NATIONAL TECHNICAL STANDARDS AND GUIDELINES SOUTH SUDAN

PART 1
DEMINING

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Additional Standards and Guidelines:
Part 2 – Information Management and Reporting
Part 3 – Explosive Ordnance Risk Education (EORE)
Part 4 – QA Procedures

AMENDMENTS

Amendments to this document shall be published periodically. An accurate record of amendments shall be maintained in the table below.

Amendment Number	Amendment date	Amendment to Section	Amendment Details

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

FOREWORD

Reference: InternationalMineActionStandards,

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 South Sudan Mine Action Program (South SUDANMAP). 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

MechanicalOperations

Mine Detection Dog (MDD) Operations.

Explosive Detection Dog (MDD) Operations

Explosive Ordnance Disposal (EOD)

Battle Area Clearance (BAC)

Remote Explosive Scent Tracing (REST).

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:- Deming

Part 2:- Information System (IMSMA)

Part 3:-EORE

Part 4:- QA

The aim of these Technical Standards is to provide mine action organisations with references for the conduct and management of humanitarian demining activities.

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

[2]Theterm'mineactionorganisation'isused to referto anyorganisation, government,NGO, militaryorcommercial entity,prime or sub-contractor, consultant or agent involved in any humanitarian mineaction activities in South Sudan.

Theyhavebeenproducedusingexperiencegainedlocallyandincorporatinglessonsandbestpractic eslearnedinother worldwide theatres.

This document is not intended to replace or replicate Standard Operation 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 detailing the minimum standard and accepted practices/methods of conducting humanitarian mine action activities as part of the South SUDANMAP.

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 South Sudan (UNMAS-SS) and provide a basis for comparison during the desk and operational accreditation process.

Organisationswhichdonotconformtothestandardsoutlinedinthisdocumentshallnotbeaccreditedto workwithintheSouthSUDANMAP.Additionally,accreditedmineactionorganisation's which do not continuouslycomplyandadherewiththetermsoftheiraccreditationi.e.continuetoapplythestandards anddetailsofaccreditedSOPs;mayhavetheiraccreditationsuspendedorremoved.

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

'Shall'isusedtoindicatearequirement,methodsorspecificationsthataretobeappliedinordertoconfor mtothestandard.

'Should' is usedtoindicatethe preferredrequirement, methodsor specifications.

'May'isusedtoindicateapossiblemethodorcourseofaction.

Thisdocumentisdesignedtobea"living"document.Theproceduresandpracticesshallbecontinually reviewedinordertoensuretheyremainrelevanttothecurrentmine/ERWsituation as well asadvancesintechnology.

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.

Authorised by Jurkuch Barach Jurkuch

Chairperson, National Mine Action Authority (NMAA) South Sudan

Signature:

Date 31st October 2020

INTRODUCTION

Inaccordanceto'SecurityResolution1590;theUnited Nations Mine Action Service South Sudan (UNMAS-SS),has been appointed by the National Mine Action Office (NMAA) South Sudan, who represent the Government of the Republic of South Sudan(GRSS),to co-ordinate 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 criteriaforthe evaluation of the MDD.

QualityAssurance(QA)ofhumanitarian mine actionactivities,

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.

NATIONALTECHNICALSTANDARDSANDGUIDELINES (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 sort and possibly granted by the NMAA/UNMAS-SS. 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-SS 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-SS 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

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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 principals 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 APMas 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 **ERW** 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 **ERW** 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 **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 **ERW**.

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 **ERW**, 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 impactof mines/ERW 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. Deminingmay 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: inIMAS standards and guides, deminingis 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 anExplosive Ordnance **mine** or **ERW 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 accreditedto 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 ERW 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 **ERW**.

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 <u>over time</u> 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 **mineclearance** operations, upon discovery of the **EO**.

b) to dispose of ERW discovered outside **hazardous areas**, (this may be a single ERW, 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 Remnants of War (ERW)
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**ERW**.

hazard marker

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

hazard marking system
a combination of measures (signs and barriers) designed to provide the public with warning and protection from **mine** and **ERW 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 **ERW**.

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 ERW 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/ERW that previously had no impact

impact survey
an assessment of the socio-economic **impact** caused by the actual or perceived presence of **mines** and **ERW**, 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 **inertmunition** differs from a **drill** munitions in that it has not necessarily been specifically manufactured for instructional purposes. The inertstate 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 **ERW 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** by applying **randomsampling** 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** 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.

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 **ERW** hazard (see**demining accident**).

mine action
activities which aim to reduce the social, economic and environmental **impact** of **mines** and **ERW**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 **ERW**contamination. The objective of mine action is to reduce the risk from **landmines**and **ERW**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 ERW 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 **ERW** from a **specified area** to a predefined standard.

Mine Detection Dog(s) (MDD)
a dog trained and employed to detect **mines**, **ERW** 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 **ERW** 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 ERW. [ISO Guide 51:1999(E)]

mine 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**, 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. Nonpermissive 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 **ERW**.

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 ofmines** and **ERW**; through public information, formal and non-formal education systems.

Note: Public education is a mass mobilisation approach that delivers information on the mine/ERW 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 **ERW** 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 **safecleared 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 <u>outside</u> 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** 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**.

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**.

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 government department(s), **organisation(s)** or institution(s) charged with the regulation, management and coordination of mine action in South Sudan.

Note: In certain situations, and at certain times it may be necessary and appropriate for UNMAS, or some other recognised international body, to 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** 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 **ERW hazards**, as determined by the **NMAA/UNMAS** 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 actionstandards** 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)
Standing 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**, **ERW** 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/ERW**.

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

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

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 delayillegal 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 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)
the focal point within the UN system for all mine-related activities.

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

Note: UNICEF is the focal point for **EORE**, within the guidelines of UNMAS overall coordination.

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 **ERW**. Victims include directly impacted individuals, their families, and communities affected by **landmines and ERW**.

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 **ERW 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 neithera member of the **demining organisation**, nor a **demining worker** accredited by the **NMAA/UNMAS.**

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: 31st October 2020

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 (SSUDANMAP). 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.

1.2 Purpose of NTS

a. 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.

b. 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 pervious mine action activities.
   - Lack of physical access.

c. 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 priority setting;
   - 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.

1.3 NTS Outputs

a. Upon completion of an NTS, surveyors should reclassify the suspected 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 presence and suspicion of EO;
   - Recommend the definition of the CHA, where appropriate and justified on the basis of ‘’all reasonable effort’’.
   - Recommend the cancelation 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.

1.4 SHA and CHA criteria

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

1.5 Cancelation

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 cancelation by demonstrating that, had contamination in fact been present, the combination of all the efforts applied would have identified evidence in the respective area.

1.6 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.

1.7 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 not be defined on the basis of 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.

1.8 Classification of Sources

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 hazard (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 indicate 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.

1.9 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.

1.10 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 1.9 Land Use should be adapted and applied as well as Chapter 20 Route Verification.

1.11 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 South SUDANMAP the IMSMA Survey Report Form and Hazard/Completion Report Form shall be the primary forms used for recording of all NTS. NTS teams shall also provide photographs/sketches with the Survey Report. When applying the Land Release Policy during NTS of a HA, i.e. no evidence of EO found, as

mentioned in paragraph 1.9 Land Use, then a Cancellation Report 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-SS 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 shall 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, marking shall be installed at the earliest opportunity and where it is safe to do so.

f. Hazardous area marking has been categorised into three levels; Temporary Marking, Semi-Permanent Marking and Permanent Marking. For further information on marking systems and procedures see Chapter 3 Marking System.

1.12 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-SS 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-SS.
   - An operational accreditation assessment shall be conducted by the NMAA/UNMAS-SS.

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 Supervisor
   - 3 x Operators (Trained in Community Liaison)
   - 1 x Accredited medic
   - 1 x Designated ambulance driver

   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 trusted 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.

1.13 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-SS 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.

1.14 General Requirements

a. To ensure that all activities during TS are carried out with the minimum exposure to risk.
b. To ensure that the technical levels are of a standard that shall enhance 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 TS process shall be recorded and reported as per normal clearance operations.
f. The quality of TS should be monitored as per normal clearance operations.

1.15 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;
   - Hinderance 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 Survey and hazard/Completion Report form shall be completed by the mine action organisation and submitted to NMAA/UNMAS-SS Sub-office once the TS has been completed. This shall include a sketch map, which shall be clearly illustrated, the scale shall be large as is practical and it shall have the following information recorded on it:
    - Landmark 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 compass bearing and distance. 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 and the bearing shall be recorded in degrees (360degrees 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.
    - Mined area – areas found to be mined, during the survey shall be indicated on the sketch and this shall include patterns.
    - All mines/ERW locations.
    - Mines and ERW 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 supervisor.
- Type of equipment used.

1.16 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 HA/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 1.15 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-SS Chief of Operations.

1.17 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/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 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 supervisors, NMAA/UNMAS-SS 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-SS Ext QA visits;
- HA/Completion Report to be submitted to the NMAA/UNMAS-SS.

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 opposite 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.

1.18 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.

1.19 Responsibilities

a. It is the responsibility of the mine action organisation, with delegated authority through supervisors, 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 with minimum exposure to risk;

- Ensure that the technical levels are of a standard that shall enhance the safety, effectiveness, efficiency and quality of all technical survey operations.

b. 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-SS, information from other mine action organisations concerning previous relevant activities, information from the NTS team, EORE team and possibly the Landmine Impact Survey.
c. 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.
d. 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.
e. 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, after receiving the priority of the minefield but generally if clearance does not immediately follow a TS then the area shall be marked by semi-permanent or permanent fencing depending on the estimated duration before clearance commences. The level of marking shall be determined in the tasking order. Information on this shall be passed on to representatives of all members of the community through the EORE team or Community Liaison Officer. The fencing shall conform to Chapter 3.

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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 and administrative areas shall be cleared regardless of whether the control point is located in a suspected hazardous area (SHA) or not. 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 dependant on the perceived threat that may result from fragmentation should a high order detonation occur.

2.1.2 Access Lane

a. An access lane shall be a minimum of two metres wide. White or unpainted posts or stones shall be used to mark this (to be marked as hazardous if one side adjacent to any hazard.

2.1.3 Vehicle Park

a. This should be close to 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 park 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.

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. If cultural norms require, 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. 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.

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.
   - 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
   - Conform to the following figures:

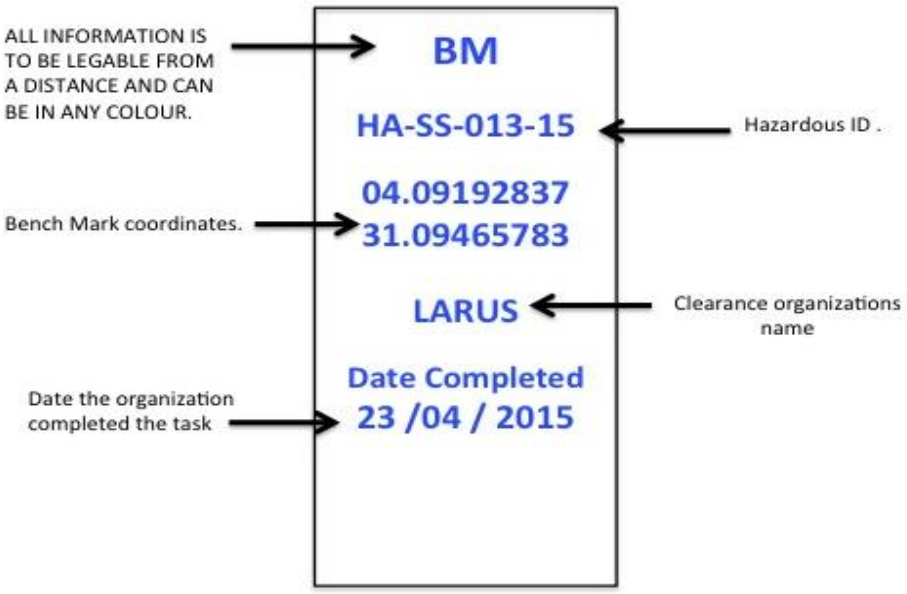

Figure 0-1 Benchmark Marking

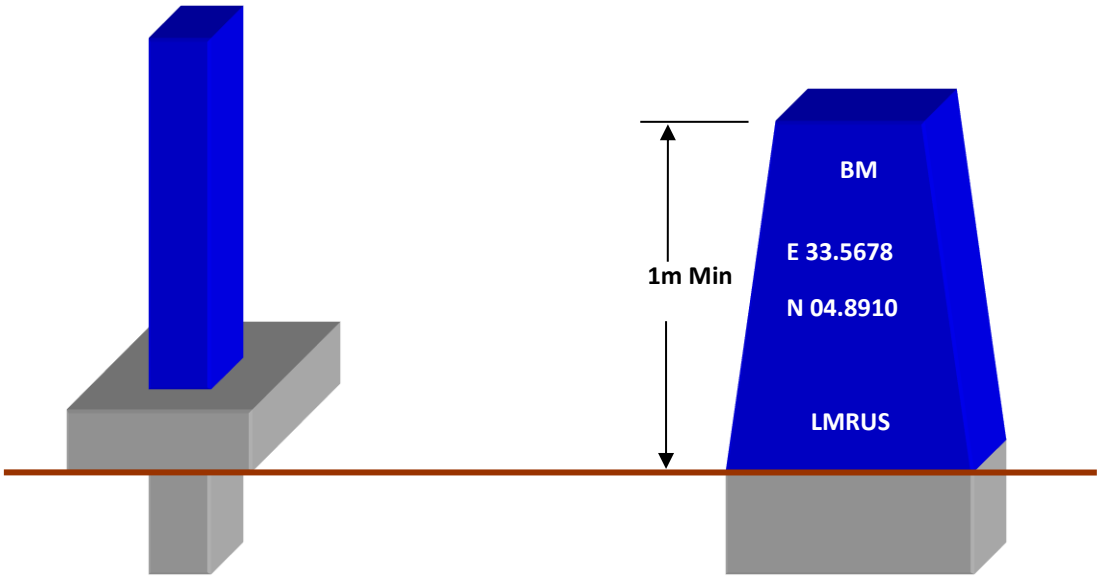

Figure 0-2 Benchmark Designs

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 located 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 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-SS, in which case the locations shall be also marked by DGPS.

