieve a safe working environment by providing effective management and supervision, by developing work practices that contribute to risk reduction, by selecting equipment with inherently safe design, by providing appropriate training throughout the structure and by making available effective personal protective equipment (PPE).

b. The PPE standard should consider the requirements as set out in IMAS 10.30 as a reference.

c. They shall develop and maintain management procedures and processes that shall enable safety and occupational health (S&OH) risks to be identified, evaluated and reduced in a systematic and timely manner, for each demining task and for each demining worksite.

18.13 **Post-Clearance**

a. The inspection of cleared land aims to provide confidence that the clearance requirements have been met, and as such forms an essential part of the overall clearance process. An important aspect of this procedure is to clarify the ownership of any residual risk and to ensure that the local community have been fully briefed.

b. Prior to the handover of cleared land, the area shall be surveyed and marked, and all necessary documentation shall be prepared, including a formal handover certificate.

c. Wherever possible, mine action organisations should conduct a formal post project review (PPR) to identify lessons-learned during the planning, preparation and clearance phases of the operation. The PPR should include a report on the suitability

of the equipment, procedures, training and support. Issues of concern should be identified and prioritised, and solutions proposed.

d. PPRs should be distributed to NMAA/UNMAS-UNMISS and to donors or sponsors. Where PPRs highlight shortcomings in established equipment or procedures, particularly issues involving safety, they should be more widely distributed.

18.14 Quality Management

a. The effective management of demining operations aims to clear land in a safe and efficient manner achieved by developing and applying appropriate management processes, by establishing and continuously improving the competency of mine action organisation personnel, by obtaining accurate and timely information on the mine and ERW threat, by applying safe and effective operational procedures, and by using appropriate and efficient equipment.

b. The process and procedures that aim to achieve this continuous improvement to an organisation's management system and operational practices is commonly referred to as quality management.

c. A quality management system shall be developed, the purpose of which is to ensure that the 'products' or 'services' delivered meet the agreed needs.

d. Mine action organisations shall apply the principles of quality management as per the NTSG.

18.15 Field Security Risk Assessment

a. Security and general situational awareness in mine action operations work sites is paramount, in the context of S**outh Sudan** MAP, towards the safety of demining assets i.e. personnel/MDDs and equipment.

b. Before and during the deployment of demining teams, the Mine action organisations shall assess the security situation of an area to determine the probability and consequences of intolerable risks the teams will be **exposed to at their** work sites, camps and during movement. Formal documentations of such may be annexed to the tasks' implementation plans.

Responsibilities

a. **National Mine Action Authority.** The national mine action authority, or the organisation acting on its behalf, is responsible for ensuring the national and local conditions that enable the effective management of mine action projects and for establishing and maintaining national regulations and procedures for the

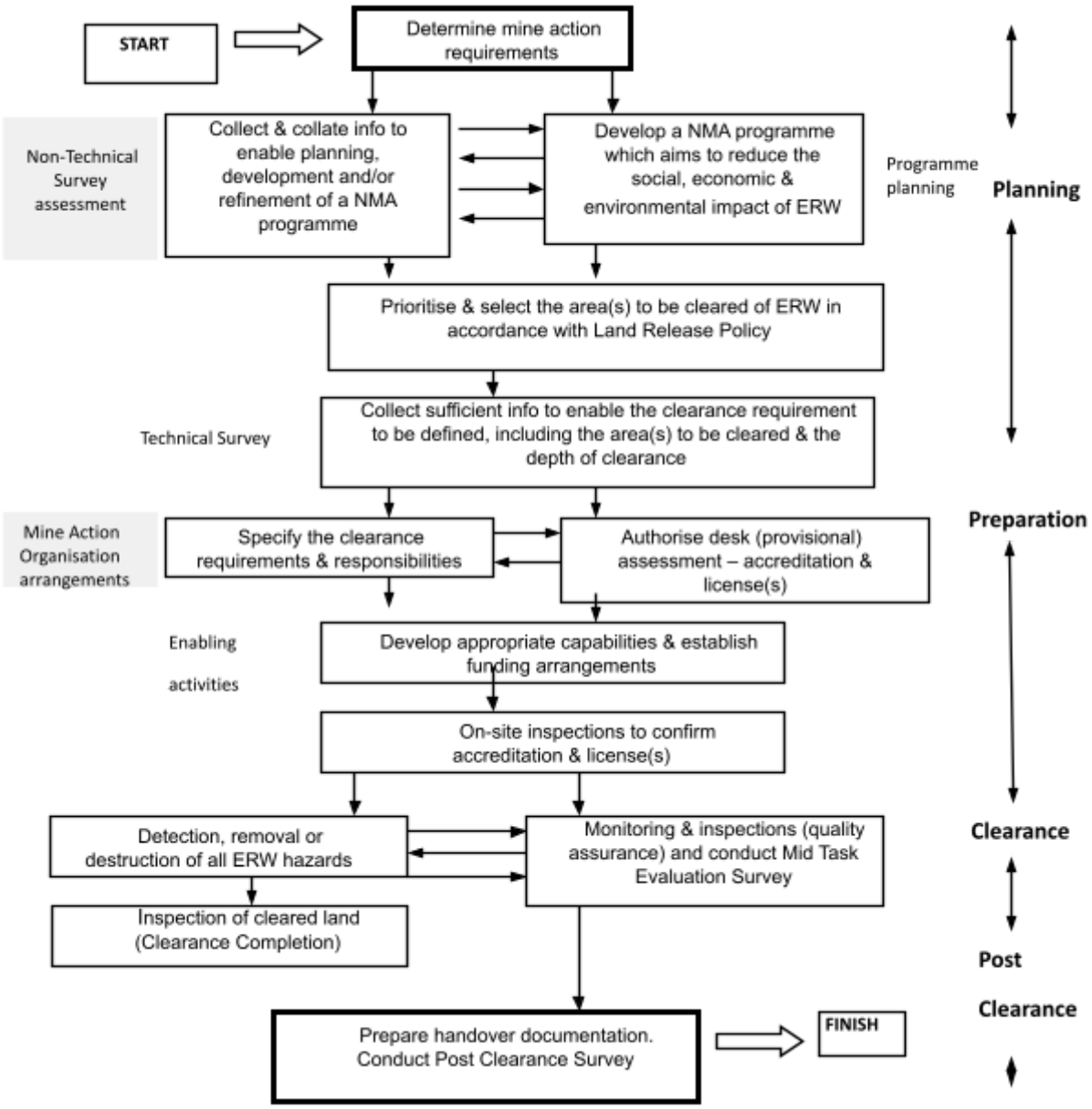
management of mine action operations in accordance with IMAS. The national mine action authority is ultimately responsible for all phases of a mine action project within its national boundaries, including defining the clearance requirement, the accreditation and licensing of mine action organisations, the monitoring of mine action organisations during clearance, and post-clearance inspections prior to accepting full responsibility for the cleared land.

b. **UNMAS-UNMISS.** UNMAS-UNMISS has a general responsibility for the effective management of mine action programmes within South Sudan, supporting the NMAA, by continuously refining the NTSG to reflect developing mine action norms and practices, and incorporating changes to international regulations and requirements such as those produced by the International Organisation for Standardisation and the International Labour Organisation. UNMAS-UNMISS applies IMAS to its mine action programmes, activities and contracts unless the local situation precludes their effective use. In such circumstances, when one or more IMAS is not appropriate, the UNMAS provides alternative, specifications, requirements and guidance.

c. **Donors.** Donor agencies are part of the management process, and as such have a responsibility to ensure that the projects they are funding are managed effectively, and in accordance with international standards. This involves strict attention to the writing of contract documents, and ensuring that mine action organisations chosen to carry out such contracts meet the accreditation and licensing criteria. Donors, or their agents, are also partly responsible for ensuring that the standards and guidelines for quality management are applied. This responsibility and accountability is even greater when the national mine action authority is in the process of formation, and has not had the opportunity to gain experience.

d. **Mine Action Organisations.** Ultimately, it is the mine action organisation which is required to establish an appropriate and effective management system, demonstrate it to the NMAA/UNMAS-UNMISS, and apply it throughout the project.

Annex A Demining Process



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Chapter 19

Accreditation of

Mine Action Organizations

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19.1. Introduction

Prior to any mine action, the organisation conducting demining operations in South Sudan shall be accredited by the NMAA/UNMAS-UNMISS Accreditation Board.
The board shall assess the mine action organisation's ability to plan, manage and conduct demining operations safely, effectively and efficiently in compliance with IMAS and the NTSG. On completion of the accreditation process, the board shall recommend whether or not the mine action organisation should be issued accreditation to conduct demining operations in South Sudan.

19.2.Accreditation Process

The accreditation process shall only commence in the following circumstances:

- On receipt of a written application from any national organisation
- On receipt of a written application from an international organisation providing:
  A. Evidence of a relevant contract in South Sudan and/or appropriate funding and.
  B. Evidence of registration as a UNOPS vendor.
  C. Evidence of registration with the NMAA

Accreditation shall be completed over three phases, each phase only undertaken upon successful completion of the previous one. Accreditation shall be conducted by the boards specifically formed for a particular phase of the accreditation process. The three phases are as follows:

Phase One - Desk Assessment:
This initial phase is an examination of relevant and appropriate documentation submitted by the mine action organisation in order to assess and determine the organisational and individual capabilities, experience and competency to conduct humanitarian demining in accordance with the NTSG and IMAS in a safe, effective and efficient manner. This phase is further segmented into 'organisational' and 'operational'' assessments, where specific documentation pertinent to each aspect is examined. The mine action organisations shall also submit their Code of Conduct that upholds fundamental principles of human rights, promotes gender equality, and includes safeguarding measures to protect their staff members and the communities they serve and leave with. The NMAA/UNMAS-UNMISS may request additional documentation depending on the scope and characteristics of the application.

Phase Two - Pre-deployment Quality Assurance:
All mine action organisations shall conduct pre-deployment operational training pertinent to their contracted activities. Training shall be routinely and regularly monitored throughout by the NMAA/UNMAS-UNMISS Ops/QA officers and specialists as applicable. All aspects of the mine action organisations' capabilities shall be assessed, including but not restricted to planning, logistics, administration, medical and relevant pertinent humanitarian mine action activities, i.e., manual, MDD, mechanical, etc. On completion of the training the organisation shall immediately submit a signed training declaration; see Annex A of this chapter and the relevant supplementary records. One copy of Annex A shall be submitted for each team/asset requiring accreditation. In exceptional circumstances, i.e., the unavailability of NMAA/UNMAS-UNMISS Ops/QA resources, on receipt of the signed training declaration, NMAA/UNMAS-UNMISS may provide written authority to the mine action organisation allowing their team/asset to deploy to the allocated mine action task designated by the NMAA/UNMAS-UNMISS. In such circumstances, the operational accreditation assessment shall be conducted on-site as soon as possible after deployment.

Phase Three - Operational Accreditation Assessment:
This is an assessment of the mine action organisations' competency in practically planning, managing, conducting and/or performing humanitarian demining activities in an operational environment and capacity for which the organisation wishes the said teams/assets to be accredited and licensed to perform. The assessment shall evaluate the relevant task activities that the team/assets are contracted to conduct to ensure that they are performed in a safe, effective and efficient manner in accordance with the organisational SOPs and NTSGs. The following applies:

- Whenever possible, the assessment shall be conducted upon completion of training and an accreditation certificate shall be issued by NMAA per an accredited team prior to their task deployment.
- Accredited MDDs and medics shall be assessed prior to deployment.
- The assessment shall commence at the request of the mine action organisation and upon submission/receipt of Annex A Training Declaration.
- The assessment shall cover all specific mine action and associated activities being undertaken by the team/assets at the particular site/task. It shall cover the competency of individuals, teams, support, supervisory and managerial elements in all relevant facets of the pertinent activity.
- Mine action organisations, prior to resuming their operations after two weeks or longer stand-downs, shall plan and carry out refresher training for their teams and assets for a minimum of three days. Where applicable, individual refresher training may be conducted with an on-the-job principle. The training plans shall be submitted to the NMAA/UNMAS-UNMISS so they may plan the assessment visits accordingly.
- Mine action organisations shall inform the NMAA/UNMAS-UNMISS if their teams' composition changes. This may become subject to the assessment.
- The NMAA/UNMAS-UNMISS may subject a Team Supervisor to re-accreditation should one be moved from one team to another.
- The NMAA/UNMAS-UNMISS shall subject a Team Supervisor to re-accreditation whenever one changes the organisation.

19.3. EOD Examination

Before being given assignments in South Sudan, senior operational roles of the mine action organisations, including Technical Field Managers, Team Leaders and relief staff, shall take EOD written exams. In addition, the senior operational roles, such as operations managers and deputy operations managers, after passing their EOD written exams, shall also take Demolition Order Quality Assurance exams.

The NMAA/UNMAS-UNMISS shall arrange the above-mentioned exams. EOD Exams shall be designed in line with EOD qualifications and competencies required by the respective roles and in line with NTSGs Chapter 5, EOD.

In addition/instead of the EOD written exams, the NMAA/UNMAS-UNMISS may arrange EOD practical exams, depending on the English proficiency levels of the senior operational roles.

Note: should the candidate fail the first attempt, one rewrite is awarded. In exceptional circumstances, a third attempt may be awarded with approval from the NMAA/UNMAS-UNMISS

Chief Of Operations. In such a situation, should the third attempt be successful, the NMAA/UNMAS-UNMISS may introduce special monitoring for the individual for a set period minimum of three operational months. Special monitoring may be carried out in the form of a series of QA visits from the NMAA/UNMAS-UNMISS QA Officers/Specialists, as well as revision of Demolition Orders or other administrative work of the individual subjected to it.

The above process may be applied after the accreditation of an individual showing signs of skills and knowledge fade in the EOD practices throughout the deployment.

19.4. Accreditation Board Composition

Depending on which phase of accreditation is being undertaken, accreditation boards shall be formed that comprise, but not restricted to, some or all of the following appointments:

- NMAA/UNMAS-UNMISS OPS/QA Officers
- NMAA/UNMAS-UNMISS OPS/QA Officer Assistants
- NMAA/UNMAS-UNMISS Chief of Operations
- NMAA/UNMAS-UNMISS Specialist

The following applies:

- The board shall comprise appointments suitably qualified and experienced in the roles for which they are appointed and shall be able to apply the accreditation requirements fairly and equitably.
- When accreditation is required for specialist activities, i.e., MDD, medical, MRE, etc, then the accreditation body shall include the relevant NMAA/UNMAS-UNMISS 'specialist' or, in his/her absence, an NMAA/UNMAS-UNMISS representative with relevant qualifications and operational experience that shall allow him/her to carry-out the relevant role and responsibilities.

19.5. Board Responsibilities

Each board shall be responsible for conducting the desk assessment and the operational accreditation assessment of mine action organisations. The accreditation board have the following general responsibilities:

- Respond and/or react in a timely fashion to queries and/or applications from prospective or current operational mine action organisations concerning accreditation.
- Assess applications in a timely manner, ensuring delays do not unnecessarily impact the operational effectiveness of the applicants.
- Specify and provide national standards and guidelines for the accreditation of mine action organisations and operations.
- Provide operational accreditation assessment guideline scenarios to the mine action organisation teams/assets prior to their assessments.
- Accredit mine action organisation teams/assets.
- Act independently, impartially and with integrity during the accreditation process.
- Issue certificates authorising mine action organisations to conduct operational mine action activities/tasks that they have been accredited to conduct.

Whenever possible and/or practicable, boards shall comprise of those appointments detailed with 'primary responsibilities'. Depending on the accreditation phase, the practicalities and circumstances, and the specific requirements and availability of appointments, the board may require input or assistance from some or all of the other appointments listed.

Desk (Provisional) Accreditation Board:

- The Head of the NMAA/UNMAS-UNMISS – primary responsibility for authorising desk (provisional) accreditation to the mine action organisation that is required to conduct mine action activities in South Sudan.
- NMAA/UNMAS-UNMISS Chief of Operations – primary responsibility for conducting desk (provisional) assessment and for the production and issuing of the relevant certificates.
- NMAA/UNMAS-UNMISS Ops/QA officers and specialists to support and assist as requested.

Operational (Provisional) Accreditation Board:

- NMAA/UNMAS-UNMISS Chief of Operations – primary responsibility for authorising operational (provisional) accreditation and for the production and issuing of the relevant certificates.
- NMAA/UNMS-SS Ops/QA officers/specialist – primary responsibility for recommending operational (provisional) accreditation and for coordinating and conducting pre-deployment quality assurance assessments.

Operational Accreditation Board:

- The Chairperson/Programme Manager of NMAA/UNMAS-UNMISS – primary responsibility is to authorise the mine action organisation teams/assets to conduct mine action tasks for which they have been accredited in South Sudan.
- NMAA/UNMAS-UNMISS Chief of Operations – primary responsibility for organising and conducting operational accreditation assessments and for the production and issuing of the relevant certificates.
- NMAA/UNMAS-UNMISS Ops/QA officers/specialists – primary responsibility for assisting in conducting operational accreditation assessments.

19.6. Duration, Suspension and/or Termination of Operational Accreditation

Duration:

The period of operational accreditation shall last for a period of no more than 12 months from the date the team/asset was accredited if there are no key manning appointment changes to the asset or for the duration of the demining season (July 01st – June 30th). For a team/asset that has no operational stand down, the operational accreditation shall be automatically renewed to roll over into the next demining season unless directed otherwise by the NMAA/UNMAS-UNMISS.

Suspension:

The following list, although not exhaustive, details possible reasons when suspension of operational accreditation may be invoked against a mine action organisation.

- If monitoring results in the suspension of a task (refer to Chapter 14, paragraph 8).
- In the case of improper use of the accreditation agreement.
- In the event of failure to disclose major and significant management or operational changes.
- Failure to uphold the management capabilities of the Mine Action organisation

Termination:

The following list, although not exhaustive, details possible reasons why the NMAA/UNMAS-UNMISS may recommend the termination of the accreditation:

- If monitoring results in the suspension of a task (refer to Chapter 14, paragraph 8).
- If the accredited organisation terminates mine action activity.
- If the accredited organisation wishes not to prolong the accreditation agreement.
- If the requirements or provisions of standards or laws are changed and the accredited organisation cannot or will not ensure compliance with the new requirements or provisions.
- If adequate measures are not taken following the suspension of an accreditation.
- Failure to uphold the management capabilities of the Mine Action organisation.

Note: Before the termination of an accreditation agreement, the NMAA/UNMAS-UNMISS shall determine measures to be taken to re-clear land released prior to the cancellation of the accreditation agreement. The responsibility for re-clearing land and the cost of such re-clearing shall either lie with the mine action organisation or another party. The responsibilities should be specified in the contract of work.

Annex A - Training Declaration

TRAINING DECLARATION

This document declares that:- (print asset(s)/resource(s)sub-units designation) - _____

_____

of:- (print organisation name) -

_____

has/have undergone suitable and sufficient internal training that has complied with accredited organisational SOPs and NTSGs and is considered by the signatory as fit for purpose, capable and competent to conduct those mine action activities for which it has/they have been contracted/employed.

I, (print name) - _____ as the authorised representative of:-

(print organisation name) - _____ confirm the details of this declaration:

Signature: _____ Organisation Stamp:

Date: _____

The following documentation is attached and submitted in support of this declaration:

Course Outline/Programme	□
Nominal Roll of Students	□
Attendance Records	□
Instructor Details	□
Examiner Details	□
Evaluation/Interim Test Results	□
Final Test Results	□
Pass/Fail Criteria Results	□
Other Applicable Documentation	□

A copy of this declaration is to be sent immediately upon completion of each training course to the NMAA/UNMAS-UNMISS COO.

On written acknowledgement from the NMAA/UNMAS-UNMISS COO (in his absence the Dep Chief of Operations) confirming receipt of this declaration, an 'Operational (Provisional) Accreditation' may be issued or an operational accreditation assessment shall be arranged.

In certain circumstances, the acknowledgement of receipt of this declaration may be accompanied by written authority to deploy the indicated assets/resources/sub-unit on to operational tasks authorised by NMAA/UNMAS-UNMISS.

Annex B - Accreditation Process Checklist

Serial	Process description	Responsibility			Remarks
		Mine Action Organisation	Accreditation/Monitoring Body (Sub-office QA/Ops personalities & others as req'd)	NMAA/ UNMAS-UNMISS QA Coordinator	
PHASE ONE – DESK ASSESSMENT					
1	Submits enquiry to conduct mine action	✔			Shall be by letter, email, or fax
2	Receives and acknowledges receipt of enquiry			✔	By email or letter
3	Sends organisation the NMAA/UNMAS-UNMISS introduction letter			✔	Within 10-working days
4	Submits documents as required in introduction letter	✔			Preferably in e-format (Memory stick, CD-ROM, etc) or as an email
5	Acknowledge receipt of documentation			✔	By email or letter
6	Conduct desk assessment based on documentation			✔	
7	Inform organisation of decision			✔	By email or letter
8	Does application and supporting information meet the desk assessment requirements stage ?			✔ YES or NO	If **YES** go to Ser 12.
9	Notify applicant of additional information needed to process the application			✔ If **NO** in Ser 8	By email or letter
10	Applicant provides additional information	✔ If **NO** in Ser 8			Preferably in e-format (Memory stick, CD-ROM etc) or as an email

11	Does application and supporting information meet the desk assessment requirements for this stage ?			✔ **YES** or **NO**	If **NO** continue process as in Ser's 9/10 until process is exhausted or complete

12	Applicant download the current NTSG from UNMAS-UNMISS website.	✔			
13	Applicant drafts organisational SOPs covering **all** proposed mine action activities that comply with NTSG and submits to NMAA/ UNMAS-UNMISS QA Coordinator for appraisal/review	✔			Preferably in e-format (Memory stick, CD-ROM etc) or as email attachment that can be printed
14	Appraisal/review of submitted SOPs			✔	If an organisation is working in South Sudan, then SOPs shall be reviewed by the NMAA/UNMAS-UNMISS.
15	Do SOPs meet the desk assessment requirements and comply with NTSG?			✔ **YES** or **NO**	If **YES** go to Ser 19.
16	Notify the applicant of required amendments, changes to SOPs.			✔ If **NO** in Ser 15	Send appraisal form attached to email/letter

South Sudan

National Technical Standards Guidelines

Date: 03 October 2024

Chapter 20

Land Release Process of Roads/Routes

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20.1 Land Release Process of Roads/Routes

a. This Chapter defines the minimum standards and procedures for the application of Land Release process on roads/routes (in further text referred to as “routes”)~~n~~ and shall be read in conjunction with other relevant chapters within this NTSG.
b. All activities detailed within this Chapter shall be conducted in accordance with approved and accredited SOP’s of the organisation conducting Land Release of routes.
c. In general, Land Release process applied on routes follows the logic elaborated under Chapter 23, Land Release. it can be applied to suspected and confirmed hazards (in other words to hazards, which are already reflected in the Information Management System in Mine Action [IMSMA] database), or it may be applied to potential hazards, which are not yet reflected in the IMSMA database.
d. The Land Release process of routes comprises the Non-Technical Survey (NTS) and Clearance of roads, routes and tracks used by vehicles and pedestrians. In special cases, the process may consider the TS, as elaborated later on in this Chapter.
e. The two distinct phases for the Land Release applied on routes in South Sudan are listed below:
    - Phase 1: Route Survey (NTS, which may or may not involve TS);
    - Phase 2: Route Clearance (complemented by NTS throughout).
f. It is possible that different organisations or teams will be involved in each phase, therefore full and detailed task/IMSMA documentation shall be handed over from one phase to the next through the NMAA/UNMAS-UNMISS.
g. In addition, depending on the hazard (e.g. suspected Anti Vehicular / Anti-Tank mine threat on a well-used road) and type of task (suspected, confirmed or potential hazards), teams are required to conduct clearance, NTS and, where applicable, the TS as complementing activities which have been covered in Phase 2.

20.2 Phase 1: Route Survey – Planning

a. During the planning phase for any activity related to the Land Release applied on routes a comprehensive desktop analysis shall be conducted and presented in a written form as a Desk assessment report [Annex A], in addition to the generic implementation Plan. All potential sources of information shall be considered. Survey teams shall be the principal provider of information gathered from a multitude of sources. All sources of information should be explored and analysed to determine their authenticity and accuracy in order to develop an efficient plan that achieves the greatest results. Valuable information may also be obtained from 'technical' sources such as satellite images, aerial photographs, military dossiers and hospital records.

b. Organisations conducting Route Survey in South Sudan shall use the Route Assessment form in Survey123 platform to collate all the acquired information. Some sources of information that shall be covered in the survey are:
   - The local populace who know the area/route.
   - Knowledge of any previous EO accidents / incidents (and particularly mine accidents / incidents) along the route or in the general area.
   - Security threat in the area.
   - History of conflict in the area.
   - Previous use of the route by vehicles.
   - Weather and terrain – route conditions, obstacles.
   - Other general, relevant information of the area.

c. The listed information sources are not exhaustive and should be expanded as and when required. In order to ensure that a sufficient quantity of credible data is made available a number of resources should be acquired.

d. The authenticity and accuracy of survey data shall be determined by analysing the Type, Source and Details as per NTSG Chapter 1, Survey.

e. Survey information gathering should provide a source of continually updated data and not merely a 'single snap-shot' of the situation.

a. Assessment of Survey Information

a. The assessment of information obtained from the survey should involve the detailed examination and cross referencing of each item of information with as many credible sources as possible, an evaluation of these results and then the identification of significant facts of information concerning the route, leading ultimately to appropriate conclusions being made.

b. Route Survey shall always be conducted by suitably qualified and accredited specialists. The objective of assessing information is to ensure an accurate threat assessment and classification in order to prevent avoidable accidents/incidents from occurring.

c. Depending on the Survey, routes shall be classified into the following categories:
   - Not Surveyed – annotated by the colour **GREY** on NMAA/UNMAS-UNMISS maps.
   - No Evidence of EO (and mines in particular) – annotated by the colour **AMBER** on NMAA/UNMAS-UNMISS maps.
   - Mined (suspected or confirmed) – annotated by the colour **RED** on NMAA/UNMAS-UNMISS maps.

- Released through clearance – annotated by the colour **GREEN** on NMAA/UNMAS-UNMISS maps.
- Released through Route Survey – annotated by the colour **AMBER** on NMAA/UNMAS-UNMISS maps.

d. This classification allows Operation Managers to plan future clearance activities on or near mined routes or mined areas and shall allow the UN and other agencies to include appropriate safety and security measures in planning the movement of assets and personnel.

b. Not Surveyed

a. The "Not Surveyed" category is further defined within the following parameters: No recognised, complete or up to date Route Survey has been conducted during which the Route Assessment Form was completed and during which a comprehensive assessment was done meeting the Land Release criteria, such as (the list is not exhaustive):

- Any previous EO (and particularly mine-related) accidents or incidents in the area or along the route.
- All reported and/or suspected locations of EO contamination.
- The quantities and types of explosive hazards.
- Information on the local soil characteristics, vegetation and climate.

Note: If insufficient information is collected during the conduct of the survey (as required Chapter 1, Survey and Chapter 23, Land Release), to confidently categorise the road as "No evidence of EO", then its category shall remain "Not Surveyed".

c. No Evidence of EO

a. In addition to the principles outlined in Chapter 23, Land Release (including application of "All Reasonable Effort"), the category is further defined within the following parameters:

A formal Survey has taken place along the route with regards to completing the Route Assessment Form and:

- There is no information or suspicion of EO (particularly of mines) being laid on this or adjacent routes.
- There is no information of mine incidents / accidents on the route;
- The route has been frequently used by local population and large vehicles without incidents / accidents;

- The route is easily identifiable;
- There is no information regarding any military activity or cross line fighting having taken place;
- No defensive positions or ambush sites have been identified.

Note: In addition to NTS, and depending on indications based on the parameters listed above, the survey process may include the TS of the areas (routes or their sections) that may contain hazardous items indicated during the ongoing survey. An agreed linear distance shall be ~~also~~ considered for TS. The plan to apply TS shall be discussed and approved by NMAA/UNMAS-UNMISS Chief of Operations and elaborated in an Implementation Plan.

d. Suspected or Confirmed as Mined

a. This Category is further defined within the following parameters:

A formal survey (which shall only be conducted from known safe areas and shall not be conducted along the suspected route) has taken place, and:

- Although the route is in use, there have been mine incidents / accidents reported at any point in the past.
- There is information that mines were laid in the area and that there have been some mine incidents / accidents reported.
- There is information that hostilities took place in the area and the route is avoided/abandoned, although there are no known recorded mine incidents / accidents.
- There is reliable information that mines have been laid and there have been recent mine incidents / accidents.
- There is credible information that the route has been mined.
- The local population believes the route to be mined but cannot give details of specific incidents.

e. Cleared

a. A route that has been physically and systematically processed by a demining organisation to ensure the removal and/or destruction of all EO hazards to a specified depth in accordance with NTSGs.

f. Route re-classification

b. Route classification is a continuous process which aims to accurately reflect the true threat. In particular changes to assumptions and to the reliability of sources of information should be revisited on a regular basis, and the implication of these changes examined fully.

20.3 Information management

a. Records and information gathered during Route Survey-shall be retained in the Survey123 platform from where it shall be referred to for any future mine action process required on the route, including the cancellation of Hazardous Areas. All information shall be made available to all demining organisations and other organisations with a vested interest in the route.
b. The Route Survey information shall be used to justify the judgement used in the classifying of route portions, either ‘no evidence of mines’, or ‘suspected mined areas’, or ‘confirmed mined areas’. This information should be referred to during all internal and external quality assurance checks and future route enquiries.

c. Responsibilities

a. It is the responsibility of all mine action organisations that undertake route survey to conduct this process in accordance with this NTSG using only accredited assets and SOP.
b. It is the responsibility of the mine action organisation to complete in Survey123 platform the Route Assessment Form, Survey Form and Hazard Report Form for all identified hazards they encounter (both, confirmed and suspected) during the conduct of the survey, even if these hazards do not directly impinge on the Route.
c. NMAA/UNMAS-UNMISS shall issue maps, updated at regular intervals, that should show the current state of roads. Any further clarification needed shall be directed through the NMAA/UNMAS-UNMISS Chief of Operations.