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-SS 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 to 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-SS

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.
   - Co-operate 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 Marking Pickets/Posts/Rocks

a. Boundaries of all areas, lanes and points in mine/ERW 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.

3.1.1 South Sudan Mine/ERW Clearance Marking Standard

a. 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.
- **Yellow & Black-topped picket/yellow & black rock:** Indicate the location of removed or destroyed AT Mines.
- **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 warning sign is normally positioned on the long picket.
- **Crossed Red Pickets:** Used to indicate a clearance lane has been closed.

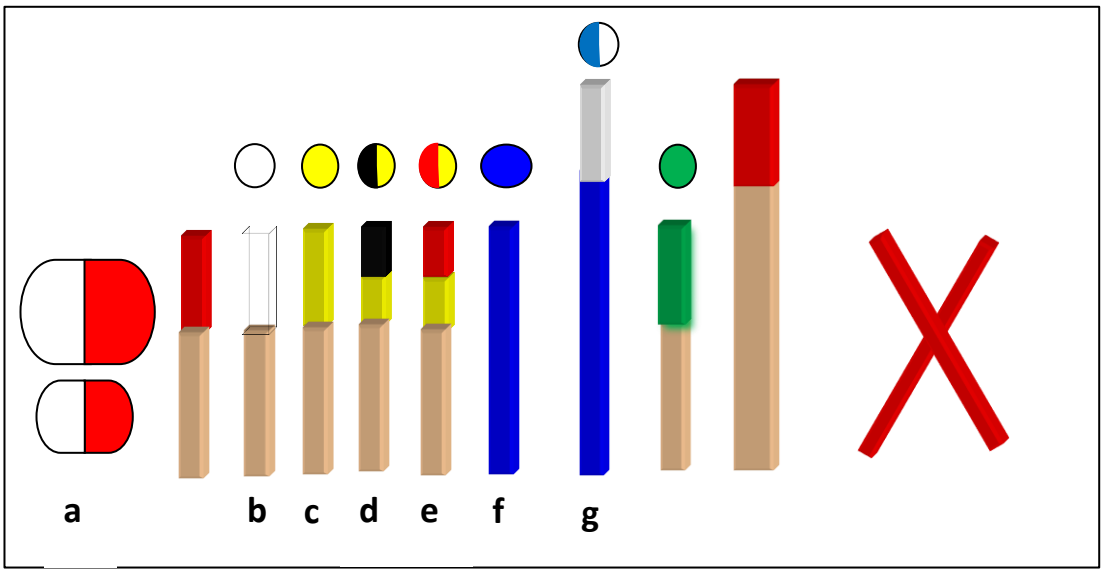


Figure 3-1 South Sudan Mine/ERW Clearance Marking Standard

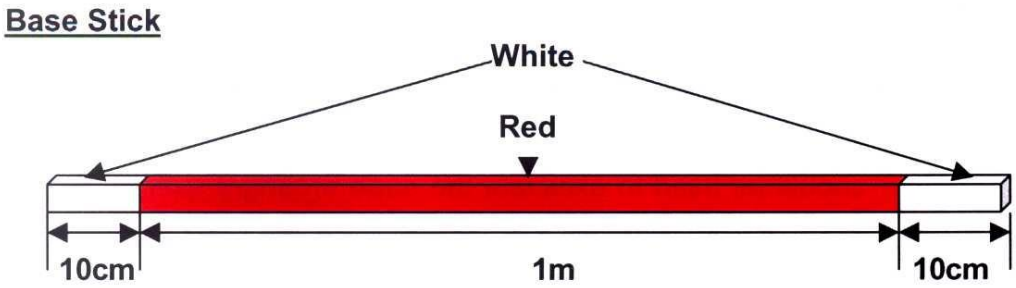
N.B. The aim of marking is to always have one continuous perimeter that clearly defines the hazardous and safe areas throughout the life of the task.

3.2 Base Sticks

a. 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 1mt lane width whilst the 10cm white ends indicate the required overlap.

Figure 3-2 Base Stick Design



3.3 Hazardous Area Marking

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

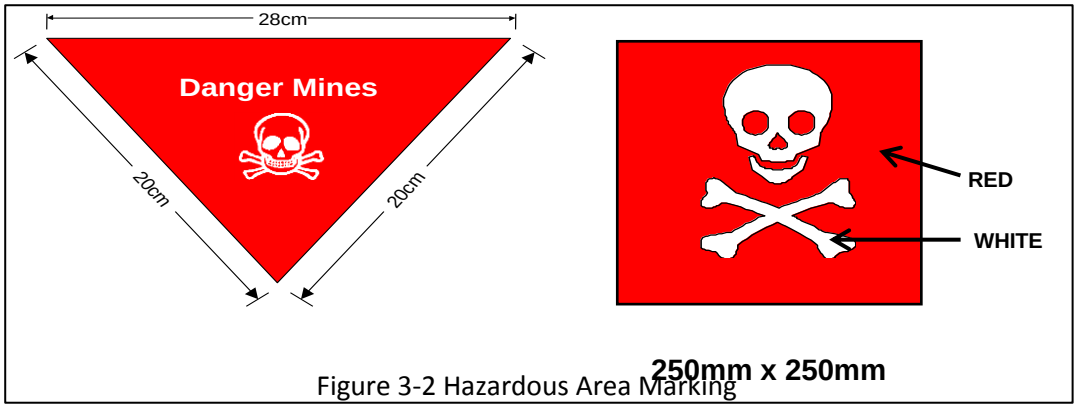


Figure 3-2 Hazardous Area Marking

b. 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.

c. Signs printed in English and Arabic should be used.

3.4 Hazardous Area Fencing

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

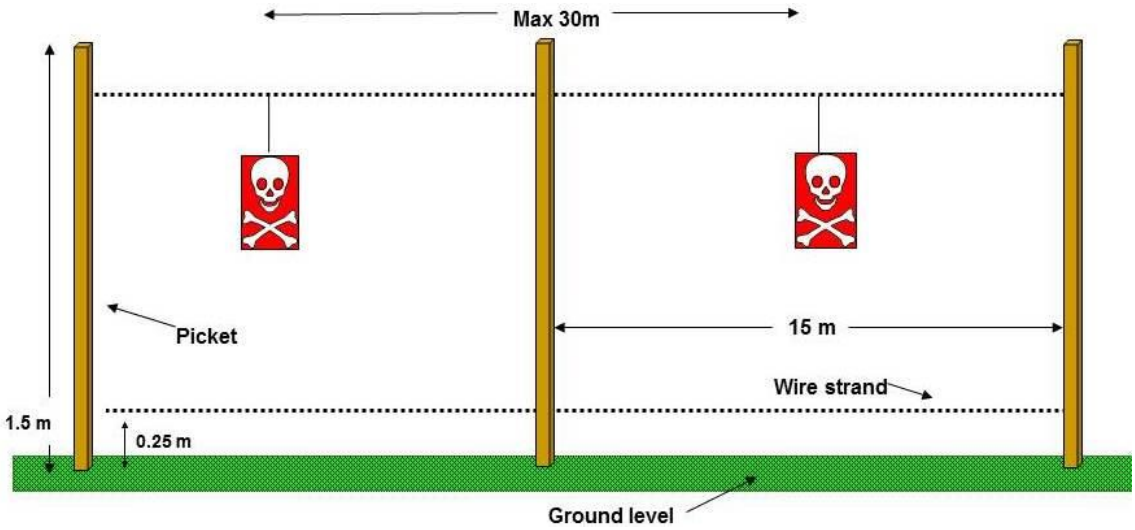


Figure 3-3 Hazardous Area Fencing

b. 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.

3.5 Marking of a Cleared Area

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

b. 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 clock wise 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. 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.

c. In addition, a compass bearing and the distance in metres between Benchmark, SP, TP's and IPS shall be recorded on the IMSMA Completion Report.
d. If only a portion of a suspected minefield is cleared, and hazardous areas remain adjacent, then the cleared area should be fenced with a hazardous area fence allowing for a 1m overlap in from the un-cleared area boundary line.
e. For details of the requirement for recording of positional data, see Chapter 1.

3.6 Responsibilities

a. The NMAA/UNMAS-SS shall prepare and publish standards for the design and construction of appropriate and achievable hazard marking systems to be used within South Sudan.
b. 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

a. Humanitarian demining techniques used during each project may differ according to equipment, the terrain, type of mines / ERW, etc. All procedures used in clearance operations are to be fully explained in step-by-step detail in the mine action organisations SOP.

4.2 Standards, Methodology & Actions On

4.2.1 Clearance Depth

a. The minimum clearance depth when searching for mines is 13 cm (130 mm), measured from the original ground level. Any reduction must be authorised by the NMAA/UNMAS-SS. The depth shall be increased when required.

4.2.2 Clearance Lane

a. A manual mine clearance deminer is responsible for clearing a one metre wide lane using one or a combination of the following recognised methods:
   - Hand-held metal detector
   - Excavation
   - Prodding

4.2.3 Visual Search

a. Prior to conducting manual clearance, a visual search of the immediate unclear area ahead shall be conducted. The deminer is not allowed to cross marking or move forward into unclear area. The following should be considered when conducting the visual search:
   - Possible Tripwires
   - Protruding fuses, mines, ERW, booby-traps.
   - Disturbance to the ground.
   - Depressions, holes, mounds.
   - Suspicious objects (inconsistent to the surroundings).
   - Other mine / ERW indicators (packaging, components, animal remains).

4.2.4 Detection of Tripwires

a. If the vegetation requires, a tripwire feeler may be used to locate tripwires. This should be made from light-gauge wire and fabricated in such a way 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 the vegetation does not allow the use of a tripwire feeler, the search is completed using the eyes and hands. After a thorough visual check of the area, search the area by slowly moving the hands forward, gently parting any thick vegetation that may obscure tripwires. The deminer shall not pull vegetation and avoid touching any trip wires.

4.2.5 Clearance of Vegetation

a. The clearance of vegetation is to be done in a safe, controlled method, avoiding any disturbance of vegetation outside the width of the lane plus overlap; it shall never be more than 50cm in front of the base stick. If necessary, one hand shall be used to hold the tree, branch, or clump of vegetation, while the other uses the cutting tool. All vegetation is to be cut to as close to the ground as is safely possible and placed in a cleared area, ensuring that it does not become an obstacle. When cutting vegetation, the operator shall ensure that a visual inspection is made and that the tool does not make contact with the ground. Caution shall be taken when cutting vegetation to avoid heavy vegetation from falling into the unclear area.

4.2.6 Use of Metal Detector

a. Prior to its use, the metal detector shall be checked to ensure that it is functioning correctly. The detector shall be used to check the one metre wide lane and a 10cm overlap either side. No signals shall be investigated outside the lane. The metal detector search shall be conducted to a maximum distance of 50 cm forward of the base stick, ensuring that the area is checked at least twice. The detector search process shall incorporate an overlap, ensuring that the distance moved forward is at least ten centimetres less than the distance searched with the detector, therefore, providing a minimum of ten centimetres safety margin. The sensitivity of the metal detector is to be checked regularly in accordance with the manufacturer guidelines and organisation SOP to ensure that it is capable of searching the ground to the required depth. Details for the calibration of the detector shall be included in the Organisation SOPs.