20.4 Phase 2 Route Clearance

a. Following the Phase 1 Route Survey, those areas that have been categorised as suspected or confirmed as mined shall require an initial further assessment and following this, integrated clearance assets to systematically process and clear the area (route or its

section). In addition, an ongoing assessment shall be conducted for the life cycle of the task and any fresh finds or conclusions added to the existing Implementation Plan.

b. This is particularly relevant for suspected mined routes as their later sections may be released at one stage, assuming all reasonable effort had been applied through clearance without any evidence of EO (and mines in particular), complemented by acclamatory survey information.

a. Clearance Depths

a. During route clearance operations the mine action organisation shall ensure the removal and/or destruction of all EO (inclusive of Anti-Tank mines) from the route to a minimum depth of 20cm; in case Anti-Personnel mines are also present, they shall be removed and/or destroyed as per requirements elaborated under Chapter 4, Manual Mine Clearance; and as per Implementation Plan. These clearance depths shall only be varied by an amendment to the Implementation Plan, which requires appropriate authorisation from NMAA/UNMAS-UNMISS.

b. Clearance Width

a. The stipulated clearance width shall be agreed between NMAA/UNMAS-UNMISS and the clearance implementing partner prior to commencement of the clearance and clearly recorded in the Implementing Plan and be based upon the current/original width of the route and its final intended purpose, but in general, the clearance width shall be the actual original width of the road with an additional 0.5m on each side. These distances may be amended with the approval of NMAA/UNMAS-UNMISS Chief of Operations if a specific threat is identified that requires the distances to change and/or there is a specific clearance width requirement from a donor.

c. Concept of Operations

a. It may be that sufficient information was made available from the Route Survey regarding specific hazardous areas to allow for clearance to take place without any further follow-up assessment. When this is the case, appropriate clearance assets shall be tasked directly by the NMAA/UNMAS-UNMISS to clear those identified contaminated areas. Clearance plan shall be elaborated in details in an Implementation Plan and approved by NMAA/UNMAS-UNMISS. This applies on both routes suspected and confirmed for mines, as elaborated under Phase 2, Route Clearance.

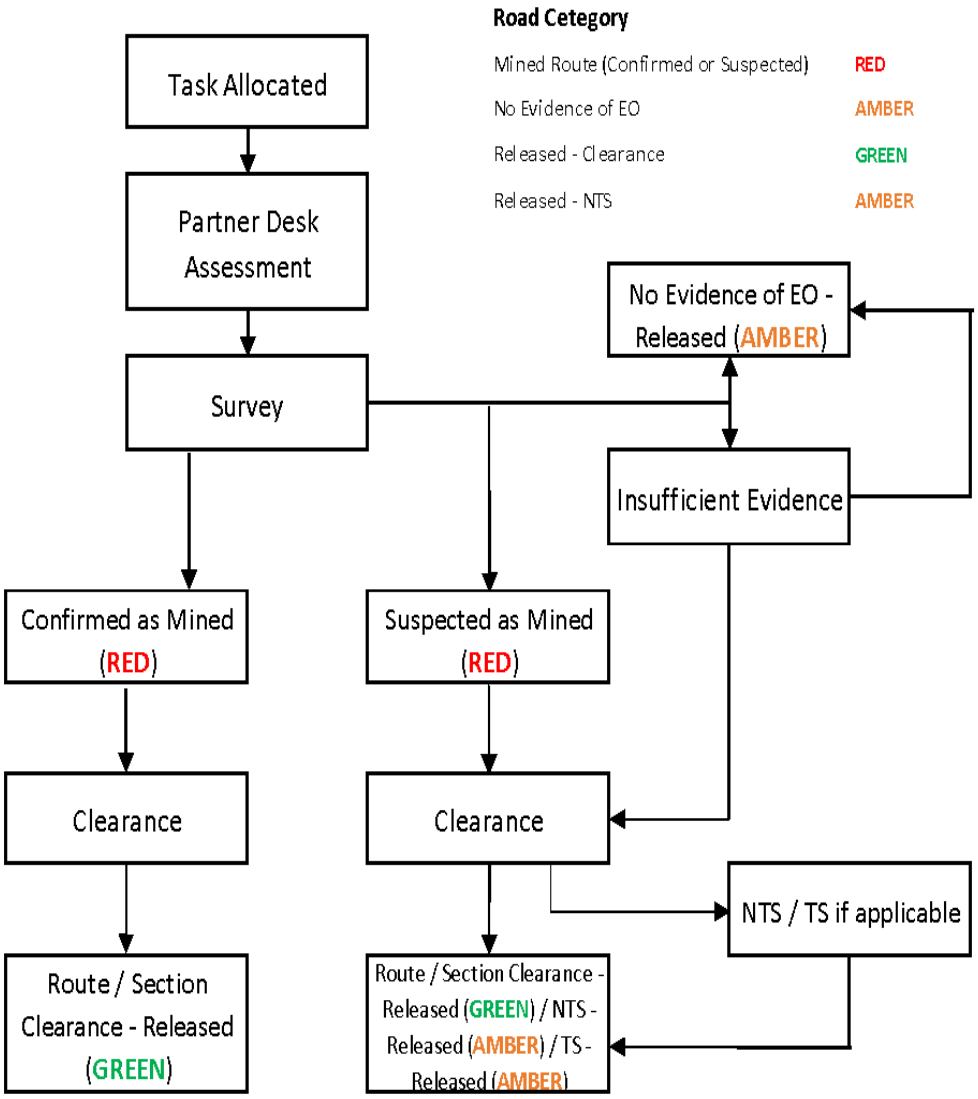
b. When insufficient information is made available from the Route Survey regarding specific hazardous areas, then a further assessment may be conducted to identify those specific hazardous areas (routes or their sections); or a decision may be made to commence Phase 2.

c. In special cases, in order to expedite the assessment and identification of specific hazardous areas, TS may be considered as an option and one or more of the following assessment tools may be utilised, as approved by NMAA/UNMAS-UNMISS Chief of Operations~~,~~

   - Ground Penetrating Radar (preferably, as the primary tool).
   - Mine Detection Dogs (MDD).

d. In addition to the above assessment tools, location information in the form of DGPS readings shall also be taken along the route (centre line).
e. On completion of the assessment, the information shall then be analysed to rule out presence of hazards or to verify identified hazardous areas (routes or their sections) as suspected[1] or confirmed. Following this identification, a mine action organisation shall be requested to submit an Implementation Plan to the NMAA/UNMAS-UNMISS for approval. Following the approval, those previously identified hazardous areas shall be cleared by integrated clearance assets.
f. In essence, the suspected or confirmed mined areas highlighted from the Desktop Assessment and Implementation Plan, as well as any further such areas, shall be subjected to clearance. These routes or their sections will be, post completion, changed to **Green**.
g. The remaining sections of the route subjected to NTS (gathering information along the length of the route), shall be re-categorised as **Amber**/no evidence of EO~~-~~as this has not been subjected to a 100% clearance.
h. Due diligence shall be exercised at all times by all concerned in this process to ensure safe and efficient implementation.
i. All information, including but not limited to DGPS readings and any subsequent mapping, shall become the property of the NMAA/UNMAS-UNMISS.

[1] In general, suspected mined routes in South Sudan cannot be simply discredited through survey, as proven by historical evidence (e.i. numerous cases of minimum metal mines, sporadically laid without any obvious tactical reason and failed to function as intended on well-used routes).



20.5 Route Clearance Method of Operation

a. The NMAA/UNMAS-UNMISS Chief of Operations may authorise a variation of methods of operation to suit specific situations, provided the required and defined level of detection and clearance is still being achieved.

During manual and MDD clearance or their combination, all signals/indications located within identified suspected or confirmed hazardous areas shall be investigated. The “start point” and area (length) to be cleared shall be task-specific and specified in the Implementation Plan.

b. In areas (routes) where the hazardous area cannot be clearly defined nor detailed, then the route shall be cleared using an appropriate methodology based on the perceived threat which will be described in the Implementation Plan, as agreed with the

NMAA/UNMAS-UNMISS. This is further elaborated in the following section, Clearance Methodologies.

j. The methods described below are exemplary as other methods may apply as approved by the NMAA/UNMAS-UNMISS Chief of Operations.

k. It should be noted that linear type clearance tasks require a high degree of command and control, as clearance teams are often spread out over a large distance and visual contact may be lost, particularly when there is vegetation present.

l. Depending on hazards and risk assessment, some demining procedures and safety precautions such as distance between deminers may be relaxed to those used for normal demining tasks. This shall be clearly explained in the respective organisational SOP and reinforced in the Implementation Plan.

d. Clearance Methodologies

a. Clearance methodology shall depend on type of assets available and type of threat (i.e. Anti-Tank mines including “minimum metal mines”, combination of Anti-Tank and Anti-Personnel mines, Anti-Tank mines and Cluster Munitions etc.) and shall be covered in details in organisational SOPs and approved by NMAA/UNMAS-UNMISS as required. In general, it may consider:

- “arrowhead formation”, with deminers moving forward with their detectors in the direction of the road/hazardous area.
- Standard Manual Mine Clearance Method forward breaching method, as per Chapter 4, Manual Mine Clearance.
- Linear Manual Mine Clearance Method, as per Chapter 4, Manual Mine Clearance.

20.6 Post Road Clearance Activities

Marking

a. In general, marking shall be applied in line with NTSG Chapter 3, Marking System.

The marking of any cleared area following clearance must be unambiguous and permanent. The Benchmark shall be physically marked, however the Start Point and subsequent Turning Points shall be recorded using a DGPS.

a. If following the assessment, no specific hazardous areas are identified, then the centreline of the route shall be used as the marking line; it is this marking line that shall be utilised for the turning points/perimeter coordinates with the information being recorded with DGPS.

b. For those areas where specific hazards are identified and subsequently cleared, perimeter coordinates for the whole area (polygon), are required. The information shall be recorded again with DGPS.

c. All turning points / perimeter coordinates shall be indicated on the IMSMA Completion report and associated map submitted in Survey123.

d. Metal pickets shall not be used to mark Turning Points / Intermediate Points.

Documentation

When following route clearance that results in no residual contamination existing to the flanks of the road/route, then this shall be clearly annotated on the IMSMA Completion Report. If, however following clearance, residual contamination still exists on either flank of the route and HA's have only been partially cleared then a Completion Report shall be submitted clearly indicating the area cleared and a new Hazard report shall be compiled clearly explaining the area yet to be cleared.

Rehabilitation and Reconstruction

Following the route clearance and prior to the actual route being reconstructed, all HA's remaining to the flanks of road/route shall be marked to allow work to continue safely.

Annex A to NTSG Chapter 20 Route Verification

ROUTE VERIFICATION DESK-TOP ASSESSMENT REPORT TEMPLATE

(During the planning phase for any Route Verification activity a comprehensive desktop analysis shall be conducted and presented in a written formal report. This should include all potential sources of information from a multitude of resources. All sources of information should be explored and analysed to determine their authenticity and accuracy, e.g. IMSMA information, other historical information from past reports – photographs, military dossiers and hospital records, recce's, local informants etc. The report shall present all findings and recommendations and shall be evaluated by UNMAS-SS HQ. Only after approval, the organisation shall consider teams deployment and implementation)

Organisation / Team ID	
HA ID:	
Start Point Longitude (dd.ddddd E)	
Start Point Latitude (dd.ddddd N)	
End Point Longitude (dd.ddddd E)	
End Point Latitude (dd.ddddd N)	
Date: dd/mm/yyyy	
Name/Position:	

Background

(Provide context, locations, route length, who requested the verification – reason for clearance, any historical information including AV accidents with coordinates, previous clearance information and map indicating key features and the actual route)

Desk-top Assessment – IMSMA Analysis

(Analyse all relevant information available on IMSMA, including any accidents in the general areas, accident and victim report analysis, any open/closed minefields, survey information, open or closed spot tasks)

a) Route Verification and Clearance

(Provide detailed information about any previous route clearance – who, when, what was found etc)

b) Open Hazards

(Provide HA IDs and explain threat, especially if AV mine related. Indicate the location of the hazard on the map)

c) Closed Hazards

(Analyse all existing completion reports in the area with focus on the HA type and any indication of AP and AV mines)

d) Accidents

(Analyse all existing accident and victim report from the area with focus on any AP and AV mine related incidents)

Additional Information

(Provide any additional information from other sources, CLOs, local informants, recce's, technical reports etc)

Recommendations

(Provide comments, risk assessment and key recommendations outlining the plan that will be presented in more details in the Implementation Plan. The plan must be logical, linked with analysis from the previous sections and specific)

South Sudan

National Technical Standards Guidelines

Date: 26 June 2023

(No changes made in 2024)

Chapter 21

Explosive Detection Dogs

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1.1 Introduction.

a. Explosive Detection Dog Teams (EDDT) can be used in many different roles within risk mitigating operations. They are to complement the existing security framework. As such, they are well suited for activities such as Entry Control Point (ECP) deployment, luggage/cargo verification, facility security screening, open area verification and IED incident response.

b. There are a variety of security scenarios in which Explosive Detection Dog (EDD) teams can be utilised. These National Standards (NS) are based on common principles that can be applied to all EDD operations in multiple contexts, and therefore shall be considered a minimum benchmark when establishing operational procedures for deployment of EDDTs.

c. EDDT are meant to complement and not replace other security and threat mitigating measures, and as such, the relationship and interdependence between different elements need to be examined and understood.

1.2 Scope

This standard provides specifications and guidelines for operational procedures to be adopted for EDD operations. For the purposes of this, “standard operational procedures” means procedures to be applied as part of an EDD operation. They include, but are not limited to; operational accreditation, EDD operations, EDD search procedures, capability and limitations of EDD, quality assurance and EDD welfare.

1.3 General Principles

1.3.1 Composition of an EDDT

a. An EEDT should comprise of one of the following two structures:

- EDDT 1: 1 x handler and 2 x EDD.

- EDDT 2: 1 x handler and 1 x EDD.

b. The composition will be dependent upon funding, resource availability, and the contract requirements. Any deviations from the recommended team structure should be approved through agreement between the client project manager and the service provider to ensure adherence to the objectives in the contract.

c. For all deployments beyond a few days, there should be a relief EDDT capacity planned into all EDD activities to cover leave rotations, sick days, rest days, training and accreditation outcomes to ensure operation effectiveness is maintained.

1.3.2 Capabilities of an EDDT

a. An EDD will search, detect and indicate the presence of explosives which it has been trained on (depending on operational requirement and threat), firearms and ammunition.
b. An EDDT can search buildings, open areas outdoors, vehicles and personal/household possessions, e.g. luggage, when it is safe to do so.
c. An EDDT can carry out routine searches as a useful means of deterrence.
d. An EDDT can provide negative information on searched areas and/or positive information of a credible threat.
e. An EDD can be used in certain areas where it is difficult to use other means of search, e.g. high metal content areas, confined spaces etc.
f. If the threat level changes in the operational environment, then through training and testing the capacity of an EDD can be expanded to extend its detecting ability.