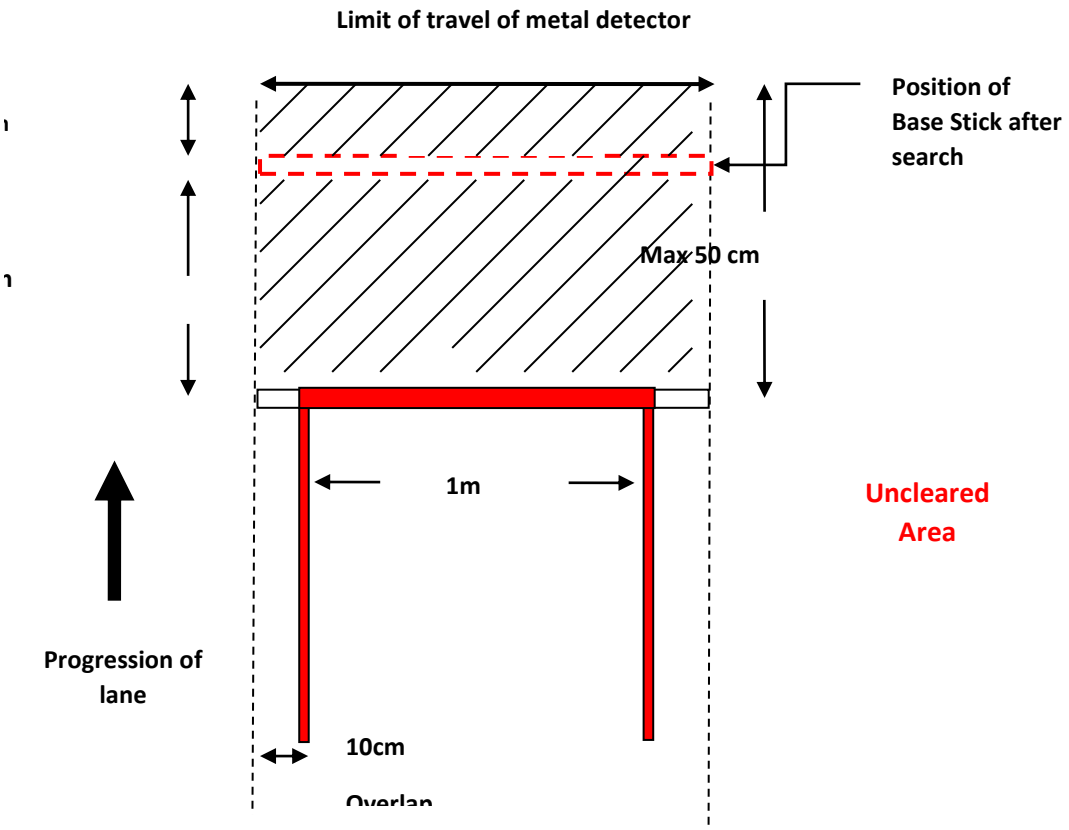

Figure 4-1 Use of a Metal Detector

4.2.7 Detector Signal, Isolation & Marking

a. Prior to investigating the detector signal, a signal marker shall be placed to the rear of the signal ensuring the excavation works towards the signal. Isolation markers can be used in conjunction with signal markers. Extreme caution shall be taken when placing these markers to ensure that they are carefully positioned and allow enough distance and achieve excavation depth before encroaching on the signal.

4.2.8 Prodding& Excavation

a. Once the precise location of the signal has been identified using the metal detector, the source of the signal shall be investigated to identify it. This shall be done by prodding and/or excavating.

b. Prodding shall commence a minimum of ten centimetres back from the nearest point of the signal and to the required width, which, is dependent on the size of the signal. All prodding is to be at an angle of no more than thirty degrees and at maximum intervals of 2.5cm. The prodder shall be used with an even motion, avoiding any excessive force or stabbing. The depth prodded shall be dependent on the ground conditions, search depth and tool design. If it is not possible to conduct prodding from the surface of the ground to the required search depth, then a certain amount of excavation shall be conducted in order to achieve the required prodding depth. Alternatively, the prodding procedure may be replaced with excavation (sapping) only. In hard ground, resulting from extremely dry conditions, water shall be used to soften the ground before prodding commences. If the known threat is a No 4 AP mine for safety reasons prodding shall not be conducted.

c. Excavation (Sapping) is used to reveal the identity/source of the signal. A hole is dug a minimum of ten centimetres back from the nearest point of the signal to a minimum depth of fifteen centimetres. The trowel (or similar tool) is

used to slowly remove the soil towards the location of the source of the signal. Any excessive pressure and abrupt movements with the trowel shall be avoided. The prodder may also be used in conjunction with the excavation process. If an object is not located after using the prodder and excavation to the required depth, the Supervisor will decide whether further investigation is required.

4.2.9 Actions on Locating Metal

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

4.2.10 Actions on Locating Mine/ERW

a. The deminer shall stop mine clearance activities, place a mine marker a minimum ten centimetres before the mine/ERW and notify the supervisor through the chain of command. The supervisor is responsible for ensuring a qualified person carries out all actions relating to the removal or destruction of the mine/ERW in situ. The lane may be cordoned and mine clearance activities started in a new lane. No personnel shall be allowed past a located mine/ERW in a one metre wide clearance lane. In circumstances where the mine/ERW is not destroyed or removed immediately, the deminer shall be moved to an alternative lane.
b. Note: The No4 is considered a no touch mine and shall always be destroyed in situ.

4.2.11 Disposal of Mine/ERW

a. Where possible all mines/ERW should be destroyed in situ. If this is not possible, or proves to be impractical, the mines/ERW shall be manually neutralised/ disarmed and moved to a secure location. All Anti-Tank mines shall be pulled prior to neutralising/disarming. Any Anti-Personnel mines suspected of been 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.

b. Where mines/ERW are not destroyed on the day that they are found, they shall be accurately reported in the organisations daily clearance log and destroyed as soon as possible. If they are not destroyed by the end of the working week, the organisation shall ensure they are included on the daily progress report for the task and submitted to the NMAA/UNMAS-SS with an explanation given.

c. The Missing Mine Drill shall be applied when the location of a mine, which should have been present in the mine row, is not there. The area to be searched shall depend on the pattern identified on the ground at the specific task site. The Site Supervisor / Team Leader shall be responsible to ensure that a sufficient area has been searched before continuing on with normal clearance

4.2.12 Action on Locating a Tripwire

a. The deminer shall stop clearance activity and place 3 x small red markers such as stones a minimum of 10cm from the trip wire and in front of the deminer, alongside each other following its direction. (Figure 4.2) and then notify the supervisor. The supervisor is responsible for ensuring 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 deminers tasked do not become isolated. Conditions should always allow for swift, safe and effective Casevac to be conducted in the event of an accident. Whilst tracing a tripwire there shall be no other activities within fifty metres.

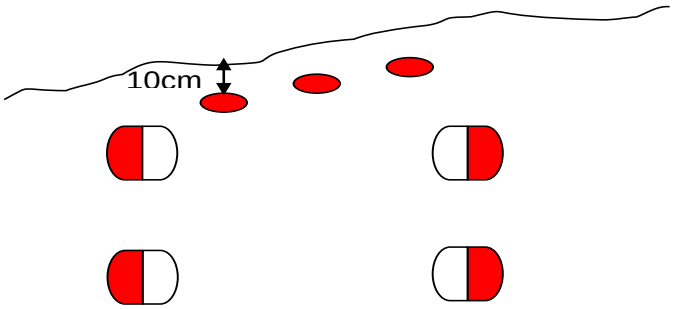

Figure 4-2 Marking of a Tripwire

4.2.13 Pulling Procedures

a. When it is necessary to remotely pull a mine/ERW or other item, the supervisor is responsible for the pulling procedure. All personnel not involved in the pulling operation shall be withdrawn to a safe area and sentries posted. There are numerous ways and techniques of pulling however all safety precautions are to be employed and in place prior to the pull in the event of a detonation. EOD evacuation and safety distance calculations should be used to determine how far the pulling point is located from the item to be pulled. This distance shall only be reduced to a minimum of 50 metres when:

b. There is adequate protection from blast and fragmentation in relation to the item to be pulled and the threat from secondary devices.

c. 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.

d. The following shall 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.

e. Once all safety distances have been implemented and the sentries having given the all clear, the final job of attaching the pulling line is attached, whilst ensuring there is slack in the line and that the line is not crossed.After returning to a safe distance, the pull can commence. A minimum of 1 minutesoak time is given on completion of the pull and 30min soak time in the event any smoke is seen. Once all soak times have ceased the supervisor will approach the item and conduct an evaluation of the item and what appropriate actions are required.

4.2.14 High Metallic Areas

a. 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 complete prodding and/or excavating procedure to ensure that all mines/ERW are located to the required depth. The minimum depth to be excavated is 15 centimetres and the complete 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 complete prodding and excavation process can be replaced with the detector procedure. Alternatively, mark the boundary of the high metallic area for clearance by MDD (when appropriate)or mechanical means. The size of the area, type of terrain and the availability of alternative clearance assets will determine the most efficient method of clearance to use.

4.2.15 Mountainous& Rocky Terrain

a. In areas where the ground is mountainous and rocky, there may be a requirement to remove rocks (E.g., physical hazard, suspicion that a mine/ERW is beneath the rocks, 'ghost signal'). Therefore, the Supervisor shall decide on the best clearance method(s) (E.g., lifting, detector search, prodding and/or 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 Clearance of Obstacles

a. During the clearance of minefields, obstacles shall be identified and special clearance drills adopted as required. (E.g., sapping, pulling, EOD). Those obstacles that cannot be cleared immediately shall be marked and if necessary fenced for future clearance operations. The supervisor on site shall decide which is the best approach and clearance method used for each type of obstacle encountered.

4.2.17 Burning of Vegetation in Uncleared Area

a. Burning of uncleared areas may be conducted in order to remove vegetation to facilitate mine clearance operations. Prior to commencing burning, the organisation concerned shall liaise with the NMAA/UNMAS-SS and local authorities. Caution must be exercised by the organisation and the burning must be controlled in order to prevent the undesired burning of other areas and cause an unacceptable risk to the local population. The results from burning shall be considered, such as, the altered state and instability of mines and ERW. Any mine action organisation conducting burning of uncleared areas shall ensure that the following precautions are adhered to:
   - Inform the NMAA/UNMAS-SS and local authorities.
   - If possible, inform the local emergency fire services.

- If necessary, construct a firebreak to prevent the fire from spreading.
- Ensure that adequate precautions are taken to extinguish any small fires in cleared areas. (e.g., fire extinguishers, sand).
- Calculate the blast / fragmentation safety distance depending on the threat (e.g., mines/ERW) and post sentries accordingly.
- Inform the NMAA/UNMAS-SS and relevant authorities on completion of burning.
- Allow a 24 hour soak time, from the last signs of smoke before conducting demining operations in the burned area.

4.2.18 Working Hours

a. A manual deminer 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, the working hours may be reduced or the daily routine changed. A safe and sensible approach shall be made by the mine action organisation supervisor in order to achieve the best possible mine clearance results without compromising the safety of demining personnel.

4.3 Human Remains

a. Human remains and graves are sometimes reported or found during mine action operations. In such circumstances, the organisation shall ensure that appropriate actions are taken.

b. Human remains encountered during mine action operations shall not be touched or moved. The description of the remains and their location be recorded and the information relayed to the

NMAA/UNMAS-SS, UNMISS and relevant authoritiesas applicable e.g. local police, as soon as possible.

c. In circumstances where mine action organisations are requested to conduct clearance to enable safe access to the human remains, the NMAA/UNMAS-SS shall be informed and, appropriate authorization obtained prior to commencing any such operations.

d. The location of graves and cemeteries shall be recorded during mine action operations and no demining operations shall be conducted within close proximity without prior authorization from the NMAA/UNMAS-SS and relevant authorities.

4.4 **Responsibilities**

a. NMAA/UNMAS-SS shall in relation to Manual Mine Clearance operations:

- Specify the area to be cleared and 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-SS accreditation to operate as a manual clearance teams.
- Apply the standards as laid down in the NTSG.
- Ensure that the organisations SOP are in compliance with the NTSG.
- Maintain and make available documentation of clearance as specified by NMAA/UNMAS-SS
- Apply management practices and operational procedures which aim to clear land to the requirements specified in the contract and

South Sudan

National Technical Standards Guidelines

Date: 31st October 2020

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 Phosphorous 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 may be undertaken both inside and outside of a minefield, and may involve a single ERW, a number of dispersed ERW in a specific location, 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 operators to undertake tasks that they are appropriately trained and experienced to carry out.

f. 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.

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-SS 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) qualifications a Level 3 (EOD) qualification enables the holder to conduct render-safe procedures and final disposal of any type of explosive ordnance on which the individual has been trained – including the conduct of logistical demolitions up to 50kg NEQ.