1.3.3 Limitations of an EDDT

a. An EDD may only detect substances within a limited range with the performance affected by the distance and quantity of the available scent.
b. An EDD may suffer a lowering of performance in areas where there are distractions, such as areas with stray dogs, foodstuffs or obstacles that are detrimental to the dog's health.
c. An EDD may suffer a lowering in performance in extreme weather conditions.
d. An EDD can only be accredited to work with one handler at any time.
e. An EDDT should not be deployed if there is specific evidence of a victim operated device.

1.4 Training

1.4.1 Maintenance and Corrective Training

a. Training shall be tailored to each individual EDD and handler to ensure that the required standard is maintained. Quantity and training disciplines will vary between EDDT.

b. An EDDT shall undergo a minimum of one (1) maintenance training session per week. The number of training sessions per week should increase accordingly if problems are identified.
c. All training – continuation or drop-aid – will be recorded. Training records shall include authentic comprehensive details describing individual results: exercise(s) conducted, substances present, soak time, correct/false/missed indications, problems identified, and corrective actions taken. This will be submitted to NMAA/UNMAS-SS when requested.
d. To be effective training, areas and disciplines performed must reflect the operational working environment.
e. Organisation(s) shall have access to sufficient and reliable training aids / training substances for daily use.

1.4.2 Training Aids and Equipment

a. The substances on which EDD are trained and tested shall be determined by the threat. If the threat changes, then additional substance(s) can be added to the EDD capability through training and testing.
b. Either “live” substances or reliable controlled/verified scent signatures shall be used.
c. Substances/scent signatures from the following groups that may be used, but are not limited to, include: Ammonium Nitrate, Hexogen, Octogen, Penthrite, Nitrocellulose, Sulphur and Firearms.
d. Training aids shall be stored separately in appropriate hermetically sealed containers to prevent contamination.
e. When storing training aids, the storage conditions shall be in accordance with the manufacturer’s instructions.
f. Prevention of contamination to the substance and/or the environment it is placed in shall be ensured. Sterile containers are to be used and substance handling should be done using protective gloves or tweezers.

1.5 Quality Assurance

1.5.1 Internal Quality Assurance

a. Internal QA evaluation shall be undertaken by the implementing organisation prior to accreditation (at least three (3) days before requested accreditation date), at least every month, and after a period of more than two (2) weeks where there has been no training.

b. The internal QA evaluation process shall follow the guidelines for the quality assurance test (Annex A).
c. The internal QA must be completed by a qualified EDD trainer.
d. The mandatory monthly evaluation may be completed in stages throughout the month.
e. Results from the evaluations' records shall include authentic comprehensive details describing individual results, exercise conducted, substances present, soak time, correct/false/missed indications, problems identified, suggested corrective actions; and the document shall be signed by the person conducting the evaluation.
f. If an EDD fails the evaluation, the EDD shall be taken out of operations for re-training until the identified problem has been solved. A new evaluation shall be conducted and passed before the dog can be operationally redeployed.
g. The NMAA/UNMAS-SS QA officer has the right to be present during those evaluations.

1.5.2 External Quality Assurance

a. Continuous external QA shall be conducted by the NMAA/UNMAS-SSto ensure maintained standards of efficiency at least every six (6) months.
b. The number of exercises to be assessed shall be determined by the QA officer.
c. The failure to comply with this NTSG and/or the operator's own SOP shall result in a suspension of the accreditation.
d. An example of the evaluation form shall be made available to all organisations prior to the evaluation period. The manager, or the senior supervisor of the organisation being evaluated, has the right to be present during the evaluation.
e. The external QA officer may record (video) the assessment for feedback and records.
f. If suspension occurs, the time frame in which the EDDT can be re-evaluated shall be determined by the QA officer and based upon the severity of the nonconformity and the training time needed to resolve the problem.
g. Training must be conducted on the areas of failure, and a new assessment must be conducted and passed on the failed discipline(s) before the EDD can be re-used for operations.

h. Non-severe non-conformities may be re-evaluated by the implementing organisation's qualified EDD trainer. Severe non-conformities shall be re-evaluated by the QA officer.

1.6 Operational Accreditation

a. Operational accreditation is the procedure by which a specific EDDT is formally recognized as competent and able to carry out a particular activity, such as verification/search of a vehicle, facility, area or luggage/cargo.
b. The granting of such accreditation is valid only for the composition of the EDDT tested and on the basis that the assigned tasks will not change beyond the scope or intention of the original accreditation.
c. An EDDT shall not operate without operational accreditation being granted to the specific team for the relevant activity.
d. The evaluation board for accreditation shall consist of an assigned NMAA/UNMAS-SSQA officer, but may have additional board members. The assigned QA officer shall have well documented EDD experience and is responsible for preparing and conducting the on-site assessment.
e. The manager, or the senior supervisor of the organisation being evaluated has the right to be present during the evaluation.
f. If the EDD Team Leader undertakes an on-site assessment as an EDD handler, his/hers shall be the first EDDT tested, and then they may observe the subsequent testing conducted.
g. An example of the evaluation form shall be made available to all organisations prior to the evaluation being conducted.

1.6.1 General Rules

a. Accreditation shall only be given after an appraisal of the organisations' standard operational procedures (SOPs) and the practical on-site assessment of each EDDT as outlined in Annex A.
b. The accreditation shall be valid for twelve (12) months.
c. All EDD, that are new to South Sudan, shall undergo a two (2) week acclimatisation period before being deployed operationally.
d. On application for accreditation the organisation shall ensure that detailed CVs of each dog handler are submitted, as well as information about each of the dogs intended for deployment. This shall include ;information about the name, microchip number, breed, sex, date of birth, comprehensive detailed training records (for a minimum of one (1)

month), previous accreditations, vaccinations and any known vices of EDDs.

e. A qualified veterinarian must certify each EDD to be in good health and suitable for operational duties. Any ailment the EDD has shall be recorded. This shall be done at least once per year and individual EDD records are to be submitted to NMAA/UNMAS-SSduring the accreditation process.

f. The most important element of the accreditation is the on-site assessment. The following general rules shall apply when licensing the EDDT:

- Evaluation Area: All evaluations will be carried out at a site/area/facility approved by the QA officer following guidelines detailed in Annex A. The EDD handler has the right to observe the assigned search area prior to the evaluation.
- Weather Conditions: Evaluation of EDD will only be carried out if the weather is similar to that in which the tested organisation would conduct normal EDD operations. Restrictions on operating weather conditions should be detailed in the implementing organisation's SOP.
- Type of Explosive/Substance: The evaluation will be conducted using reliable controlled /verified scent signatures and/or samples of live explosives, weapons and ammunition detailed in 'The odour/substance list' Annex A.
- Search area: Search area will reflect Statement of Work (SOW) of awarded contract i.e. vehicles, luggage/cargo, buildings/facilities, open areas etc. Each assigned search area will contain:
  i. Zero (0) to 6 (six) hides containing an odour sample/aid as detailed in the odour detection list at Annex A.
  ii. Zero (0) to six (6) hides containing blank distractors.
- Search technique during the evaluation: The search techniques used in the evaluation must be in accordance with the SOP of the organisation being evaluated.

- Search break: The dog handler may ask for a search break any time during a search.
- Time restrictions: Time restrictions will be decided by the QA officer depending on the type of test conducted and should reflect the expected speed of operational activities.

g. Pass Criteria:

In order to pass the evaluation, the following standards shall be met:

- The organisation's SOP is followed correctly.
- The EDD must be in good health/physical condition.
- 100% indication of all explosive hides per EDD.
- The EDD must have a passive indication: static without leaving or manipulating/damaging the source.
- No false indications are reported by the handler.

h. Failure criteria:

- Less than 100 % of all the explosive hides found per EDD.
- False indications are reported by the handler.
- The EDD actively/intentionally manipulates/damages the hide.
- The EDD demonstrates any environmental, stress, submission, or aggression issues that could reduce operational effectiveness.
- The EDDT does not cover the full search area.
- The EDD handler does not follow their organisation's SOPs.
- The EDD handler is not able to control the dog during the assessment.
- The EDD handler conducts the search in an unsafe manner.

1.6.2 Action on failure

a. If an EDD team fails accreditation it can be re-evaluated as follows:

- First fail – re-evaluation at a time requested by the tested organisation;
- Second fail – re-evaluation after a minimum of seven (7) days;
- Third fail – re-evaluation after a minimum of fourteen (14) days;
- Fourth fail – re-evaluation after a minimum of thirty (30) days.

b. If critical non-conformities are identified for several of the EDD teams belonging to an organisation, the accreditation board will have the right to terminate the accreditation for the overall EDD operation of that organisation.

1.6.3 Marking of Finds

a. When the presence of an explosive substance is indicated by the EDD and the handler reports the indication as correct to the QA officer, the QA officer will exclude a relevant area surrounding the reported indication, and the handler can recommence the search. The QA officer shall not confirm if the indication is correct.
b. The test manager may instruct the EDD handler to reward their EDD after an indication (this may not exceed 50% of the finds throughout the whole of the accreditation).

1.6.4 Additional Regulations

a. The EDD handler's equipment shall be serviceable and will be displayed on request.
b. During accreditation and operations, the EDD handler shall carry a canine first aid pack and have the relevant training to administer first aid if needed.

1.7 EDD Operations

1.7.1 EDD Standard Operational procedures (SOP)

a. The SOP shall be sent through to NMAA/ UNMAS-SS for approval prior to operational accreditation.
b. The SOP shall include, but is not limited to the following information:
   - General requirements – team composition, work/rest routine, employee responsibilities;

- Search procedures for vehicles, baggage/cargo, building and outdoor search;
- Actions on a positive indication or point of interest;
- EDD Welfare – kennel requirements/routines, veterinarian coverage, CASEVAC/MEDEVAC, food storage and transportation;
- Training - continuation, remedial and drop aid training on duty posts;
- Quality assurance – internal quality assurance (IQA), external quality assurance (EQA) and the organisation's actions on pass/fail of assessment;
- Reports – daily, weekly, monthly and incident/accident reports;
- Monitoring and recording – daily health checks, training records and scent sample register;
- Administration and handling of scent samples/training aids – contamination drills, storage and register.

1.7.2 EDD Deployment

a. The EDDT shall only be deployed for categories of search they have been accredited for.
b. Training and testing shall be conducted to ensure the EDD is capable of detecting all explosives or substances that are believed to be present in the operating theatre. Whenever a new threat is suspected or confirmed, additional training and testing shall be conducted.
c. EDDs shall not be used in areas with visible contamination of explosives, ERW or IED or areas where demolitions have been carried out.
d. The EDD shall be constantly visible to the handler. When obstacles prevent this, search areas shall be broken into smaller parts to permit a line of sight. Areas with insufficient light can be searched with the use of artificial light.
e. Once an EDD has indicated the presence of explosives/firearms or ammunition the handler is to report this immediately to the security point of contact/supervisor. Under no circumstance is the handler to attempt to remove or investigate any object that the EDD has indicated on.

f. EDDT are not to be deployed as a secondary confirmation of the presence of a device.

1.7.3 EDD Search Procedures

a. Search methods may vary depending on the training received and the organisational SOP.

b. When the EDD detects a substance which it is trained on, the EDD shall passively indicate the discovery as per the organisation's SOP by sitting, lying or standing close to the find, without moving around or onto the find.

c. Areas where the EDD has shown points of interest shall be reported to the security point of contact/supervisor.

d. If the environment and circumstances are such that an EDD may not search an entire area, then the EDD will either not be used or its limited use shall be reported to the security point of contact/supervisor.

e. The EDD will only work as long as interest is maintained. If the EDD work rate is affected, the search shall be terminated and the EDD given a rest. A break of at least 10 minutes should be considered for every working hour.

f. General search sequence - Ordinarily, search activities will adhere to the following format:

- Pre search assessments/risk assessment;
- Plan formulation;
- Carry out search SOPs;
- Reporting findings and/or shortcomings.

1.7.4 Environmental factors

a. Organisations shall establish procedures for the rest and rotation of EDD that consider the environmental conditions and the individual natures of the EDD.

b. If the weather has a debilitating effect on the EDD capability, the EDD may not be deployed.

c. Atmospheric pollution may prevent an EDD from working effectively; therefore, EDDs shall not be used in areas where the atmosphere is excessively polluted by gases, smoke or odours from petroleum

products, fertiliser, chemicals, domestic burning or factory exhausts, that markedly affect the EDDs' capability to detect.

d. EDDs have a limited capability of working for long periods in hot climates. During hot or arduous conditions, the EDD handler shall ensure frequent change of the EDDs or rest periods to ensure optimal efficiency of the team. Air-conditioned duty posts may be used to aid in recovery of a fatigued EDD.

1.8 EDD Welfare

a. EDD welfare is paramount on operational duty. All issues concerning this shall be recorded and NMAA/UNMAS-SSshall be informed.

b. All organisations shall comply with IMAS 09.44 Guide Occupational Health and General Dog Care which contains the regulations in regard to dog care and welfare.

1.8.1 Medical considerations

a. All EDDs shall be deployed to their country of operations with a veterinarian certificate fit for duty and a full veterinary history. This shall highlight ailments, any previous conditions and any treatments past or present.

b. All EDDs will undergo a veterinary examination at least once per year.

c. The EDD handler is responsible for conducting a daily health check on each dog. This shall include checks on general health, behaviour and vaccines/treatments. All records shall be maintained and available to NMAA/UNMAS-SS when requested.

d. When an EDD handler is on leave, a handover/takeover shall be conducted with a suitably qualified person to transfer the responsibility for the continued daily health check. This will be recorded and kept with each individual EDD.

e. All EDD handlers shall carry a canine first aid pack and have the relevant training to administer canine first aid if required.

f. A veterinarian officer shall be available when required.

1.8.2 Kennelling and general care

a. In order to ensure the dogs' welfare, the following should be provided:

- Adequate kennel and shelter facility;

- Physical and mental exercise;

- Sufficient nutrient-rich food, including supplements for hard physical work;
- A high standard of general hygiene;
- Adequate transportation facilities (fitted with air conditioning) and procedures;
- Periodic health checks and treatment;
- Vaccinations against common diseases;
- Skilled veterinary support;
- Only certified handler/kennel assistants can handle/walk/feed EDDs;
- Dog food shall be stored in appropriate conditions. This shall include but is not limited to: sealed containers, vermin free zone and temperature-controlled environment;
- Dog food may be tested prior to feeding to ensure the quality has not been compromised during manufacture, storage or shipment.

IMAS 09.44 further details standards of occupational health and general dog care. These standards shall apply to all EDDs deployed

Annex A to Chapter 21 Guidelines for UNMAS-SS EDD Accreditation test

Substances used will be recorded in on-site assessment protocol. Substances are divided into groups based on the origin. Substances which EDDs are trained and tested on shall be determined by the threat. If there is a change in threat, substance(s) can be added to the list. Either “live” substances or reliable controlled/verified scent signatures will be used.