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 South Sudan 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
- 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.

5.3.5 Level Three + Disciplines:

- Preparation of licenses of Central and Temporary Demolition Sites
- Fuse removal using a rocket wrench
- Disposal of White Phosphorous
- Planning 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 South Sudan. 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 South Sudan 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 S Sudan 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.

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 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 total amount of explosive material contained within a given item of ammunition.
- **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 the general public. Anyone remaining within the cordon, such as the EOD operator initiating the action should be under protective cover.
d. Ordinarily 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. 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 office. In unforeseeable circumstances deny access 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.
e. In South Sudan the minimum protective distances shall be applied in conjunction with IMAS Technical Note 10.20 Explosion Danger Areas[1] section 1.5.4 "Range Danger Areas Multi-Item Demolitions" (see footnotes) and section 1.5.5 "Protective Works".[1]

5.5.2 Alternative Techniques

a. If local conditions prohibit the use of explosive or pyrotechnic attack, on account of damage to infrastructure or local bans on generating explosions, then alternative disposal techniques should 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 fuze and allow the removal of the

[1] https://www.mineactionstandards.org/en/standards/

ERW to a safe location for disposal, or the use of low-order techniques aimed at minimizing the scale of the blast generated.

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 office is to be informed of all approvals for the movement of blind items.

5.6 Range Danger Areas Multi Item Demolitions

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 BULK demolitions of cased ammunition: $R = 444\ (AUW)^{1/6}$
   - For the disposal of condensed explosive[2] $R = 130\ (NEQ)^{1/3}$

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

- For items arranged linearly not stacked[3] $R = 370\ (\text{AUW largest item})^{1/5}$

b. In all case 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 South Sudan Chief of Operations and updated registers distributed to all accredited agencies on a regular basis.

d. For vertical limits see 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.

c. As a general rule:
   - 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.

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

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

- 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 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 when the wattage output is unknown.
   - The minimum safety distance from all HF vehicle radio transmitters is 160m.
   - The minimum safety distance from all VHF radios is 20m.
   - 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 shall elapse before moving forward to investigate the misfire.

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 explosive attack is used to consume the WP filling 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 laterall 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 S Sudan shall detail the methodology that will be used in the disposal of WP.

5.10 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 explosive begins to burn.
   - -Agencies are required to details their methodology for open burning in their SOPs.

5.11 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 Survey and Hazard Report, ensuring the appropriate section on EOD spot tasks is completed. All other EOD tasks shall be recorded in the IMSMA Completion Report and highlighted in the organisation daily progress report.

b. Photographs of the item or items prepared for disposal shall be taken at least twice - after the charge placement but before the det-up procedure; and after the demolition, to prove successful outcome. The pictures should clearly show:
   - Complete item or items or a stack prepared for demolition with charge placement.
   - A complete crater after demolition.
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.

5.12 **Demolition Orders**

a. General Provisions: Whenever demolitions involving the stacking of multiple items are carried out a demolitions order shall be submitted for approval to the respective regional office of UNMAS/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. That 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 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.

5.13 **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-SS 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-SS. 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-SS.

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 South Sudan is to be notified and they may conduct an inspection.

5.14 Notice to Airmen (NOTAM)

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

5.15 Operational Sequence

5.15.1 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 instruct the procedure to stop and refer it the UNMAS SS Chief of Operations for review.

5.16 **Responsibilities**

a. NMAA/UNMAS-SS: The NMAA/UNMAS SS 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 SS 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-SS staff responsible for implementing policy and monitoring EOD operations.

Annexes

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

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

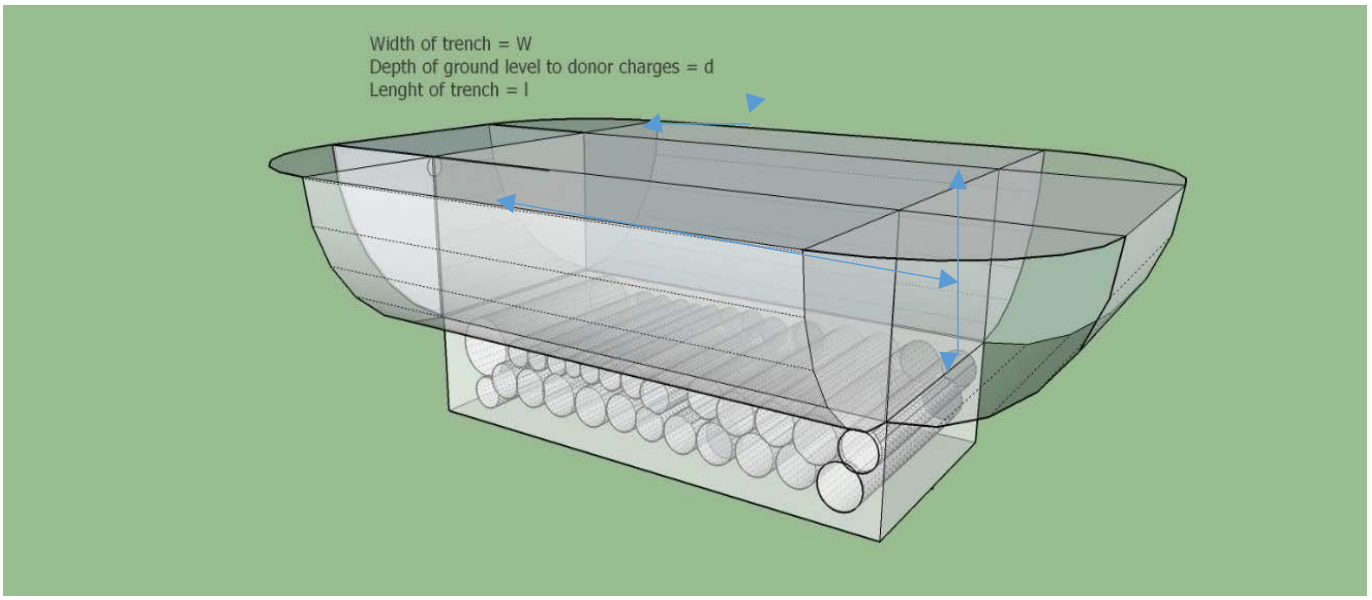
$$M = \sigma\,((w.d.l)+2/3\,\pi.d^3 + \pi.d^2.w/2)$$

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.

Organisation

Logo

Demolition Order

Team:	
Location:	
Date:	
Time:	

DESCRIPTION:

Source of Munitions (List HAs)

Directions from Camp to Demolition Site

Safety Considerations, Protective Works & Methodology

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	Nº 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.

PIT SERIALS

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

Pit 2	Nature & Designation	Nº 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				0.00	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**

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?	

1. Demolition Site Map Showing required positions

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

Dems IC Name:	

Signature	

UNMAS Sub-Office use only:

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

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

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

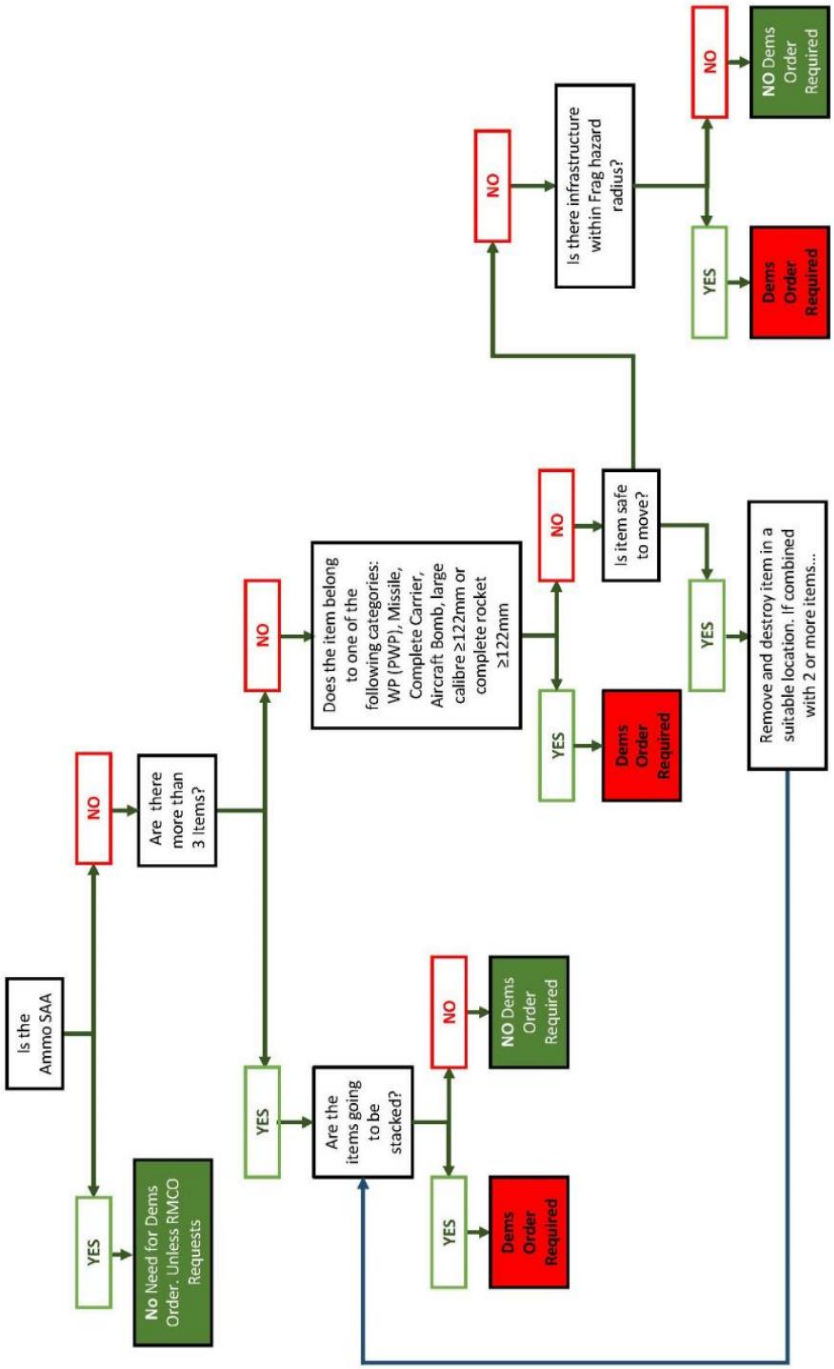
Witnessed by

Name:	Position	Agency	Date	Signature and stamp

Witnessed by

Name:	Position	Agency	Date	Signature and stamp

Demolition Order Decision Tool



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National Technical Standards Guidelines

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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 direct to the NMAA/UNMAS-SS 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 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:
- 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 supervisor.
- 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-SS.

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-SS 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 6.1.4 and submit to the relevant NMAA/UNMAS-SS 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 ERW, including unexploded submunitions, can be extensive across former battle area.

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 ERW 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 ERW, including UXO and AXO, <u>but not mines</u>, 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 ERW 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 Supervisors shall be qualified to EOD Level 3 and BAC Team Leaders shall be qualified to a minimum level of EOD Level 2.

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.

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

b. The minimum BAC subsurface clearance depth is 20cm 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 with the NMAA/UNMAS-SS 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-SS:

- 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 ERW target instead of minimum metal mines;
- Wide area and large loop detectors;
- Deep search locators;
- Magnetometers[i];
- 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-SS.

b. **<u>Phase 1</u> 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 dossiers and hospital records). The main purpose of this is to ensure that teams are not deploying on Anti-Personnel mine hazard. Only then the next phase shall commence.

c. **<u>Phase 2</u> 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.

d. 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 munition.

e. **<u>Phase 3</u> 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.

f. **<u>Phase 4 BAC</u>:** This is the clearance by systematic search, detection and removal of all ERW within the marked area, to the required depth.

g. **<u>Phase 5 Reporting</u>:** 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.

7.8 Methods of Search

a. 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:

b. **<u>Visual Search</u>:** 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 meter;
- 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 ERW 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 an ERW by a deminer;
- Any deminer who identifies an item of ERW shall immediately alert the remainder of the team and the TL. Under no circumstances shall the ERW be moved or disturbed at this stage;
- After an evaluation by the TL the ERW 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 ERW 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.

c. **<u>Instrument Aided Visual Search</u>:** 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.

d. **<u>Sub-surface Search</u>:** 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[ii]. 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;
- 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;
- Searching shall always be carried out in complete silence, except for instructions given by the TL and on the identification of an ERW by a deminer;
- Constant reassessments of the area, including threat assessments, shall be made at all times and any signal from the instrument that may reasonably be expected to be an item of ERW 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 ERW shall immediately alert the TL who will in turn evaluate and mark accordingly;
- All items of ERW 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 sub-munition position of the outer perimeter of the strike footprint. As displayed in the diagram below:

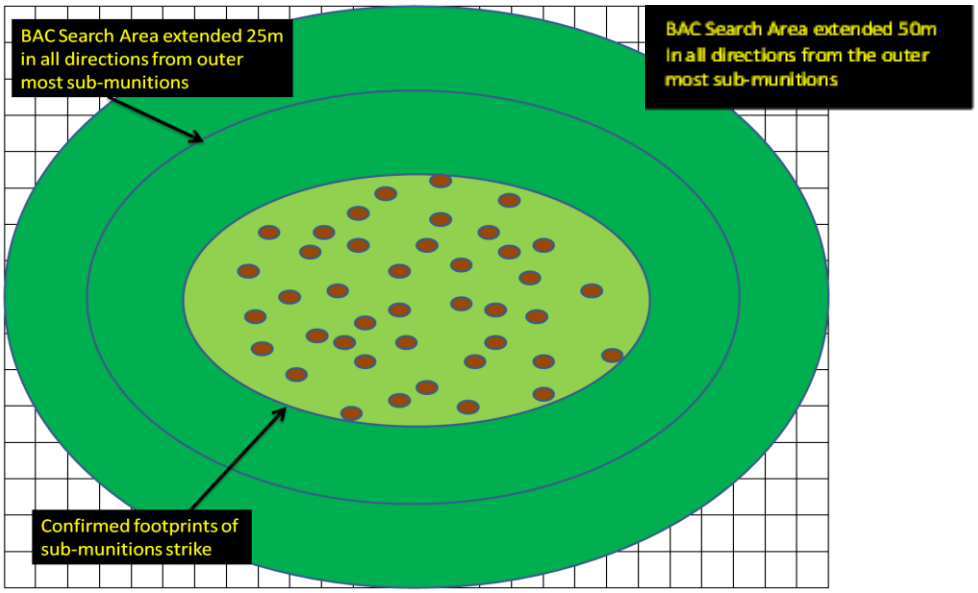

Figure 0-1 BAC Fade Out

- 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;
- Any additional QC measures such as large loop detector “360 degree” check around each submunition find, shall be described in the clearance company’s SOP;
- If a mine is found during BAC, the task is to cease immediately and considered as a Mine Clearance Operation with NMAA/UNMAS-SS being informed. A safety procedure to extract the searchers from the minefield is to be defined in the organisations SOP.

7.9 Disposal of ERW

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. All ERW 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. The clearance shall not continue until items identified and marked on the previous day have been disposed of;
c. Items of ERW 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 Reporting

a. Daily reporting of production and demolitions conducted on the site shall be submitted daily in the format specified by NMAA/UNMAS-SS.

b. Upon completion of a BAC task a Completion Report shall be submitted to the NMAA/UNMAS-SS. 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.

7.11 Responsibilities

a. NMAA/UNMAS-SS 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-SS 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-SS staff responsible for implementing policy and monitoring BAC operations.

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

[ii] Whichever entity is used reference to a single entity in this chapter is made by the term ‘deminer’

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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 a number of machines employing a variety of tools.

c. A mechanical demining unit refers to one or more machines working as part of a system for example, 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 a number of 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

a. When conducting mechanical demining, machines are divided into three distinct roles

b. Machines designed to detonate hazards – Machines designed to detonate hazards for the purpose of this NTSG shall be referred to as Mine Clearance Machines. These machines are those whose stated purpose is the detonation or destruction of hazards. As a consequence of their use, the necessity for follow-up clearance is reduced,

c. 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.

d. 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 either in the High or Low Threat Area.
- 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 (MPVDS):** 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/ERW’.

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 and/or ERW 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 and ERW.

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 and ERW 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 tools, or a combination of machines with different tools, or non-mechanical demining procedures applied at different stages during the demining process. The systems 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 suppressing 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) is capable of performing 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.
   - Acceptance Test – A test to ensure that a machine is able to 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-SS.

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 and ERW 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 is carried out by qualified personnel and authorised agencies.
   - Fire fighting 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 with drawn 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.

8.4 Safety

a. In addition to routine and normal safety practices employed during humanitarian demining the following safety precautions/procedures shall apply to all mechanical operations:

b. 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 component.

c. 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.

d. 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.

e. Machines shall be checked prior to moving from hazardous to safe areas to ensure that no landmines, ERW or hazardous components remain in the working or moving parts of the machine or are attached to the machine.

f. Communications between the site supervisor, the mechanical operator, the Medic and the sentries shall be in place and confirmed at all times while a machine is working in a hazardous area.

g. 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 Supervisor/Remote control machine operator wearing PPE and a machine working in suspected AP blast mine areas.	100

6	Between Supervisor/Remote control machine operator wearing PPE and a machine working in suspected AP fragmentation and AT mine areas.	150
7	Between Supervisor/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-SS 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 to 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 manufactures 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 0-1 Minimum Safety Distances for a Mechanical Sites

8.5 Clearance Requirements

a. The following applies during all mechanical demining operations:

b. A minimum of 500mm overlap is required for all medium and heavy mine clearance/ground preparation machine attachments during processing lanes.

c. 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.

d. 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.

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 (eg, 100% clearance to the required depth, area reduction, verification, removal of vegetation, loosening of soil) shall be taken into account. 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-SS.

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.

j. Note: The overlap can be measured by doubling the width of either the flail/tiller drum then measure the width of two flailed/tilled adjacent lanes that have been ground prepared and then subtract the minimum required overlap for either machine/tool, the difference is the “Overlap”.

8.6 Asset Deployment Tool

a. Table 8.2 details the minimum clearance requirements for mechanical operations conducted in South Sudan.

Table 0-2 Asset Deployment Tool

Asset	Threat	High Threat					Low Threat		
		Items Found			No items found				
		1st Stage	2nd Stage	3rd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage	Item found
Mine Wolf 330 / 370	AP/AT	Tiller/Flail to reach required depth	100% sub - surface follow up	2m x 2m box cleared around item	Tiller/Flail to reach required depth	100% sub - surface follow up	Tiller/Flail to required depth	Minimum 50% sub-surface follow up	Revert to HT routine after redefining HT/LT area
Mine Wolf 240	AP/AT	Tiller/Flail to reach required depth	100% sub - surface follow up	2m x 2m box cleared around item	Tiller/Flail to reach required depth	100% sub - surface follow up	Tiller/Flail to required depth	Minimum 50% sub-surface follow up	Revert to HT routine after redefining HT/LT area
Armtrac 400	AP/AT	Tiller/Flail to reach required depth	100% sub - surface follow up	2m x 2m box cleared around item	Tiller/Flail to reach required depth	100% sub - surface follow up	Tiller/Flail to required depth	Minimum 50% sub-surface follow up	Revert to HT routine after redefining HT/LT area
Armtrac 100	AP Only	Tiller/Flail to reach required depth	100% sub - surface follow up	2m x 2m box cleared around item	Tiller/Flail to reach required depth	100% sub - surface follow up	Tiller/Flail to required depth	Minimum 50% sub-surface follow up	Revert to HT routine after redefining HT/LT area
MV4	AP Only	Tiller/Flail to reach required depth	100% sub - surface follow up	2m x 2m box cleared around item	Tiller/Flail to reach required depth	100% sub - surface follow up	Tiller/Flail to required depth	Minimum 50% sub-surface follow up	Revert to HT routine after redefining HT/LT area
Bozena 4	AP Only	Tiller/Flail to reach required depth	100% sub - surface follow up	2m x 2m box cleared around item	Tiller/Flail to reach required depth	100% sub - surface follow up	Tiller/Flail to required depth	Minimum 50% sub-surface follow up	Revert to HT routine after redefining HT/LT area
Bagger	AP/AT	Tiller	100% sub - surface follow up	2m x 2m box cleared around item	Tiller	100% sub - surface follow up	Tiller	Minimum 50% sub-surface follow up	Revert to HT routine after redefining HT/LT area

8.7 Responsibilities

a. The NMAA/UNMAS-SS shall:

- Accredit mine action organisations' SOPs prior to carrying out on-site accreditation of machines 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-SS accreditation to operate as a mechanical clearance teams.
- Apply the standards as laid down in the NTSG.
- Ensure that the organisations SOP are in compliance with the NTSG.
- Maintain and make available documentation of clearance as specified by NMAA/UNMAS-SS
- Apply management practices and operational procedures which aim to clear land to the requirements specified in the contract and agreements.

1. INTRODUCTION

1.1 NMAA/UNMAS-SS in South Sudan are responsible for ensuring that all mechanical assets working within the South Sudan Mine Action Programme (South SUDANMAP) are safe, efficient and fit for their intended purpose. NMAA/UNMAS-SS achieves this by conducting an accreditation process to ensure that the mechanical asset meets the minimum standards as specified within the NMAA/UNMAS-SS 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 utilized 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-SS 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-SS 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-SS to ensure that the SOP and the intended use of the machine comply with South SUDANMAP NTSG;

b. **Ground Penetration Test** : A test shall be carried out in a safe area to ensure that the tiller/flail can reach the required 13cm penetration of the ground;

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-SS personnel may confirm a machines ability to operate in South Sudan and demonstrate its ability in safe controlled conditions. The purpose of the tests are 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 GROUND PREPARATION:

2.1 Once the contractors/organisations SOP have been received and reviewed, it is possible to proceed with the Ground Penetration 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 GROUND PREPARATION TEST:

4.1 The ground penetration 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:

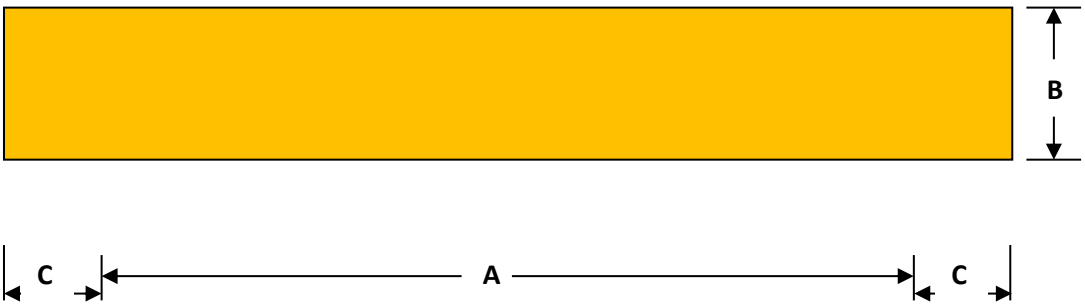
5.1 The purpose of the accreditation test shall be to establish the ground penetration depth achieved by the tiller/flail. The test strip shall be marked in a manner that clearly denotes alignment, start, finish and marking every 5 meters. Narrow trenches parallel to the start/finish lines shall be excavated 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 5mm 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.

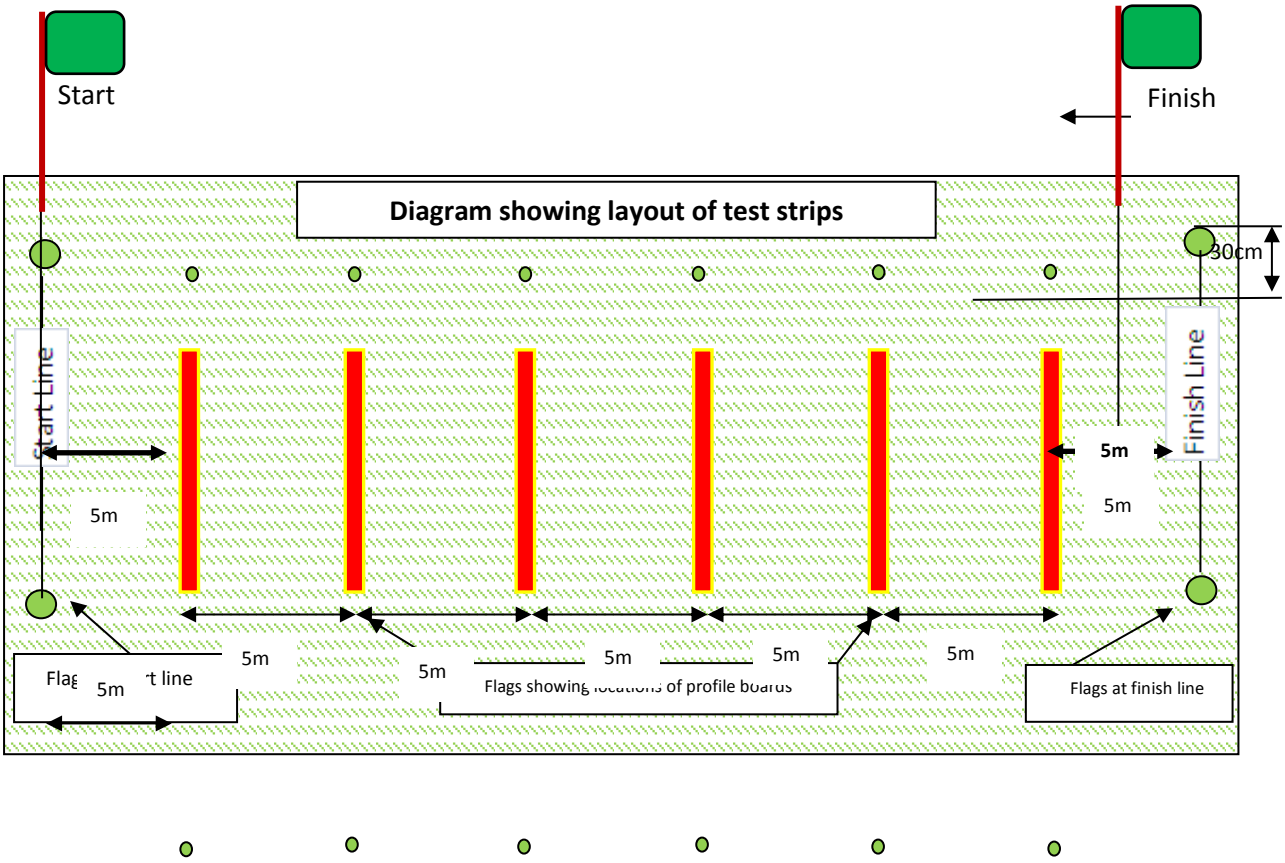


Figure 2: Plan view of test strips

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 penetration boards should be removed and examined to determine amount penetration inflicted by the flail*