Substances used may include but are not limited to:

Odour/substance list:	
Group	**Examples of Products / Substances**
Ammonium nitrate group	Amatol, Ammonal, Amatex, ANFO, ANNM
Hexogen group	RDX, C4, PE4, COMP A-3, M112, HEXAL, SHEET
Octogen group	HMX, LX-14, LX-17-0, PBX-9502. PBX-9503
Penthrite group	Nitropenta (PETN)
Tolite	TNT, Trotyl
Nitrocellulose	Propellant powder
Sulphur	Black powder /gun powder
Other products	Semtex. TATP, Blasting gelatine
Firearms	Weapons, weapon parts, ammunition

Test procedure

1. General conditions

- **The** test shall be performed in controlled circumstances;
- the dog handler will follow instructions given by the Test Manager;
- the dog must be in good health / physical condition to commence the test;
- any commands shall be given to the dog in a normal tone
- positive punishment(verbal or physical/psychological abuse; or the use of aversive equipment) is not allowed;
- the assessment will be performed with the dog on and/or off leash as instructed by the Test Manager in accordance with the organisations SOPs;
- the exercise starts and ends on the command of the Test Manger;
- passive indication: static and silent indication (without leaving, manipulating or damaging the hide);

- hide: the odour source and its surroundings;
- rewards may be given under the test manager's instruction, but must not exceed 50% of the indications throughout the whole test.

2. Pass criteria

- the EDD must be in good health / physical condition;
- the EDD team must find all hides throughout the exercises;
- the EDD must have a passive indication: static (without leaving or manipulating/damaging the source);
- the organisation's SOPs are followed correctly;
- no false indications are reported by the handler.

3. Disqualification situations

- The EDD shows uncontrolled submissive or aggressive behaviour.
- The EDD shows any environmental or stress issues that could reduce operational effectiveness.
- The EDD actively/intentionally manipulates the hide.
- The handler is not able to control the dog during the assessment.
- The handler does not cover the full search area.
- The handler conducts the search in an unsafe manner.
- The handler does not follow their organisation's SOPs.
- Threatening commands, intimidating behaviour or physical punishment is used.
- The EDD shows uncontrollable barking behaviour.
- Spike collars or e-collars are used.
- Assessment rules or animal right laws are violated.
- Suspicion of fraud (e.g. collar use - rubber band, hidden spikes).

4. Order of the exercises

Exercises shall be performed by the dog handler, in four sessions, under the supervision and following the instructions of the Test Manager. Exercises shall reflect the tasks for which the EDDT is to be employed. The exercises can be performed in any order chosen by the QA officer/assessor.

5. Actions on failure procedures

In case of failure the EDD team will be given the opportunity to be re-tested by following the below sequence:

- Accreditation test. If failed;
- After organisation requests, re-test. If failed;
- After 7 days, re-test. If failed;
- After 14 days, re-test. If failed;
- After 30 days, re-test.

5. Exercise description and items benchmark:

Exercise number: 1

Search, detect and indicate the presence of explosives, weapons and/or ammunition hidden in transportation means.

Area to be searched: a search area including 1 – 6 types of transportation means such as cars, trucks, buses, trailers.

Requirements: Search shall be conducted on and/or off leash, according to organisational SOP, following the instructions of the Test Manager. Passive indication is mandatory. The type of indication is announced by the handler before starting the exercise. The handler must await acknowledgment from the Test Manager before approaching / communicating with the dog during indication. Finding and correctly indicating on all hides in the exercise is mandatory. No false indications are allowed.

Set up: The number of hides is unknown for the handler (0 to 6). Products / substances used in the evaluation are in accordance with the substance list in this document. A varied number (0 to 6) of blank distractors may be used in the evaluation.

Provided information: The vehicles and areas (exterior and/or interior) to be searched will be presented by the Test Manager. The dog handler has no knowledge about how many hides are to be found and she / he is instructed - in case of indication – to continue to search the remaining transportation means.

Exercise timing: up to 30 minutes for the entire exercise.

Exercise number: 2

Search, detect and indicate the presence of explosives, weapons and/or ammunition hidden indoors.

Area to be searched: The area to be searched shall be an enclosed structure such as accommodation, hotel, airport, office buildings, stores, storage house etc that may vary in size from 50 m² to 500 m².

Requirements: Search shall be conducted on and/or off leash, according to organisational SOP, following the instructions of the Test Manager. Passive indication is mandatory. The type of indication is announced by the handler before starting the exercise. The handler must await acknowledgment from the Test Manager before approaching / communicating with the dog during indication. Finding and correctly indicating on all hides in the exercise is mandatory. No false indications are allowed.

Set up: The number of hides is unknown for the handler (0 to 6). Products / substances used in the evaluation are in accordance with the substance list in this document. A varied number (0 to 6) of blank distractors may be used in the evaluation.

Provided information: The search area will be presented by the Test Manager. The handler has no knowledge about how many hides are to be found and she / he is instructed - in case of indication – to continue to search the remaining area.

Exercise timing: The search time will be set by the Test Manager according to the size of the search area before each exercise.

Exercise number: 3

Search, detect and indicate the presence of explosives, weapons and/or ammunition hidden outdoors.

Area to be searched: a search area may be an open field, industry area, parking lot, forest, railway, train platform, bridge, stadium, route etc. The assigned search area will be between 500m² to 1000 m² and it can be divided into several parts.

Requirements: Search shall be conducted on and/or off leash, according to the organisational SOP, following the instructions of the Test Manager. Passive indication is mandatory. The type of indication is announced by the handler before starting the exercise. The handler must await acknowledgment from the Test Manager before approaching / communicating with the dog during indication. Finding and correctly indicating on all hides in the exercise is mandatory. No false indications are allowed.

Set up: The number of hides is unknown for the dog handler (0 to 6). Products / substances used in the evaluation are in accordance with the substance list in this document. A varied number (0 to 6) of blank distractors may be used in the evaluation.

Provided information: The search area will be presented by the Test Manager. The dog handler has no knowledge about how many hides are to be found and she / he is instructed - in case of indication – to continue to search the remaining area.

Exercise timing: The search time will be set by the assessors according to the size of the search area before each exercise.

Exercise number: 4

Search, detect and indicate the presence of explosives, weapons and /or ammunition hidden in luggage / objects.

Area for searching: objects are lined up after each other in several rows. Each object shall be searched. Examples of objects: luggage, bicycle, tires, boxes, envelopes, home appliances, computer etc. The number of objects will be between 10 and 30.

Requirements: Search shall be conducted on and/or off leash, according to organisational SOP, following the instructions of the Test Manager. Passive indication is mandatory. The type of indication is announced by the handler before starting the exercise. The handler must await acknowledgment from the Test Manager before approaching / communicating with the dog during indication. Finding and correctly indicating on all hides in the exercise is mandatory. No false indications are allowed.

Set up: The number of hides is unknown for the dog handler (0 to 6). Products / substances used in the evaluation are in accordance with the substance list in this document. A varied number (0 to 6) of blank distractors may be used in the evaluation.

Provided information: The search items will be presented by the Test Manager. The dog handler has no knowledge about how many hides are to be found and she / he is instructed - in case of indication – to continue to search the remaining objects.

Exercise timing: The search time will be set by the Test Manager according to the number of objects before each exercise.

South Sudan

National Technical Standards Guidelines

Date: 03 October 2024

Chapter 22

Task Administration

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22.1 General

a. Efficient and effective administration is necessary at all stages of humanitarian demining. The ability of the mine action organisation to correctly administer clearance tasks is first assessed during the initial accreditation process. There is an expectation that the level of administration being applied during a successful accreditation shall continue throughout operations.

b. This Chapter provides information on the administration process for clearance tasks in South Sudan.

22.2 Task Cycle Within South Sudan

a. Diagram 1 depicts the lifecycle of a task that is applied and implemented within the South Sudan Operations.

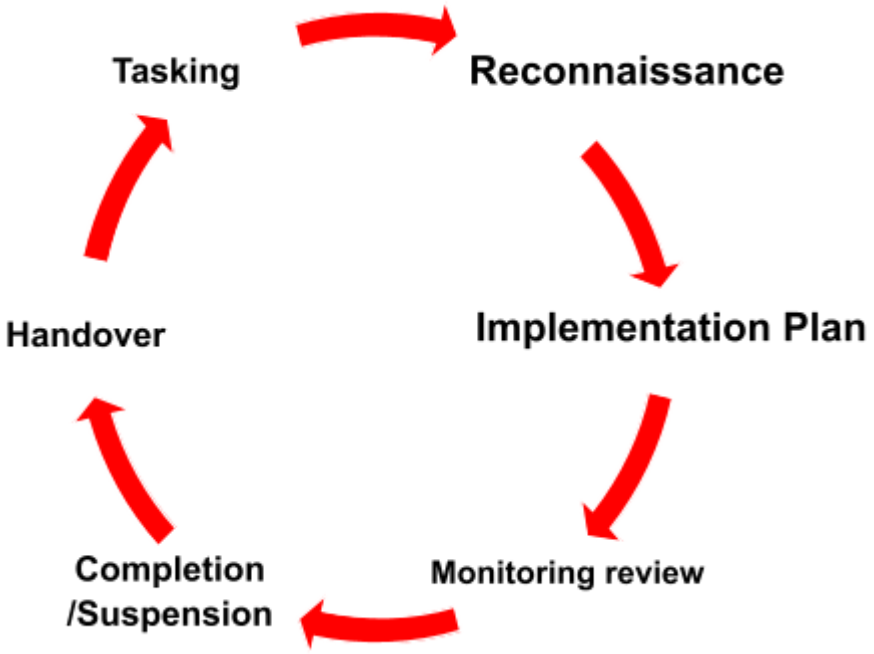

Figure 22-1 Task Cycle

22.3 **Tasking**

a. The NMAA/UNMAS-UNMISS sub-office is responsible for co-ordinating and implementing the tasking for all mine action organisations operating in their area of responsibility (AOR). The tasking process begins once a relevant task is identified, the selection of the task will be dependent on humanitarian and National priorities as well as the available resources required for completing the task.

b. **Task Dossier**: The Task Dossier is a task specific folder which records the lifespan of a task from inception to completion. The production of the Task Dossier is the responsibility of the mine action organisation in compliance with documentation requirements detailed in the Task Dossier Contents list. An example of the TD contents list is at Annex A. All information and documentation pertaining to the task are included in the dossier and should be appropriately indicated. The dossier is a 'living document' throughout the life cycle of a task and therefore can and should be added to and appropriately updated by the relevant demining organisation as and when appropriate. The Task Dossier is to be kept on the task site and made available for inspection / review during all IQA / EQA visits.

c. **Task Sheet:** The Task Sheet is the initial directive to carry out a task. The task type, area to be cleared and basic methodology are detailed on the task order. Which will then be signed by NMAA/UNMAS-UNMISS and the mine action organisation accepting the task. A copy of the signed Task Sheet will be held by NMAA/UNMAS-UNMISS and the organization should keep a copy in the respective Task Dossier.

22.4 **Joint Reconnaissance**

a. After the Task Dossier has been issued a joint reconnaissance may be planned and conducted by the mine action organisation representative(s) and the NMAA/UNMAS-UNMISS sub-office Operations Officer in order to verify the layout of the task area, and conduct the initial risk assessment. A joint discussion and assessment of the task shall then take place culminating in the formulation and agreement of the proposed implementation plan. The Reconnaissance can

be conducted by Operation Manager or Deputy Operation Manager of the mine action organization and NMAA/UNMAS-SS officers or Assistant Officers.

22.5 **Task Implementation Plan (TIP)**

a. All the details collated to date shall be utilised in order to produce an implementation plan. This is the responsibility of the mine action organisation issued with the task and shall include a desktop assessment of the area including possible threats, local information including known hazards and security information and local population, a detailed assessment of the area to be cleared including proposed methodology, timeline and assets to be allocated, and the proposed clearance depth. The IP templates for both area clearance and route verification tasks can be found at Annex B and C respectively.

22.6 **Implementation Plan Approval**

a. Once completed by the demining organisation the implementation plan shall be submitted for approval to the NMAA/UNMAS-UNMISS. The following approval process applies:

b. Mine Action Organisation Responsibility The implementation plan shall be completed, prepared and signed by the authorised individual from the mine action organisation. It should be submitted to the NMAA/UNMAS-UNMISS sub-office that issued the task a minimum of 4 working days before the planned commencement of the task. The mine action organisation shall ensure it clearly identifies and details all pertinent information. In particular, any planned deviation from accredited SOPs shall be clearly highlighted.

c. NMAA/UNMAS-UNMISS Sub-Office Responsibility. The NMAA/UNMAS-UNMISS sub-office Operations Officer shall review the implementation plan to ensure it complies with any appropriate agreements and with the standards, processes and procedures detailed in the mine action organisations accredited SOPs and NTSG's. The review shall consider and decide if any proposed deviations from accredited SOPs are necessary and/or acceptable. The review should include an assessment that the implementation

plan is able to meet the aims of the task in a safe, effective and efficient manner. The sub-office Operations Officer shall confirm and if necessary verify any relevant or appropriate detail, ensuring that the proposed plan matches the detail contained in the HA report i.e. polygon shape, area to be cleared and expected threat. The Operations Officer should refer all concerns with regards to the implementation plan to the mine action organisation in an attempt to resolve them at this level. If resolution is not achieved, pertinent issues shall be raised with the NMAA/UNMAS-UNMISS Chief of Operations. Once satisfied the Operation Officer shall sign-off on the implementation plan and then submit it to the NMAA/UNMAS-UNMISS Chief of Operations. This should be completed within 48 hours of receipt. Any deviation from accredited SOPs and any other critical issues shall be clearly annotated.

d. NMAA/UNMAS-UNMISS Chief of Operations, if satisfied with the implementation plan, shall sign it off and return it to the relevant authorised appointment(s) within 24 hours. On approval of the implementation plan at this level the mine action organisation shall be informed that they can commence the task. The task shall not commence without an appropriately authorised IP. However, in exceptional circumstances, NMAA/UNMAS-UNMISS may initially deploy a team without an IP in which case the IP shall be submitted within 48 hours.

e. NMAA/UNMAS-UNMISS The Operations Assistant shall file the signed implementation plan and copies of the completed document shall then be distributed to the mine action organisation for addition to the Task Dossier / Site File. The authorised IP will also be stored electronically in the responsible team's Dossier. The signed and approved implementation plan shall become a mini-contract from a contractual point of view between the NMAA/UNMAS-UNMISS and the mine action organisation.

22.7 **Task Monitoring and Review**

a. During the task implementation, monitoring, review and quality assurance shall be conducted by both the NMAA/UNMAS-UNMISS sub-office and the mine action organisation as per chapter 14 of this NTSG. In addition, the mine action organisation shall submit a Daily Progress Report and Weekly Progress Maps. Once the information from the Progress Report is verified by the responsible

NMAA/UNMAS-UNMISS representative, it shall be entered into IMSMA. Weekly Progress Maps should be kept in all copies of the task dossier until completion/handover of the task and then filed/archived with the rest of the task documents.

b. In the event of the task being handed over to a relief manager a formal handover form shall be completed. This document shall include, but is not limited to, the following information:

- Cleared and un-cleared areas
- Items located
- Items destroyed
- Current NOTAM arrangements

22.8 **Amendments to Implementation Plans**

a. Any amendments to the original implementation plans that do not compromise safety or major deviations from the original IP shall be consulted with NMAA/UNMAS-UNMISS for authorisation. These amendments may be agreed in principle on site but are to be submitted on an AIP form for authorisation and signature as a 'change of contract' and should be submitted within 48 hours. Amendments concerning safety shall be required to be forwarded to the NMAA/UNMAS-UNMISS Chief of Operations for approval. In general, the following shall constitute IP amendments;

- Change in threat assessment.
- Change in methodology.
- Request for a Task Specific amendment to the demining organisations SOP.

- New information becomes available that was not available at the time of planning and will impact on the completion of the task.

b. Each implementation plan amendment shall be numbered and appropriately filed and recorded in all copies of the task dossier.

22.9 **Timeline Extension Requests (TLER)**

a. In the event that the projected completion of the task is affected a Timeline Extension Request shall be submitted to the relevant NMAA/UNMAS-UNMISS sub office via email. The request shall state the following and include an up to date progress map:

- HA reference number
- Team name
- Current projected completion date as per the Implementation Plan
- Initial HA Area size in square metres or kilometres for roads
- Area cleared up to date of request
- Area remaining to be cleared
- Average daily clearance
- Reason for delay
- Proposed new completion date

- Any relevant fade-out rule shall be applied

- Site Progress map

b. Acceptance of the Timeline Extension Request by the relevant NMAA/UNMAS-UNMISS sub office shall also be done via email. A copy of both emails shall be retained in the Site File.

22.10 **Task Completion**

a. Task implementation shall only be considered complete once the mine action organisation has submitted the Completion Report to the NMAA/UNMAS-UNMISS sub-office and this has been reviewed and accepted. Cancellation of land through non-technical survey is also documented in the Completion Report with the attached scanned Cancelled Area Report signed by the representatives of the local community and authorities (Annex A to Chapter 23). The NMAA/UNMAS-UNMISS sub-office QA Officer/Ops Officer shall conduct a final QA and sign-off the appropriate section of the completion report indicating the task is ready for the formal handover. The completion report shall then be entered into the IMSMA and appropriately filed and recorded in all copies of the task dossier. The following applies:

    - NMAA/UNMAS-UNMISS to be notified seven (07) days prior to the completion of the task.

    - All original documentation relating to the task shall be handed over directly to the NMAA/UNMAS-UNMISS.
    - The implementing partner shall submit to the NMAA/UNMAS-UNMISS the task completion report and supporting documents including Google kml files at least 48 hours prior to the completion date. This is to allow ample time for review prior to the EQA Field Visit/ Desktop Completion.

- Attached to the completion report shall be two (02) large scale maps indicating:
    - Areas cleared
    - Findings
    - skipped areas
    - QC'd areas
    - FFE / Scrap metal pits
    - Any other pertinent information.
- The completion report shall be used to verify that the task has been completed as per the tasking order and the implementation plan.

22.11 **Partial Completion**

Occasionally a task may be closed before a full completion of the area and any associated Fade out has been achieved. In such cases the task will be subject to a Partial Completion. The administration of a partial completion is the same as for a full completion, however the HA reference No will be annotated with a post script alphanumeric, indicating that the HA has not been fully cleared and will require further clearance. i.e. Should HA XXX-001-024 be closed due to weather / end of season / end of contract, XXX-001-24 will be subjected to a completion with any remaining area reported under XXX-001B-24 ('A' is not used). Should a further partial completion be required, the remaining area will be reported under XXX-001C-24, and so on.

22.12 **Task Suspension**

a. When a task is suspended a partial completion of the task is to be conducted. The NMAA/UNMAS-UNMISS sub-office QA Officer/Ops Officer shall conduct a

QA evaluation with the mine action organisation and generate an IMSMA Completion Report. If and when the task recommences a joint reconnaissance shall be conducted by the NMAA/UNMAS-UNMISS sub-office Ops Officer/QA Officer and the tasked mine action organisation. If a different mine action organisation is employed, the NMAA/UNMAS-UNMISS sub-office QA Officer/Ops Officer shall conduct a QA handover evaluation preferably with representatives from both mine action organisations present. Following this, the new mine action organisation shall generate a new implementation plan and the complete process shall recommence.

22.13 **Formal Handover/Declaration**

a. After all documentation processes are complete a formal Handover and Declaration Certificate as at Annex D shall be generated. The following applies:

- A copy of the completion survey report and an A3 scale map shall be attached to the Formal Handover and Declaration Certificate.
- This shall be signed as followed:
- Authorised representative from the mine action organisation.
- Authorised representative of any supporting mine action organisation i.e. sub-contractor.
- Acceptance signature from NMAA/UNMAS-UNMISS (usually the Chief of Operations).
- Final receipt by responsible authority.

22.14 **Archiving Task Documentation (NMAA/UNMAS-UNMISS)**

a. Once all documentation as per the contents sheet are compiled and recorded the task shall be considered complete. The task Dossier will be shared with NMAA/UNMAS-UNMISS for verification of contents.

b. The Task Dossier will be scanned by the mine action organisation and an electronic copy (in PDF) shared with the NMAA and UNMAS-UNMISS on a flash drive. In order to standardise the electronic format of scanned files, the following minimum standards shall apply:

- All scanned documents should be in full colour, minimum 300 dpi settings.
- Files shall be saved in pdf format.
- Scan resolution ratio of 1:1 or 100%.
- All scans must be legible to the smallest font on the record, regardless of colour and markings.
- Name the files as their hard copy.
- The sequencing of the files on the soft copy folder should match the sequence on the hard-copy folder.
- If a document has many pages, please combine the multi-pages into a single file.

c. The final action shall be for the IMSMA Officer to verify all information against the database. Thereafter, soft copies of all documentation shall be archived by IMSMA, whilst both hard and soft copies of all documentation shall be archived by the NMAA. Hard copies will be retained for five (05) years.

22.15 **TASK MAP**

a. Accurate mapping of mine and UXO clearance operations is extremely valuable for operational planning, conducting task briefings and as a testimony to the

clearance conducted. Demining organisations are encouraged to use electronic map making tools, such as Map Source, Map Maker and Track Maker.

b. Mine action organisations shall ensure that all mine/UXO clearance supervisors are capable of producing an accurate map of the clearance conducted, which should be updated regularly in order to reflect the actual clearance on the ground. The following applies:

c. Each separate clearance task shall have its own map which should depict all clearance activities conducted during the task duration.

d. The production of the map shall start when clearance commences and should be finished on completion of clearance.

e. A copy of the map and all coordinates should be submitted with the completion report.

f. In circumstances where a task is suspended, the mine action organisation shall ensure that the map accurately reflects all clearance conducted and that it is included with the partial completion report.

g. In situations where a task is divided into smaller tasks (eg, SS-50A, SS-50B, SS-50C), it may be necessary to produce separate maps.

h. The map should be in electronic format and all coordinates taken with DGPS.

22.15.1 Preparing a Task Site Map

a. **Stage One –**

- From the Benchmark, record the coordinate as well as the bearing and distance to the Start Point.
- From the Start Point, record all perimeter coordinates (including bearings and distances) to each turning/intermediate point, using a DGPS, compass and measuring tape, returning to the Start Point.
- Ensure that the information is gathered in a clockwise direction only.

b. Stage Two –

Input collected coordinates into Google Earth or similar mapping software, to check that the polygon is the correct size and shape. Coordinates should be input in the order in which they have been laid out on the ground.

c. **Stage Three** –

Input coordinates for any other relevant details which shall include:

- Any findings;
- Missed and skipped areas;
- QC Boxes;
- Any areas cleared using differing techniques i.e. depth changes, equipment changes etc.

d. **Stage Four** –

- The map should be updated regularly, ideally at the end of each working day.

e. The task map shall have the following information:

- Map name
- Task number, start date and expected end date
- Days worked on site
- Team Leader's Name
- BM and grid reference
- SP and grid reference
- North Pointer
- Scale
- Legend

- Control Point/administration area
- Mines/UXO located
- Cleared and uncleared areas
- Findings – different markings for different types of findings

f. In addition, the task supervisor should have the following information available at the task:

- List of perimeter coordinates (in sequence)
- Map symbols sheet (if not included on map)
- Mine/UXO information (type/quantity/depth) located
- Accidents / Incidents

g. The following colours are recommended for use on task maps:

- Red – mines/UXO
- Blue – water features
- Green or yellow – cleared areas, working lanes
- Black – other symbols.

h. Any skipped areas remaining shall be annotated on both the map and the Completion/Handover report as a polygon or if the skipped area is less than 2m x 2m, a single coordinate.

22.16 **VISITORS BRIEF**

a. All task visitors shall be given a brief by the task supervisor in a designated safe area (e.g. control point or administration area) prior to being allowed into the worksite. The briefing shall be conducted in the pertinent language to ensure that all visitors understand the content of the brief.

b. The operations brief should include the following:

- Ground orientation
- History – what, when, where, who, why, how?
- Map brief – marking, symbols and clearance.
- Current threat and findings

c. The safety brief should include the following:

- Organisation marking system, in particularly, clear/unclear areas.
- Actions on controlled demolitions.
- Actions on uncontrolled explosion.
- Casualty evacuation plan.
- Conduct of visitors (do’s and do not’s).
- Wearing of PPE (Personal Protective Equipment).

Annex A: Task Dossier Contents List

DOC	Document Description	Index No.
0	Mine Action Organisation Task Dossier Index	0
1	MA Team Accreditation Certificate	1
2	UNMAS-SS Task Sheet	2
3	IMSMA Task Issued HA's	3
4	Hazards Reports	4
5	Implementation Plan and Amendments to Implementation Plans	5
6	Team Staff List (ID's No's Blood group and allergies)	6
7	Daily Attendance	7
8	UN CASEVAC Request (9 Liner, EGRA, ATMIST) MERP and CASEVAC Exercise record, IMSMA Accident report	8
9	Contact Sheet and Radio Net	9
10	Communication Log	10
11	Visitors Log	11
12	Daily Site Diary	12
13	Items Found Log	13
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15	Task Explosive Log	15
16	Demolition Orders	16
17	NTSG NOTAM Request Form	17
18	IMSMA Accident/Incident Investigation Reports	18
19	Training Log Sheet	19
20	Stores List Including Medical/Ambulance	20
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23	IMSMA EXTERNAL QA's	23
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25	IMSMA Cancellation Report	25
26	IMSMA Handover and Formal Declaration Certificate	26
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Annex B: Implementation Plan for Clearance Tasks

	Task Implementation Plan (TIP)	Implementing Partners Logo

1. GENERAL INFORMATION				
Organisation	**Team ID**	**Task Dossier Number**		**HA ID**
HA Type	**Expected threat**	**Area to be cleared**	**Start date**	**End date**
Method	**Method details**		**Daily productivity**	**Days required**
			Site set-up and pre-deployment NTS	
			Completion and handover	
			Total work days required	

2. Team composition	
Role	**Number**
International Team Leader	
National Team Leader	
Section Leader	
Deminer	
Paramedic	
CLO	
Driver	
Total	

3. EQUIPMENT	
Description	**Quantity**
Minelab F3	
Standard demining tool-bag	
VHF	
HF	
Satellite phone	
Mobile phone	
Major trauma kit	
Stretcher	

4. Task objectives

5. Timeline *Do not repeat the dates here. Instead, elaborate on rest days, public holidays and other events such as concurrent EOD callouts, splitting/merging the team,etc.*			
Timeline	**Work days**	**Rest Days**	**UN Holidays**

6. pre-deployment Assessment *Study a 1 to 2 km radius, depending on how populated/known the surroundings are. This is to be done using IMSMA tools, such as Google Earth and IMS portals; review the available reports to understand the threat in the proposed HA*		
6.1. Reports Reviewed		
ID	**Month/Year**	**Remarks, such as organiszations, Items confirmed/suspected, methodology used, distance from current HA, etc.**
Closed HAs		

Open HAs			
Closed EOD Spot Tasks – can be limited to those related to AP/AT mines and CMs			
Open EOD Spot Tasks – can be limited to those related to AP/AT mines and CMs			
Accidents			
Accident No.	**Date**	**Device (if known)**	**Brief description**
6.2. Maps ***Keep it interactive with a clear legend and display relevant elements. For example, displaying EOD Spot Tasks relevant to AP/AT mines and CMs is prudent as they may have a bearing on the proposed methodology, whereas those related to AXO/UXO only would not. Incorporating all detail in one map is advisable; however, more can be added if required***			
6.3. Summary ***Summarisze the above study and conclude that the proposed clearance method is safe and efficient.***			

7. site set-up
7.1. Description of the HA, CP and Access Lanes
7.2. Site Map

8. clearance plan
8.1. Method Description and Clearance Direction ***Clearly identify the primary and secondary search tools, ground preparation and QC elements, detector configuration/calibration and test pieces, clearance depth and other details.***
8.2. Map showing the clearance map

8.3. Challenges known/expected ***For example, spoil piles, domestic scrap visible on the ground, flooded or cultivated spots, movement of civilians, etc.***

9. health and safety					
9.1. Casualty evacuation - major injuries or health condition					
In case of major injuries or serious health conditions, personnel will be stabiliszed and initially treated at the Control Point under the supervision of the Team Medic. This will be followed by evacuation to the designated hospital.					
Designated hospital	**Hospital Name**	**Grid Coordinates**		**Hospital Contacts**	
		Longitude	**Latitude**	**Names**	**Phone Number**
Primary Evacuation plan					
Secondary Evacuation Plan			**Helicopter Landing Site**		
			Location name and distance	**Grid Coordinates**	

Each member of the team will also be issued with Individual First Aid Kits.

10. social and environmental factors

Site remediation will include the removal of all ERW. Site remediation will take place, where any excavations or demolitions are conducted, and the ground returned to its original state.

All markings are to be removed upon completion and handover of the task site.

Non-hazardous areas affected by the operations are to be left in a similar condition to that before operations commenced.

UNOPS contracted implementing partners are obligated to adhere to the Social, Sustainability and Environmental requirements as per the project's schedule or requirements and implementing partners' project proposals. This is in addition to the requirement of NTSG Chapter 16 HSSE.

11. COMPLETION AND HANDOVER

12. ANNEXES

Insert any applicable annexes below or provide references should those be separate files

SIGNATORIES				
NAME	**POSITION**	**ORGANISATION**	**DATE**	**SIGNATURE**
Prepared by				
Reviewed by				
Processed by				
Approved by				

Annex D: Handover & Formal Declaration Certificate

HANDOVER AND FORMAL DECLARATION CERTIFICATE

GENERAL INFORMATION		
1. TASK DOSSIER NUMBER:		10. DESCRIPTION OF CLEARED AREA:-
2. TASK ID (IMSMA NAME:)		
3. ORGANISATION		
4. TEAM ID		
5. STATE		
6. COUNTY		
7. PAYAM		
8. MAP SERIES:		
9. LOCAL AREA NAME:		

DETAILS OF CLEARANCE OPERATIONS	
11. NUMBER AND TYPE OF MINE / UXO CLEARED:	15. FINAL DISPOSAL METHOD OF MINES / UXO:
12. CLEARANCE METHODOLOGY USED:	16. IS AREA METAL FREE? .
13. QUALITY ASSURANCE METHODOLOGY USED:	17. QUALITY ASSURANCE INSPECTOR NAME:
14. CLEARANCE DEPTH: 13cm	18. DATE OF COMPLETION EVALUATION. .