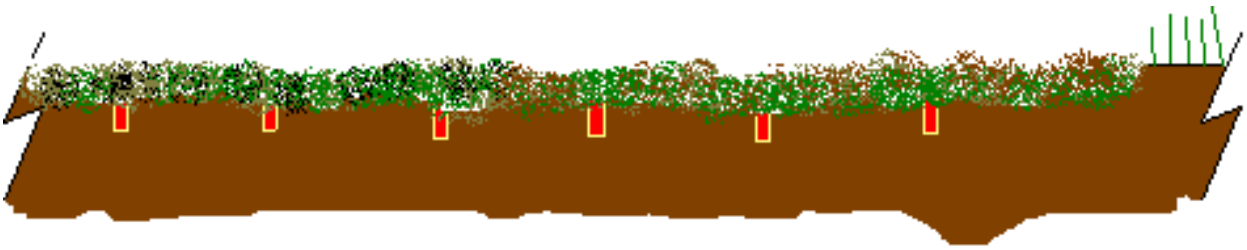


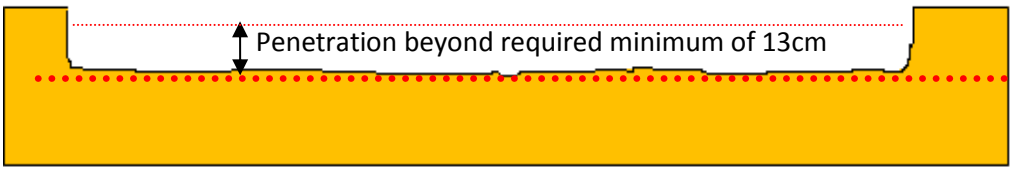
Figure 2: Layout of the test strips, each should be 35m long with trenches dug every 5meters so that the profile boards can be inserted into the ground.

The profile boards to be removed and examined and compared with boards of the original size and dimensions. The profile boards should show penetration across the width of the board to a depth of a minimum of 13cm. If the penetration on the board is less than 13cm then the test shall be repeated with the same boards until the penetration reaches, the required depth, this shall determine the number of passes required by the machine to reach the required 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 penetrated to 13cm.



Profile board

C: = Depth of penetration, this shall exceed 13cm across the width of the profile board.

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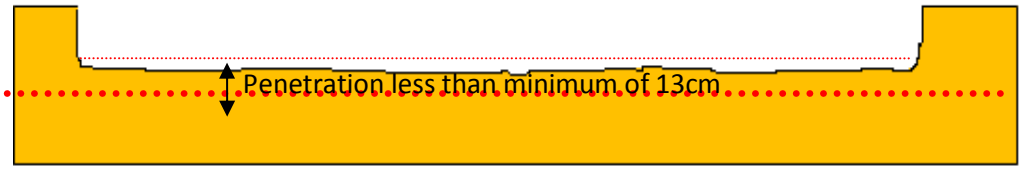


Profile board

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 penetration boards are penetrated 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 penetration 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-SS 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.

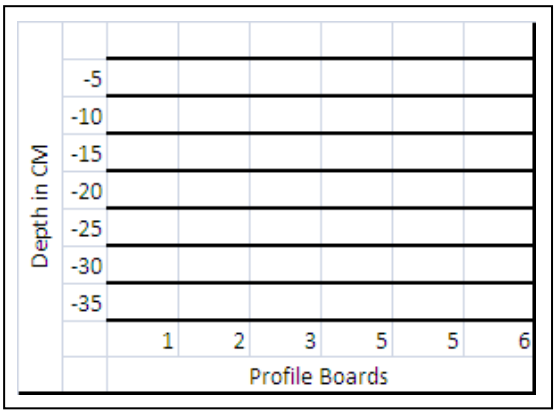
8.2 It is the responsibility of the contractor to complete all documentation to the required NMAA/UNMAS-SS standards and organize all facets of the field testing.

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

Profile 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: 31st October 2020

Chapter 9

Mine Detection Dogs

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1.1 Introduction.

a. 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 minimal metal mines may be found.

1.2 General Principles.

1.2.1 Roles of a Mine Detection Dog Team.

a. MDD teams may be tasked for the following operations:
b. Survey or verification of suspected hazardous areas.
c. Clearance of medium and low-density mined areas.
d. Technical survey (TS) and clearance on cluster munition remnants (CMR) contaminated areas.
e. Battle Area Clearance (BAC).
f. TS in support of nontechnical survey (NTS).
g. TS in ‘buffer zones’
h. Clearance of suspected mined roads.
i. Clearance in areas where handheld mine detectors are unable to operate (e.g., high metal content areas).
j. Quality Control (QC) on any clearance task provided that it is suitable for MDD operations.

1.2.2 General Safety

a. All MDD operations shall be conducted under the command and control of the site supervisor 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.
c. 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 his/her 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.

d. 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.
e. MDD handlers shall not be permitted to carry mobile phones when deploying into the hazardous area.
f. 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.
g. 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.
h. 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.
i. 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.
j. 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.

1.2.3 Capabilities of a MDD team.

a. MDDs are used for the detection of EO. The use of MDD teams may offer potential benefits including:
b. Detection of EO with low-metal and no-metal content;
c. Detection of EO in areas with high metal contamination;

d. increase the speed of search of an area;
e. search roads and road verges;
f. Search pockets of land unreachable by mechanical demining equipment;
g. Search areas contaminated with metal restricting the use of metal detectors;
h. Creating safe lanes and control points;
i. Rapid sampling of cleared land – Quality Control (QC).

1.2.4 Limitations of a MDD team.

a. MDD teams cannot be used successfully under all circumstances and conditions. Limitations associated with environmental, contamination and practical aspects include:
b. 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;
c. 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;
d. Atmospheric conditions: High levels of pollution from smoke, exhaust gases, odours from petroleum products or industrial activity may prevent ADS from satisfying detection standards;
e. High concentrations of EO: A high density of EO may make it hard for animals to differentiate between targets;
f. Background contamination: Widespread background contamination, following mechanical or other processing of land containing many targets, may overshadow the scent from target objects;
g. and 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 ADS units are likely to encounter.

1.2.5 Composition.

a. A MDD team consists of one (1) qualified Mine Detection Dog (MDD) handler and two (2) Mine Detection Dogs (MDD).

1.3 Training.

1.3.1 Management of training.

a. 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:
b. Established clear, relevant training objectives;
c. The relevant EO threats should be taking into account when planning training;
d. Delivering training using authorised, competent trainers;
e. Ensuring that training sites, targets and conditions correspond to those associated with operational sites;
f. Monitoring training performances through observation and the collection and analysis of data;
g. Updating training whenever necessary in response to changing circumstances, conditions and standards.

1.3.2 Records of training.

a. 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 search
   - Type of training
   - Instructor/handler details
   - Environmental conditions
   - Target object(s)
   - Laying details of target(s)
   - Results of training (including problems identified)
   - Analysis of the MDDs performance
   - Corrective action to be taken

1.3.3 Training Aids

a. Training aids used shall conform to the different types of mines/ERW 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.

1.4 Operational Accreditation

1.4.1 General rules

a. All organisations intending to use MDD for mine/ERW clearance operations shall ensure that the MDD team have received the necessary accreditation and licensing from the NMAA/UNMAS-SS. 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. Continuous External QA Evaluation shall be conducted by the NMAA/UNMAS-SS 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.
d. The MDD operational accreditation shall be conducted by the NMAA/UNMAS-SS QA Officer. The manager or the senior supervisor of the mine action organisation which is undergoing operational accreditation has the right to be present during the evaluation if desired.
e. 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-SS QA Officer and on completion the form shall be signed by the dog handler, organisation senior supervisor (if present) and the NMAA/UNMAS-SS QA Officer.

1.4.2 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-SS 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 ‘minefield record’ and kept by the relevant NMAA/UNMAS-SS. 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 then the operational accreditation shall be called off, to allow improvement in the weather conditions. As a general rule, operational accreditation shall not be carried out if it is too hot, too windy or if it is heavy rain.
d. The accreditation site shall consist of mines/ERW representative of target objects that will be encountered during operations. The type of mines/ERW, exact location, depth and any other relevant detail shall be recorded in the ‘Accreditation Site Minefield Record’.
e. The search area for each MDD will be a minimum of 500m² 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 2-5 days of 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 varied lengths of time. 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. A break may be required because of a provisional lapse or if the MDD or the handler may need to drink water. 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.

1.4.3 Pass/Fail Criteria

a. Pass Criteria:
   - The MDD shall be in good health/physical condition.
   - The MDD team shall comply with the organisation's SOP's correctly.
   - The MDD shall indicate on all test items (minimum of three (3) test items per MDD) in the test area within 125cm.
   - The MDD team shall provide no more than three (3) false indications throughout the test.

a. Fail Criteria:
   - The MDD scratches of physically/actively manipulates the surface of the test item.
   - 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 fails to comply with the organisations SOPs.
   - The handler is not able to control the MDD

1.4.4 Actions of 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.

1.5 Quality Assurance.

a. Each mine action organisation shall comply with the following:

b. 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-SS representatives on request.

c. Refresher training and an internal QA assessment shall be conducted and passed by the MDD team when returning from a block leave period prior to re-deployment.
d. Every 2 months the MDD Team shall undergo external QA conducted by NMAA/UNMAS-SS. This shall be conducted either on-site or in the NMAA/UNMAS-SS accreditation field.
e. The QA shall be conducted to replicate the operational working environment as close as possible.
f. The External Quality assurance assessment should be carried out as similar to the accreditation procedure as possible.
g. The area size may be reduced depending on the facilities available at the site.

1.6 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

1.7 MDD Operations

1.7.1 General requirements

a. Pre-deployment Requirements: The following shall be applied:
b. Prior to deployment, all MDD shall be checked by a vet to ensure that they are medically fit for deployment and are capable of working in the environment required. A report from a qualified veterinarian shall be submitted to NMAA/UNMAS SS prior to deployment.

c. MDD shall be checked by a qualified veterinarian at least every 12 months to assess the dog's medical fitness and well-being, the results of which shall be recorded.
d. All MDD shall be subject to accreditation prior to commencing operational tasks and shall only be tasked for the activities that they are accredited for.
e. The MDD team shall implement and adhere to the accredited organisations SOPs.
f. When investigating a MDD 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 Supervisor 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 organisations SOP.

1.7.2 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.

1.7.3 Search procedures

a. The search procedures and search patterns shall follow those described in the mine organisations accredited SOPs.

b. MDD for clearance – If MDD teams are used as a primary detection tool, then the area may be subject to the QC procedure.
c. MDD during Emergency Response – As an exception, one appropriately trained MDD may be used on its own in cases of urgent medical evacuation.
d. 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.

1.7.4 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/ERW is found, the handler shall mark the indication using the same materials and procedures in accordance with the organisations SOPs. The marking system shall only be placed outside the search area. E.g. boundaries of the box/panel.

1.8 MDD Welfare

1.8.1 General

a. General principles requirements and guidelines for MDDs are provided in IMAS 09.40 and details on health are described in IMAS 09.44. 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;
   - 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;
   - physical and mental exercise to sustain the animals' wellbeing and operational performance;
   - providing kennel/shelter facilities of an adequate size that maintain appropriate environmental conditions and with access to daylight, exercise and human company;

- maintaining transportation facilities, equipment and procedures that keep animals safe and healthy and that do not adversely affect their operational performance;
- 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.

1.8.2 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 urination should be normal.
    - Skin & coat - Run hands over dogs' body. Check for ailments such as lumps, wounds, thorns, parasites, skin condition, matted hair or any abnormality.
    - Legs - Make sure there is no swollen or injured areas, swollen joints or hot spots. Check the dogs 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 paw, pads and between toes for fungal infections, inter-digital 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^{o}F or 38.3 – 39.2^{o}C
- Vaccination/treatment - Check Vaccination status. Check parasite treatment record.

a. Handlers are responsible for reporting to their Supervisor and medic any medical / health problems or any unusual out of character behaviour in their MDD Team.
b. For further guidance please refer to IMAS 09.44.

1.9 Responsibilities.

1.9.1 National Mine Action Authority and/ or UNMAS

a. The NMAA, or an agency acting on its behalf, shall:
b. establish a clear and sustainable national policy on the use of MDD within the mine action programme;
c. develop and implement relevant national standards and other guidelines governing the use of MDD within the mine action programme;
d. accredit MDD organisations as fit to undertake clearance;
e. 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
f. assist MDD organisations with the establishment of testing and training areas and other facilities to support the deployment of MDD Teams.

1.9.2 Mine Action Organisation

a. The Mine Action Organisation shall:
b. gain from the NMAA/UNMAS accreditation to operate as an MDD organisation;

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 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 occupational and general health care of animals.

South Sudan

National Technical Standards Guidelines

Date: 31st October 2020

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. Therefore, any organisation conducting humanitarian demining operations and other explosive hazard management in the 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 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 organizing 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 obstruction, respiratory arrest, hypothermia prevention and CPR. BCP also include the extrication and movement of the injured casualty from hazardous areas to a provider capable of

[1] E.g. *UNMISS Casualty Evacuation Policy* as amended from time to time

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 stabilization and Damage Control Resuscitation (DCR) where the severity of injury is such that stabilization 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 provider. 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 are 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, specialized 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, prioritized 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, Medical Treatment Protocols (MTPs), and oversight of the Organisational Medical Director.

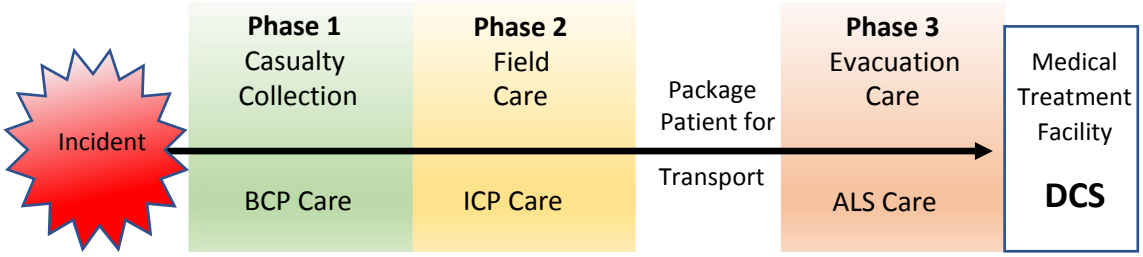
[2] IMAS 10.40 Technical Note on Mine Action, Annex A.

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, stabilization 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 utilized 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. <u>Phase 2: Field Care:</u> 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 stabilize life threatening injuries and the casualty will be prepared for movement. 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 Country Office 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).

e. <u>Phase 3: Evacuation Care:</u> 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).

f. 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)s 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.

g. 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.

h. 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.

i. 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.

j. Care Providers shall not cease care (i.e. abandon the patient) without express direction as outline 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.

k. 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.

l. 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.

m. All exercises are required to use the current UNMISS 9 Liner, EGRA and ATMIST reporting formats.

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 standardize 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 Country Office (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-SS 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, authorizing/ producing amendments reflecting medical policy changes or updates and ensuring NMAA/UNMAS 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 Country Office to UNMAS Headquarters.
- The OMD shall establish policies and procedures for the evaluation of Team Medics, prior to accreditation by the UNMAS Country Office.
- 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

[3] Example: Joint Trauma System-Clinical Practices and Guidelines (https://jts.amedd.army.mil), or similar

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.
- 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. <u>Intermediate Care provider (ICP)/Team Medic:</u> 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/NMAA in order to participate as Intermediate Care Providers in active operations.
- The UNMAS-SSD 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.
- 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. <u>Demining Team Member:</u> 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 DT members shall complete a NMAA/UNMAS-SS approved BCP course prior to participating in demining operations as outlined in Annex A.
- All DT 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 authorized by the OMD through the respective organisations MTPs may be carried my DT members including Team Medics. The possession of unauthorized 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 document and reported in a timely manner as outlined in the MTPs and in all cases to the UNMAS-SSD 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 with 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: Organisation based ICP training and certification is required for all Team Medics prior to their accreditation by NMAA/UNMAS Country Office. 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 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 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 UNMAS.

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 call 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 organisation in South Sudan are issued by NMAA/UNMAS-SS with a Log Book. The log book details a serious 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. At 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/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 PCR standardized form using a triplicate carbonized 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-SSD 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 practiced 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-SSD 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-SSD 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. 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 constituent 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.

e. Retesting shall include all of the attached OSCEs as outlined in Annex E.

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
C-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		May	Should
Establishment of a chest		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		Should	Shall
Dressing of non-	Should	Shall	Shall
Metabolic Homeostasis Management			
Hypothermia/hyperthermia	Shall	Shall	Shall

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
Nasal Pharyngeal Airway and lubrication	2			
Supraglottic Airway Device (set of 3)	2	LMA	King-LT	I-gel
Definitive Airway Device	2	4.0 ET tube	Boogie assisted kit	CRIC Key
Handheld/Portable Suction	2	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			
IV Administration Equipment (include. blood lines)	4			
Intraosseous administration cannula	2	Illinois Bone Needle	EZ-IO	FAST
IV NaCl Resuscitation Fluid 500ml	6	NS	FDP	FWB
IV NaCl Resuscitation Fluid 0.9%, 100ml	4			
IV 3% hypertonic Saline 500ml	2			
General Equipment				
Universal Precaution Equipment as necessary				

Tape 2”/ 5cm	2
Trauma Shears	1
Flashlight/Torch/Penlight	2
Stethoscope	1

Casualty Collection Equipment	
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	
Gauze (preferably vacuum packed/rolled/‘z' folded)	4
Arterial Tourniquet (with windless 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
IV Blood Administration line	4
Citrate Blood collection bag	2
IV dial-a-flow	2
Rapid Diagnostic Tests (HIV, HBV, Eldon Card, Malaria)	1
Adult Diapers	3

PCP Trauma Care Pack Pharmaceuticals	
Pharmaceuticals	Recommended
Localized 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
IV Hemorrhage support/ tPA inhibitor	Tranexamic Acid
Antiemetic injectable (consider adding rectal)	Metoclopramide
IV Antihistamine	Promethazine
Malarial Treatment	Cortem
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)

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 Hemorrhage	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 10A.16 - Medical Treatment Report

Date: DD/MM/YYYY	Time: HH:MM	Medic:
Task ID:	Unique Report ID: Task 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.	Size: mm	Depth: mm			
Breathing	Breathing Rate: /min	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!!)			
	Heart Rate : /min	Regular	Regularly Irregular	Irregular			
	Notes:						
Metabolic	HGT: mmol/l	HH:MM	Intervention	Temp: °C	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	Rate: ml/hour	Bolus	Size/ml	Total: 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	Dose 3

	Respiratory	Cardiac	Endocrine	Neurological	Surgical	Natal

Prior Medical History	Describe	
Last Input	HH:MM	Describe
Last Output	HH:MM	Describe
Events Prior	HH:MM	Describe

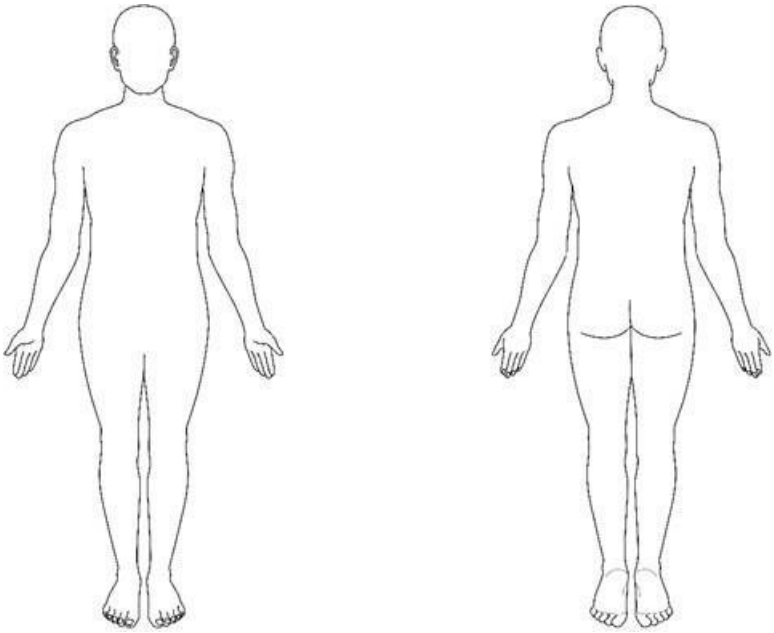
Secondary Survey

Vitals	Time: HH:MM	LoC: Alert Verbal Pain Unresponsive		
	RR: /min Clarity Volume	HR: /min Regularity Strength		
	Pupils: /mm Reactive Equality	SpO_2 %	BP /	
	Time: HH:MM	LoC: Alert Verbal Pain Unresponsive		
	RR: /min Clarity Volume	HR: /min Regularity Strength		
	Pupils: /mm 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

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	Control Severe Hemorrhage
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	January 2019

Participants Name:	Date:

Participant is requested to demonstrate the following:

Applies Arterial Windless 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 patients 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		

Annex E

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	Airway Assessment
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	January 2019

Participants Name:	**Date:**

Participant is requested to demonstrate the following:

	Positional Airway Techniques	
	Performs Head Tilt-Chin Lift	
1.	Performs Jaw Thrust	
	Performs Recovery Position	
	Oral Suctioning	
	Tests suction device for function	
	Correctly measures suction catheter	
	Advances suction catether 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 verbalizes “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 verbalizes selection of correct nostril	
	Inserts NPA perpendicular to face	
	Verbalises observation of chest rise	
	Instructor verbalizes “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

Assessment Name:	Chest Injuries
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	January 2019

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:	January 2019

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		
	Verbalizes 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		
	Verbalizes 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:	IV Access
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	January 2019

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 disposes 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	

Annex E

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	Pharmacology Administration
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	January 2019

Participants Name:	**Date:**

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 disposes 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 disposes 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 orientated to person, place, time and event	
	Assists patient to place medication on their tongue and swallow	
	Provides a small quantity of no more than 50ml 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:	January 2019

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 hemorrhage	
	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 authorized)	
	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:	January 2019

Participants Names:	Date:

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	
	Categorizes 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)	
	Categorizes the patient as Priority #1 – RED	
Patient #3		
	Identifies patient is breathing >30/min	
	Applies patient's tourniquet to leg (if appropriate)	
	Evaluates patients radial pulse (radial pulse present)	
	Evaluates patient's mental status (alert)	
	Categorizes 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	

Annex E

OBJECTIVE STRUCTURED CLINICAL EXAMINATION

Assessment Name:	Medical Patient Management
Course Title:	Team Medic
Level:	Intermediate Care Provider
Competency Reference:	
Version:	January 2019

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 OPRQRST	
	Assesses airway (verbalises)	
	Assesses Respirations	
	Considers administration of aspirin (if authorized)	
	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 verbalizes "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

National Technical Standards Guidelines

Date: 31ST October 2020

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. 3 different levels of communications are operated to co-ordinate and control operations:

- National Network: This is the operational network between the NMAA/UNMAS-SS 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-SS.
b. NMAA/UNMAS-SS 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 established and functioning between the operational site and base camp and NMAA/UNMAS-SS before any work commences.

e. Communications shall also be confirmed internally between the worksite supervisors, 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-SS shall be informed 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-SS 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 supervisor.
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-SS.
d. If no such call sign has been assigned then the NMAA/UNMAS-SS 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 ERW, 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 EO or any unidentified ERW.

11.10 **Responsibilities**

a. NMAA/UNMAS-SS 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.

South Sudan

National Technical Standards Guidelines

Date: 31st October 2020

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 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 permanent shall be recorded in a log book showing the amount of explosives transported or stored and the amount of explosives being

[1] https://www.un.org/disarmament/un-saferguard/guide-lines/

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 mine action organisations. Records are to be kept and made available for inspection by UNMAS/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/Twaroon 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

12.4.1 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.