DECLARATIONS AND ACCEPTANCES	
HANDOVER AND DECLARATION ON BEHALF OF DEMINING ORGANISATION	**QUALITY ASSURANCE DECLARATION BY THE UNMAS QA OFFICER**

I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE AREA AND DEPTH SPECIFIED IN THIS HANDOVER AND FORMAL DECLARATION CERTIFICATE HAS BEEN CLEARED OF ALL MINE AND UXO HAZARDS.		**I CERTIFY THAT THE AREA AND DEPTH SPECIFIED IN THIS HANDOVER AND FORMAL DECLARATION CERTIFICATE HAS BEEN INDEPENDENTLY ASSESSED TO BE CLEAR OF ALL MINE AND UXO HAZARDS.**	
NAME:		NAME:	
POSITION:		POSITION:	
DATE:		DATE:	
SIGNATURE:		SIGNATURE:	
ACKNOWLEDGEMENT AND ACCEPTANCE BY THE UNMAS SUB-OFFICE OPERATIONS OFFICER		**ACKNOWLEDGEMENT AND ACCEPTANCE BY THE UNMAS COORDINATION AND COMPLIANCE OFICER**	
I ACKNOWLEDGE THAT THE INFORMATION CONTAINED IN THIS HANDOVER AND FORMAL DECLARATION CERTIFICATE IS CORRECT AND ACCEPTABLE.		**I ACKNOWLEDGE THAT THE INFORMATION CONTAINED IN THIS HANDOVER AND FORMAL DECLARATION CERTIFICATE IS CORRECT AND ACCEPTABLE.**	
NAME:		NAME:	
POSITION:		POSITION:	
DATE:		DATE:	
SIGNATURE:		SIGNATURE:	
ACCEPTANCE BY THE NATIONAL AUTHORITY			
I ACCEPT RESPONSIBILITY OF THIS AREA ON BEHALF OF THE PEOPLE OF SOUTH SUDAN. I UNDERSTAND THAT THE SPECIFIED AREA HAS BEEN CLEARED OF MINES AND UXO TO THE DEPTH SPECIFIED IN THIS HANDOVER AND FORMAL DECLARATION CERTIFICATE.		NAME:	
		DATE:	
		ATURE:	

Maps / Images of released area to be attached: (Completion Maps / images)

Annex E: Amendment to IP (AIP) Format

Amendments to this document will be published from time to time. An up-to-date record of amendments is to be maintained in the table below.

Any comments, suggestions or proposed amendments to this document should be addressed to Regional Operations Coordinator.

Task ID:

Record of Amendments			
S/N	**Date**	**Remarks/Comments**	**Approved by**

Current Situation:

Requested Amendment:

Prepared/Submitted by:

Name:

Title:

Organization:

Sign:

_____

Date:

Verified and Approved by UNMAS: **Name:** **Title:** **Sign: Date:**

South Sudan

National Technical Standards and Guidelines

Date: 03 October 2024

Chapter 23

Land Release

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23.1. Introduction

Land release back to the community is the overall aim of any particular mine action activity, and this NTSG provides a basic methodology to be applied in using the demining assets available in South Sudan.

23.2. Scope

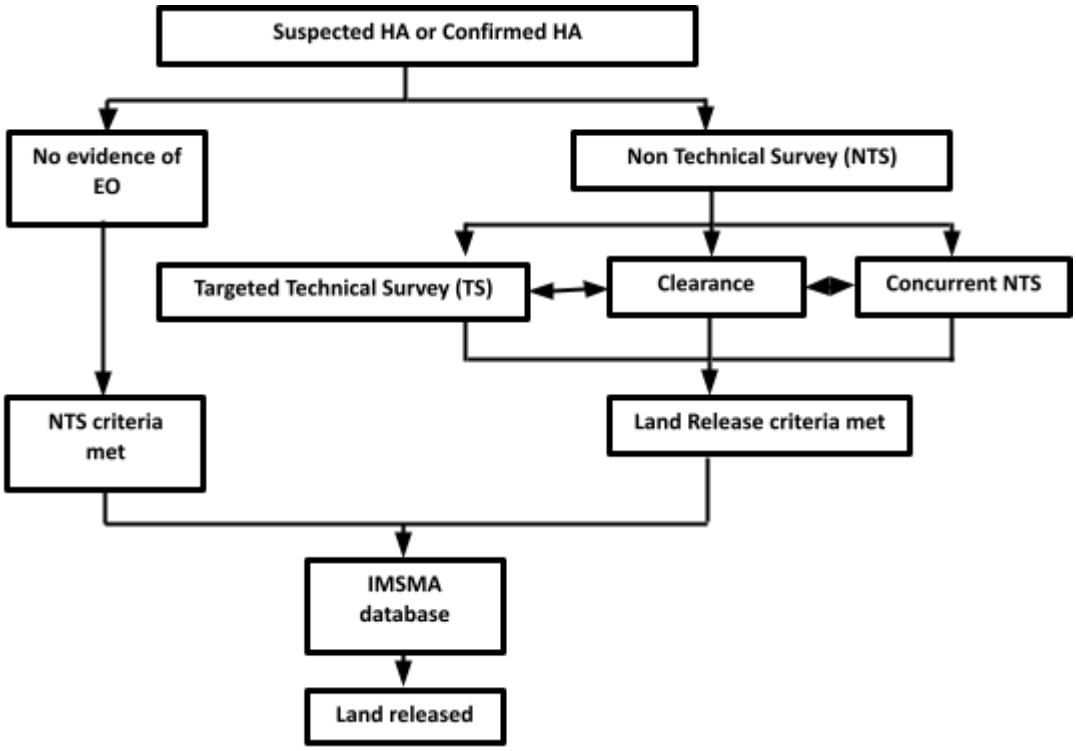
The land release process may be applied to a suspected hazardous area (SHA), and a confirmed hazardous area (CHA) right from the beginning of tasking (in other words to hazards, which are already reflected in the Information Management System in Mine Action [IMSMA] database), or it may be applied to potential hazards, which are not yet reflected in the IMSMA database.

23.3. Scope

Land release process in South Sudan is an evidence-based decision-making process that helps determine with confidence which land needs further action and which does not. In general, it involves:

- The identification of hazardous areas;
- The cancellation of land through non technical survey;
- Where applicable, the reduction of land may be conducted through targeted technical survey. Due to frequency of nuisance mines, systematic technical survey is seen as ineffective in South Sudan operational context;
- The clearance of land with actual EO contamination;
- Due to the predominant nuisance minelaying in South Sudan in terms of both, anti-personnel and anti-vehicle mines, where applicable, an integrated approach should be considered, complementing clearance with targeted technical survey and an ongoing non technical survey.

The flowchart below illustrates the process of applying interlinked criteria for land release through non-technical survey, targeted technical survey and clearance:



23.4. Direct and Indirect Evidence

- As a general rule, a SHA should be defined on the basis of analysis of indirect evidence of the presence of EO. The examples of indirect evidence may include, but are not limited to:
  - potentially productive land not in use;
  - verbal reports from local population/former combatants;
  - EO records, where the reliability of such records remains open to doubt or has not been assessed;
  - Analysis of other known contamination areas, tactics and historical sources;
  - Former combatant zones;
  - Evidence from previous surveys, not supported by direct evidence of the presence of contamination;
  - EO accidents or incidents where the location of the event cannot be accurately determined.
- A CHA should be defined on the basis of direct evidence of the presence of EO. The examples of direct evidence may include, but are not limited to:
  - EO records, where the reliability of such records has been confirmed during previous operations;
  - visual observation of EO parts, fragmentation or craters;
  - detonations during fires or by animals;
  - mine signs, fencing, ancillary equipment (boxes, canisters) etc. associated with contamination;
  - EO accidents or incidents where the location of the event can be accurately determined.

23.5. Information Gathering Methodologies

- The IMSMA database for South Sudan divides HAs into SHAs and CHAs, based on availability and reliability of information and whether evidence is direct or indirect for that specific hazard.
- Information gathering as part of the land release process shall be based on:
  - Analysis of current EO database (IMSMA), historical facts (previous clearance) and other physical observations of the areas under survey without any physical intervention;
  - Obtaining evidence through interviewing people with confirmed knowledge of the area under survey.
  - Obtaining information of the area under survey by physical intervention.
- The principles of information gathering by non-technical survey and technical survey is covered in NTSG Chapter 1 - Survey.
- Information gathering process continues throughout the clearance, which leads to the contaminated area being fully defined, and gaining confidence in order to decide when clearance can be stopped. Information gathering, as a part of the land release process, is a constant activity, and a hazardous area report should be updated as new information becomes available, which can be from various reasons and through various activities, such as:
  - Clearance progress (defining the type of a threat, the pattern or fadeout trend);
  - New informants;
  - IDPs returning to their homes and commencing their activities around village;
  - Expansion of agricultural land;
  - EO incidents/accidents.

- As more information becomes available, it is the responsibility of mine action organisations who conduct activities in respective areas to continuously collect and record this information and submit to the IMSMA database for South Sudan, using approved IMSMA forms.
- The new information provided by Mine Action organisations may include the following:
  - CHAs and SHAs that are being occupied or utilized by the local population without incidents related to EO;
  - Cultivated areas within previous CHAs and SHAs;
  - New HA identified by the local population within areas considered safe or within previous SHAs;
  - EO incidents/accidents within areas considered safe or within existing SHAs.

23.6. Land Release Criteria

- In general, the conditions to be met before the release of land can be considered are:
  - The land can be released only by an organisation registered in South Sudan as Mine Action Organisation and accredited in the specific activity approved to be used for land release, i.e. non-technical survey and/or technical survey and clearance or both;
  - The criteria and methodologies for releasing land are provided in the following chapters of the NTSG:
    1. Chapter 1 - Survey.
    2. Chapter 4 - Manual Mine Clearance.
    3. Chapter 7 - Battle Area Clearance.
    4. Chapter 8 - Mechanical Demining.
    5. Chapter 9 - Mine Detection Dogs.
    6. Chapter 20 - Route Verification.

23.7. Confidence in Released Land

- Before land can be released from suspicion, it should be established, with a sufficiently high level of confidence, that there is no longer any evidence that the area contains any explosive hazards. This confidence can only be gained after all reasonable efforts to investigate whether landmines and other EO are present have been made.
- Varying levels of survey and clearance shall be conducted to reach this point. Concerning the achievement of confidence in mine action activities, the point at which it is unreasonable to expect more effort to be expended to achieve the desired result, should be determined by NMAA/UNMAS-UNMISS.

23.8. All Reasonable Effort

- “All reasonable effort”, in South Sudan mine action context is the process of deciding when land may be released from suspicion, is the level of effort required to achieve the desired level of confidence that the land is free of EO. “All reasonable effort” may, at one extreme, only be the conduct of a non-technical survey which finds absolutely no evidence of EO. The commitment of additional resources, in this case, is unlikely to justify the expected additional information about the area. However, if the non-technical survey confirms evidence of EO, it would be reasonable to expend more effort to gain more confidence about which areas are free of EO and which are not. In this case, “all reasonable effort” may mean that a technical survey and/or clearance should be conducted.
- “All reasonable effort” for the release of SHA/CHA is reached at a point where sufficient and reliable information has been obtained to conclude, with confidence, that there is no evidence of EO.

- The sufficient and reliable information shall be obtained on a case by case basis, through tactical and operational analysis and approved by NMAA/UNMAS-UNMISS and it may comprise of the following:
  - Thorough analysis of all relevant, available historical sources and records;
  - Sufficient number of informants;
  - Sufficient 'fade out' clearance achieved from the last EO located as per relevant NTSG chapters;
  - The degree of land use.

23.9. The Land Release Principles in South Sudan

- The application of land release assumes a level of risk based on verification of threat. It recognises that just because a hazard is reflected on the IMSMA database, the details are not necessarily accurate and that all hazards benefit from thorough application of the land release process at all levels of intervention.
- The Land Release methodology is based on the universal application of the references in IMAS and the NMAA/UNMAS-UNMISS Land Release Process. Due to predominantly nuisance minelaying in South Sudan and number of variables, this process may be complex. In order to maintain a desired level of confidence in mine action activities, any land release processes involving landmines are subject to a case-specific assessment and approval by NMAA/UNMAS-UNMISS. The above mentioned variables include, but are not limited to:
  - conflict history in particular area;
  - hazard type and combination of hazards;
  - historical clearance efforts and, in relation to that, inconsistent standards and approaches applied;
  - population density and availability of informants;
  - intensity and type of land use.
- Due to their productivity and efficiency in challenging environments such as metal contamination and soil built-ups post-mine laying, the use of mechanical means of clearance are considered valuable and should be employed in South Sudan.
- Land should only be cancelled, reduced and/or handed over following clearance when it is deemed safe to use after a credible and well-documented evidence-based process has been fully implemented.
- A systematic assessment shall be made of whether EO have been found during the use of the land, the circumstances under which these hazards were found - when, where, how?
- A systematic assessment of how land has been used, how long it has been used, and how many people have used it should be made. Attention shall be given to the precise limits of areas used, together with any areas which have not been used.
- If land has been used extensively for cultivation over a number of seasons and no evidence of EO has occurred, this should be deemed sufficient information for land release.
- Community involvement in the verification process is necessary to ensure that they have confidence in the methods used and that the threat has been removed from the area.
- Land can be released from the suspicion of landmines while there may still be a suspicion of other EO. Additional measures will be taken as other EO are found, to remove the threat as quickly as possible from the immediate vicinity of the communities.
- With manual clearance teams the object should be to get into the mined area as quickly as possible and only clear the area which is known to be mined.

- In nuisance mined areas, rather than technically surveying the entire area, the clearance teams shall breach into the site of previous accidents or incidents and work out from the seat of the mine accident.
- ‘Fade out’ should be applied from the last mine found. The buffer will depend on various factors such as type of the minefield (patterned or nuisance), former military positions (i.e. distance to the trenches). Each decision shall be task specific and agreed between NMAA/UNMAS-UNMISS and the clearance organisation.
- ‘Fade out’ should also be applied when treating any cluster munition (CM) Battle Area Clearance (BAC) task. A buffer of a minimum 50 meters should be applied to the last item found, either surface or sub-surface. Where UXO are found outside a known “footprint” then a further expansion of a clearance should be decided on a case by case basis.
- Fade out distance can also be site specific and may be dictated by the patterns of items found, any deviation from the distance stated above should be agreed between NMAA/UNMAS-UNMISS and the clearance organisation.

23.10. Quality Management

Refer to Chapter 14 of South Sudan NTSGs.

23.11. Documentation

- Information management is a critical part of the land release process. Data and information about EO contamination, previous land release efforts, information obtained and decisions taken during land release process should be made available through IMSMA to all appropriate recipients, in the format approved by the NMAA/UNMAS-UNMISS.
- Minimum data/information collection requirements for mine action in South Sudan are defined in the Chapter 22 Task Administration of South Sudan NTSGs.

23.12. Implementation and Tasking

Refer to Chapter 22 of South Sudan NTSGs.

23.13. Risks and Liability

- EO contamination is primarily and ultimately a national responsibility. This includes known as well as unknown areas affected by EO and the areas that have been subject of the land release process.
- At all times the mine action actors shall base their actions, at all levels, on a well-documented, transparent and evidence-based approach to land release, demonstrating the application of ‘all reasonable effort’.
- Residual risk is the risk remaining following the application of all reasonable effort to identify, define and remove all presence and suspicion of EO through non-technical survey, technical survey and/or clearance.
- If EO contamination is found in areas that have previously been cancelled, reduced or cleared, liability disputes should in principle be settled based on how well organisations have implemented the land release process.
- The organisation will in principle not be liable in cases of missed EO contamination or accidents if an investigation shows that the agreed land release policy has been implemented appropriately and thus

that the organisation has made all reasonable effort to ensure that the area was safe before cancellation, reduction and/or handover following clearance.

- Only when an implementing agency is directly, and currently, responsible for an affected area could they be considered liable for injuries in that area. In such cases the validity of the claim will need to be proved on a case-by-case basis.
- An organisation shall in principle be liable in cases of accidents caused by missed EO contamination if investigation shows that:
  - The accident was caused by wilful or reckless misconduct, gross negligence or a conscious indifference to the rights or safety of the individual(s) harmed.
  - The organisation was not properly accredited or authorised to carry out acts leading to the incorrect land release decision.
  - The organisation wilfully infringed prevailing national standards.

23.14. Post Land Release Actions

- In general, all mine action organisations should constantly monitor cancelled, reduced and cleared land in the areas they conduct their activities, to confirm that local communities are using the land and that EO contamination has not been discovered.
- In conjunction with NMAA/UNMAS-UNMISS Mine action organisations shall plan and conduct a post clearance survey of the areas previously released, minimum six months from task completion..
- NMAA/UNMAS-UNMISS shall ensure survey and clearance resources are available to respond if EO contamination is subsequently discovered and/or to undertake additional survey.

23.15. Responsibilities and Obligations

- In general, the NMAA/UNMAS-UNMISS shall:
  - Develop, review and maintain the national land release standards;
  - Accredit organisations as capable of undertaking the land release;
  - Conduct quality assurance and quality control to land release process;
  - Maintain and make available the national IMSMA data base;
  - Conduct strategic planning and monitoring of the land release cycle.
- Demining organisations shall gain accreditation to conduct land release activities and comply to NTSG.
- For specific responsibilities and obligations of the NMAA and demining organisations refer to NTSG chapters listed under Paragraph 23.6 Land Release Criteria.

Annex A – 23 Cancelled Area Report

SHA No:	Nearest Location:

IMSMA recorded SHA _____ located in the vicinity of _____

at Grid Reference	Longitude: Latitude:	was visited on	Start Date: End Date:

This SHA is matched with TS ID. TS-XXX-NNN-YY

Comments:

"No mine/ERW hazards were located during a comprehensive survey, therefore it is requested that this previously recorded minefield/hazardous area should be cancelled and removed from IMSMA"

"We the undersigned agree that the reported hazardous area should be cancelled in accordance with NTSG requirements"

South Sudan

National Technical Standards and Guidelines

Date: 03 October 2024

Technical Note to Chapter 23

TN 23.01 South Sudan Residual Threat Management

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1. Introduction

The conflict in South Sudan, predominantly between SAF and SPLA, has had a devastating impact, leaving behind widespread contamination from landmines, Cluster Munitions (CM), and other Explosive Ordnance (EO). These remnants continue to pose a significant threat to the population and impede development and humanitarian efforts.

In response to the critical need for mine action, the United Nations Mine Action Service (UNMAS) arrived in South Sudan in 2004, playing a pivotal role in coordinating landmine/CM clearance, Explosive Ordnance Disposal (EOD), Non-Technical Survey (NTS) and Explosive Ordnance Risk Education (EORE) operations. UNMAS has since led efforts to reduce the threat posed by EO, working in collaboration with the National Mine Action Authority (NMAA), contracted mine action companies, and International Non-Government Organizations (INGOs) operating in South Sudan. These entities have been integral in carrying out the mine action activities. Since 2004, UNMAS has cleared 48.5 km² of minefields and 96.5 km² of cluster strike and battlefield areas while surveying and confirming over 1,174.4 km² of suspected hazardous areas. Of note, resources have been predominantly provided by the UN. However, as the country nears the completion of all known hazardous areas, the ability of the national capacity to address residual contamination in a sustainable manner will become increasingly important.

2. South Sudan NMAA

The NMAA was established by Presidential decree in June 2006 with the aim to develop and subsequently take over and assume responsibility for all mine action activities and, in the long term, manage the residual threat of landmines/EO in South Sudan. However, since its establishment, the capacity and capability of the NMAA remains dependent on external support, particularly from UNMAS, which has acted as the custodian and interim body enterprising ~~the title~~ on behalf of NMAA/UNMAS-UNMISS. The main challenge for the NMAA in progressing and developing lies in the lack of government resources, compounded by other higher-priority needs such as nutrition and health issues in the country.

3. South Sudan's commitment to ridding the country of landmines/EO

South Sudan is a State Party to both the Anti-Personnel Mine Ban Treaty (Ottawa Treaty) and the Convention on Cluster Munitions (CCM), having acceded to the Ottawa Treaty in 2011 and the CCM in 2023. By doing so, it has committed to banning the use, stockpiling, and production of these weapons. The country actively participates in international mine action conferences and invites international organisations and stakeholders to support its mine action initiatives. Through the NMAA, South Sudan works closely with UNMAS and GICHD to align its strategies with global standards.

4. Known contamination

4.1. Hazardous Areas (HA)

The following table summarises all known open hazardous areas (HAs) that have been surveyed and recorded in the IMSMA database.

Type of HA	Number of HA	Total area size (m^2)	Remarks
AP minefield	118	5,242,095	
AV minefield	54	2,436,345	
Cluster munition strike	104	6,100,946	
Confrontation area	38	1,944,755	
Mined road	25	3,916,484	377km total length
Stockpile area	5	350	
Total	344	19,640,975	

**the figures provided on the table able are periodically changing.*

It is important to note that South Sudan has not yet conducted a comprehensive Baseline Survey (BLS) due to ongoing insecurity, lack of resources and inaccessibility in certain regions. Consequently, more HAs are expected to be identified once a full BLS is completed. In this respect, an entry-level database should be completed within the next five years in line with South Sudan's national mine action strategy for 2024-2028. for when such a survey can realistically be planned or executed. In the interim, NMAA/UNMAS-UNMISS has taken proactive measures by incorporating a BLS chapter into the National Technical Standards and Guidelines (NTSG) and conducting pilot trials in select areas of the country. These efforts provide foundational knowledge and preparedness for when a comprehensive BLS becomes feasible.

It is also worth highlighting that many of the figures referenced above are based on older HA reports, which UNMAS continuously queries the database for qualitative checks and is also actively working to resurvey and redefine existing hazardous areas. Initial desk analyses indicate that, through rigorous NTS efforts, the overall contaminated area is expected to be reduced moderately.

4.2. Other EO – analysis and projection

This section emphasises EOD activities, which should become the primary focus for managing residual threat. The assumption is that all known minefields and cluster strike areas will be addressed with the support of foreign aid before mine action transitions to full national ownership in South Sudan.
The table below presents a summary of EOD activity from the arrival of UNMAS in 2004 through to mid-October 2024. Initially, there were only a few mine action teams operating in South Sudan, with their number gradually increasing over time. A more stable and consistent capacity of mine action teams was established moving forward from 2013.

Year	EOD tasks conducted	Items located				
		AP Mine	AV Mine	CM	Other EO	SAA
2004	23	6,750	14,472	5,000,869	3,539,239	798,021
2005	43	22,335	5,809	2,474	439,852	86,129
2006	116	54,043	8,050	8,309	3,172,299	9,455,108
2007	452	8,042	1,131	586	2,534,980	539,652
2008	973	53,269	1,935	3,974	1,634,963	1,873,805
2009	881	7,665	2,242	2,456	265,752	965,571
2010	1,116	13,254	3,960	2,702	412,902	2,132,008
2011	528	106,417	16,506	11,634	2,810,060	8,826,047
2012	810	7,443	691	310	121,929	550,496
2013	1,300	815	2,452	0	262,980	2,405,146
2014	1,183	834	150	0	37,206	286,335
2015	1,818	631	187	965	65,195	542,757
2016	1,946	586	96	354	20,773	84,938
2017	1,359	31	53	180	115,933	1,540,110
2018	1,889	3	121	1,804	74,980	2,908,518
2019	2,275	135	49	109	126,091	4,829,516
2020	782	13	20	35	81,443	1,585,114
2021	999	24	24	104	26,720	563,603
2022	979	27	29	138	397,514	1,850,938
2023	1,200	34	26	257	296,959	3,671,289
2024	932	23	11	519	2,807	48,518
Total	21,604	282,374	58,014	5,037,779	16,440,577	45,543,619

The data above shows that the number of ordnance located and destroyed through EOD activity has decreased over time, reflecting the normal progression of a successful mine action initiative in the country; this downward trend is clearly positive.

To calculate a reliable average number of EOD tasks, the period from 2013 to 2023 is most appropriate, as it represents a more stable period of operational capacity. Speculatively, the numbers presented in the table below are expected to remain relatively steady over the next few years and can serve as a key factor in preparing and planning for residual threat management. However, the NMAA should aim at further data analysis, especially towards the gradual ending of foreign aid; this will help project the respective capacity.

Year	EOD tasks conducted	Ordnance located				
		AP Mine	AV Mine	CM	Other EO	SAA
Total	1430	285	292	359	136,890	1,842,569

The IMSMA database holds valuable raw data that can be leveraged for further analysis, allowing for trends to be illustrated by States, Payams, and other administrative divisions. Additionally, the analysis can extend to examining the types and quantities of ordnance found and their relationship to possible former military barracks or closed HAs. This may result in identifying further HAs, which previously remained unknown.

5. Projected Timeframe for the Presence of Foreign Aid

It is anticipated that UNMISS and mine action INGOs will maintain their presence in South Sudan for the foreseeable future. However, the long-term availability of foreign aid cannot be certain, given the developing conflicts and dynamics related to balancing humanitarian assistance worldwide. It is expected that some contamination will persist in South Sudan due to the incomplete survey of all regions of the country and limited access due to insecurity and resource constraints. As a result, the NMAA will plan for continued collaboration with both local and foreign governments over the coming years to forge the capacity to address the residual threat.

6. Transitioning and takeover

The NMAA should continue to build its capacity by leveraging the support provided by UNMAS and other mine action stakeholders and move forward to assume full responsibility for mine action activities in South Sudan. In this scenario, UNMAS would continue contracting commercial companies while remaining in the background to support the NMAA in gaining the necessary expertise and knowledge to coordinate and oversee mine action activities independently. This approach will gradually enable the NMAA to become fully self-sufficient and capable of taking over fully, including managing the residual threat of landmines, CMs and other EO.

6.2. **Preparation for managing residual threat**

The NMAA will ~~should~~ consider the following actions to prepare for taking over and managing residual threat:

A. Assessing the capacity of locally trained personnel - currently, approximately 20 commercially recruited teams and up to 10 INGO teams operate in South Sudan. Most teams are multi-tasking and capable of conducting clearance, EOD, NTS, and EORE operations. Some of the teams are skilled in advanced techniques such as mechanical clearance, dual-sensor metal detectors, and mine detection dogs. The majority of the personnel forming these teams are locally recruited. If The NMAA will evaluate this capacity and identify the most experienced and versatile individuals for the formation of potential national teams, if NMAA role will be beyond planning and coordination. .
B. Determining the resources needed for potential national teams - the NMAA/UNMAS-UNMISS will analyse available data to project the volume of residual threat, whether related to clearance of hazardous areas (HAs) or EOD operations. Based on this analysis, the NMAA will establish its preferred capacity.
C. Estimating equipment and infrastructure needs to sustain operations - drawing from the example of current teams and equipment, the NMAAwill estimate the minimum equipment and vehicles required for its teams to operate effectively.
D. Developing a proposal for government funding - using the insights gathered, the NMAA will create a concept note and gradually develop a full proposal to present to the Government of South Sudan. This will open discussions for lobbying and advocating for funding to build national teams.
E. Mobilising resources and starting independent operations - the NMAA will finalise a shortlist of personnel, equipment, and other resources and conduct a workshop with UNMAS and INGOs to share its initiative and gain their conceptual support, as well as their willingness to release some capacity in terms of human resources.

F. Capacity building for support functions – The NMAA ~~should~~ will focus on developing its financial, logistical, and other institutional support functions. By incorporating these essential elements, the NMAA will be better positioned to operate independently and sustainably.
G. Developing a fundraising strategy – In addition to government support, the NMAA will establish a fundraising strategy to attract international donors and foster partnerships that can provide long-term financial sustainability.
H. Learning from best practices – The NMAA would benefit from studying best practices from similar institutions, such as the Cambodian Mine Action and Victim Assistance Authority (CMAA) and the Cambodian Mine Action Centre (CMAC). Notably, CMAC initially functioned as a national authority before the establishment of CMAA, providing valuable insights for the NMAA's own development.

By taking these steps, the NMAA will be well-positioned to move forward with further steps in terms of both coordinating and managing mine action operations.

6.3. **Trial of a capacity**

While UNMAS is still present in the country, the NMAA will establish a trial multi-tasking team and begin operations initially around Juba and gradually in the outer regions. With UNMAS's support, this team can gain valuable experience through actual operations. Over time, this team can also develop the capability to train new personnel, becoming self-sufficient in terms of replenishing human resources. The team's focus should be on clearing minefields, addressing areas with cluster munitions, and conducting EOD, NTS, and EORE activities in between. Initially, UNMAS should support this initiative by selecting relatively simple tasks and gradually progressing to more moderate and challenging operations as the team's capacity builds.

6.4. **Further development and formation – possible structure models**

There are various models for structuring national mine action capacities worldwide. Depending on the assessed level of residual threat, the NMAA may consider forming one of the following structures:

A. Centralised Juba-based Unit: This model involves a multi-tasking team operating out of Juba, responding to mine action needs across the country. While this is the simplest model to administer, addressing needs in remote areas will be demanding and would present logistical challenges. However, it could serve as a solid starting point for building the capacity.
B. State-based units governed by Juba-based NMAA HQ: State-based units would be fully functional teams operating locally. These teams could still be administered by the Juba-based HQ or evolve into self-sufficient administrative units coordinating with the Juba-based NMAA HQ. While this model may incur higher overall running costs, it offers greater versatility and efficiency in addressing local needs minimising logistics and other challenges.
C. Contracting commercial companies/sub-granting INGOs: this model may be simplest, removing the administrative burden from the NMAA and assuming liabilities. However, it will be costly and is unlikely to work for South Sudan for the foreseeable future.

7. Conclusion

In conclusion, managing residual threat in South Sudan will require a phased and well-coordinated approach. The NMAA, with continued support from UNMAS, has the opportunity to build its operational capacity through structured training, strategic resource allocation, and the gradual assumption of full responsibility for mine action activities. The data and trends observed over the past decade illustrate that significant progress has been made, but ongoing efforts will be essential to manage the remaining contamination effectively. As the NMAA builds its strength and adopts one of the proposed operational models, its ability to respond efficiently to current and residual threats will increase, ensuring a safer environment for the people of South Sudan. Future planning should prioritise sustainability, local capacity building, and ongoing collaboration with international stakeholders to ensure long-term success.