12.4.1 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 EED's (Electro Explosive Devices).

12.4.1 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 is 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.

12.4.1 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.
- 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 agencies SOPs but in general should prohibit the entry of all smoking materials, including cigarettes, matches, lighters etc. and any object or item that might cause fire from entering the storage facility. 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 of 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.
- Detonators and explosives shall be loaded on to 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.

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 DAM/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 r 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 inert, drill, instructional or replica mines and ammunition 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 inert, drill, instructional or replica mines and ammunition 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 EOD technician shall then certify the item is free from explosive (FFE). The certificate shall contain the following information:

- Unique serial number.
- Date
- Name of inspecting EOD technician
- Brief description of item
- A declaration that the items is free from explosive

a. The statement and 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 know 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 on the last day of the working week so that they can track the timely disposal of such item

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 3000veh/day		More than 3000veh/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.

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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-SS 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-SS 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. All personnel attending a specific training course shall be given certificates of competency, achievement and qualification on

successfully completing the course or after a suitable probationary period (three months is recommended).

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-SS 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 /ERW identification
   - Mine clearance procedures
   - Map reading
   - Sketch drawing
   - Land navigation and surveying techniques

h. Mine / ERW (Deminer) Training: The following minimum training requirements apply:
   - Mine/ERW identification
   - PPE
   - Equipment & tools
   - Minefield layout and marking
   - Manual clearance procedures to include: detector, investigating a detector signal – prodding and/or 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 & ERW 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 and GPS

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-SS 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-SS 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-SS 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.
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-SS 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 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-SS.

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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 SS 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 South SUDANMAP 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. <u>Accreditation:</u> 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 SUDANMAP see Chapter19.

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 IMSMA compatible QA 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 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 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 SS, delegated to a contracting organisation, or both.

c. Quality Management Body: This is a body comprised of senior personnel from UNMAS SS 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 UNMAS South Sudan IQA Monitoring form (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. Thus, a full assessment is expected to include:

c. Site briefing

d. Revision of clearance/deployment plan

e. Casualty evacuation exercise

f. Review of demolitions procedures

g. Assessment of marking
h. General Assessments: General Assessments is 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.
i. For each team only one fully completed General Assessment form, compiled over the duration of the month, is to be submitted to the UNMAS Field Office for review and subsequent entry into IMSMA. However, 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-SS 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 IMSMA 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, internal quality assurance records, and Survey 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 **Desk Assessments**

a. The NMAA/UNMAS South Sudan Quality Control process will ensure reporting compliance by the clearance agencies and will evaluate all agency quality assurance reports and aims to identify any trends that, if left without action, may result in critical non-conformities. These trends will be highlighted to the agency for action and will be subject to further attention as part of the quality assurance process. A monthly overview of each agency's quality assurance reports will be compiled and sent to the agency with comments (and where appropriate on a project by project basis). These reports will also form part of a country-wide monthly quality management report to be submitted to the UNMAS Chief of Operations.

14.11 **Field Assessments**

a. The NMAA/UNMAS South Sudan 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

QA manager 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 IMSMA 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 UNMAS SS IMSMA External QA Monitoring form that shall be registered and submitted to the Quality Manager on a weekly basis.
   - Compare the recordings/results of completed external IMSMA QA Monitoring forms against the most recent internal IMSMA QA Monitoring forms for accuracy and take appropriate action dependant 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 Completion Report. The Completion QA should be submitted to the Quality Manager on a weekly basis
   - Ensure appropriate follow-up action is taken on the Quality Management Body's' recommendations.

14.12 QC Sampling of cleared areas

a. The NMAA/UNMAS South Sudan Quality Assurance teams during any visit can conduct Random Sampling of an area that has been subjected to clearance and Internal QA/QC by the implementing partner.

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.
   - 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.

14.13 **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
   - Task map showing the progress and deployment of each clearance asset
   - Approved Implementation Plan

b. Additional documentation may be requested by the QA official.

14.14 **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 sent to the NMAA/UNMAS-SS Quality Management office
   - Copies of all reports sent to the organisation from the NMAA/UNMAS-SS quality management office

14.15 **Outputs - External Monitoring Body**

a. The external monitoring body shall deliver the following outputs:
   - The NMAA/UNMAS-SS sub-office OPS/QA officer shall provide a Weekly Summary based on the previous week's external monitoring activities, to the NMAA/UNMAS-SS National QA Officer/Chief of Operations.
   - As part of the NMAA/UNMAS-SS 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-SS Chief of Operations / Program Manager.

14.16 **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 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.

14.17 **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-SS 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 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 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 submitted to the relevant UNMAS sub – office once completed.

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-SS 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-SS.

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 teams 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 QA monitoring form for possible subsequent further action.
s. The Operations / QA Officer will conduct the QA / monitoring visit using the UNMAS-SS 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 that any decisions or recommendations subsequently arrived at are based purely upon factual observations.

14.18 **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 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 QA monitoring form to the aforementioned written recordings of the body.
d. Completed external IMSMA QA monitoring forms shall be signed by appropriate appointments prior to the departure from site of the external body.

e. Ideally a fully completed 2nd copy of any IMSMA QA monitoring form should be presented to the mine action organisation appointment in charge of the task/site however, it is acknowledged that this often may not be possible; this may be done electronically on site by way of a signed PDF copy.

f. Following the completion of the visit any completed and signed external IMSMA QA monitoring forms shall be submitted to the QA Manager on a weekly basis. On completion of this information transfer the original QA evaluation form shall be stamped, signed and placed in archives.

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.

14.19 **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.

14.20 **Sanctions and Penalties**

a. If and when an agency if 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 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-SS:

- 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 reoccurrence 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-SS 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 Quality Management Body 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 Quality Management Body 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.

14.21 **IMSMA Forms for Internal and External QA Inspection**

a. Internal and External QA shall be documented using the relevant UNMAS S Sudan QA evaluation reports. Specialist reports relating to specific disciplines such as Risk Education shall also be used when appropriate.
b. 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.
c. Completed IQA forms shall be submitted on a weekly basis to the respective NMAA/UNMAS-SS sub-office OPS/QA officer.
d. It is the duty of the Ops /QA office to review the IQA form and once clarifications have been sought to submit the corrected report to the IMSMA office.
e. External Quality Assurance forms are to be completed by the UNMAS/NMAA staff and registered within the IMSMA system.

14.22 **Summary**

a. The NMAA/UNMAS-SS 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-SS QM system is aimed at confirming that mine action organisations are applying their accredited management processes and operational procedures in a manner that shall result in the Annex A to Chapter 14 External QA Report

External QA Visit

1. GENERAL

Hazard ID		Date: (dd/mm/yyyy)	
UNMAS Representative		Demining Organisation	
Site Supervisor		Team/Asset ID	
Team Leader		Task Dossier Number	
Longitude(dd.dddd):	Latitude(dd.dddd):	Nearest Village	

2. Ground & Weather Conditions

Soil Type	Rocky	Sandy	Chalk	Clay	Swamp	Ploughed
Rainfall previous 7 days	None		Moderate		Heavy	
Other Comments						

Special Monitoring : Yes No If yes Start Date (dd/mm/yyyy):

3. Is the operation being conducted in accordance with SOP & IP?

Yes No

Detail conduct of task with observations (compulsory)

4. Is the Organisation's internal QA in accordance with NTSG/SOP?

Yes No

Brief description of internal QA conducted and results/remedial actions (compulsory)

5. Are there constraints that have/may prevent the task being conducted as per the IP?

Yes No

List and any issues/potential issues and recommended amendments to IP *(signature of this documents by organisation and by UNMAS QA monitor represents acceptance of the amendment)*

6. Were any non-conformities identified?

Yes No

If yes – detail all non-conformities and recommended remedial action

Were these rectified on site? Yes No

Need for additional follow up? Yes No

QA Result: Passed Failed

7. UNMAS Representative **Comments (compulsory)**

8. ORGANISATION on-site representatives comments (compulsory)

SIGNATURES

UNMAS REP		ORGANISATIONAL REP	
DUTY STATION (AoR)		TEAM/ASSET ID	
SIGNATURE		SIGNATURE	
DATE		DATE	
TIME ON-SITE		TIME OFF-SITE	

South Sudan

National Technical Standards Guidelines

Date: 31st October 2020

Chapter 15

Investigations Mine/UXO Accidents & Incidents

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15.1 Introduction

a. Effective reporting and the thorough investigation of mine/ERW 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.

b. The aim of this NTSG is to provide standards and guidelines on the minimum requirements for the reporting and investigation of mine/ERW accidents and incidents within the South SUDANMAP. This NTSG is based on the guidelines and principles outlined in IMAS 10.60.

15.2 Reporting of Accidents/Incidents

a. Accidents and/or incidents shall be reported to the NMAA/UNMAS-SS accordingly, in the following circumstances:
   - When an event involving mine/ERW 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/ERW or explosives results in damage to equipment or property.
   - At all times when a mine/ERW 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 the application of the SOP or the failure of equipment issued to employees.
   - When any unplanned detonation of a mine/ERW or explosives occurs irrespective of the cause or outcome.
   - If a non-mine/ERW 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-SS on receiving reports of mine/ERW 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.

b. Initial Contact Report. Provides essential information about the accident/incident, which permits the NMAA/UNMAS-SS 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-SS Headquarters within 30 minutes of the mine/ERW accident/incident occurring. The minimum information required is:
   - **WHEN –** Time of accident.
   - **WHERE –** Location, province, district, Task No, lat / long coordinates.
   - **WHO –** Organisation, C/S and/or name, nationality and blood group of injured.
   - **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.

c. Follow-Up Report. Upon receipt of the Initial Contact Report the NMAA/UNMAS-SS 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 verbal report shall be made by the mine action organisation to the NMAA/UNMAS-SS Headquarters. This is generally made via telephone. A confirmation e-mail shall be sent within two days 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 Initial Contact Report.
   - Confirmation that all other mine/ERW sites where the same organisation is operating are shut down and that the scene of the mine/ERW accident/incident is as secure as possible, pending the arrival of the Internal Investigating Officer.

- 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.

d. Written 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-SS Headquarters within 48hrs of the incident. If this form is not relevant to the incident then an appropriate written report covering all details shall be drafted and submitted.

15.3 **Investigation Requirements**

a. 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 reoccurrence. The NMAA/UNMAS-SS shall have the final decision on whether an accident/incident warrants or requires an investigation however and 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-SS 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

a. An accident/incident formal investigation may consist of one of three levels of investigation:

b. **Board of Inquiry (BOI):** Ideally any BOI should shall be comprised of a principal member from the NMAA/UNMAS-SS, 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-SS 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 on each BOI.

c. **Independent Investigations:** An appropriately qualified and experienced independent investigation officer appointed by the NMAA/UNMAS-SS Headquarters shall carry out the independent investigations.

d. **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

a. On the initiation of any formal investigation NMAA/UNMAS-SS shall ensure that:

b. The investigation commences as soon as practicably possible.

c. 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.

d. 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.

e. 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.

f. Photographs of the accident/incident site are taken immediately.

g. 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).
h. 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.
i. 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.
j. The senior in-country appointment from the mine action organisation, in consultation with NMAA/UNMAS-SS, shall ensure that recommendations are implemented without delay. The NMAA/UNMAS-SS shall ensure that summaries of lessons learnt are distributed to all mine action organisations as soon as possible.
k. Within three months of the BOI report findings, NMAA/UNMAS-SS 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 the 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-SS 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-SS. 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.

d. Following this it shall be signed, bound and produced as four copies for distribution as follows:
   - 1 x copy (each) for the NMAA/UNMAS-SS 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-SS Headquarters shall hold an additional electronic copy.

15.7 Reporting of Accidents to Local Authorities & Immediate Family

a. Reporting of Accidents to Local Authorities AND IMMEDIATE FAMILY

b. 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-SS shall confirm that the accident is reported to local authorities and immediate family.

c. 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

a. 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 should 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-SS within 24 hours after the accident occurred.
- All on-site documentation shall be collated and held for the BOI investigation.

15.9 Responsibilities

a. NMAA/UNMAS-SS Responsibilities

- Establish and maintain procedures for the reporting and investigation of mine/ERW accidents and incidents in accordance with this NTSG.
- Appoint personnel to investigate mine/ERW 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-SS, who may then extract information for other National Mine Action Authorities.
- Coordinate with NMAA/UNMAS-SS in the reporting and investigation process.

b. Mine Action Organisation Responsibilities

- Report all known mine/ERW accidents and incidents to the NMAA/UNMAS-SS 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.

- In the event of demining accidents/incidents only one Point of Contact (POC) from the mine action organisation/contractor shall be the focal point for relaying correspondences between the investigation team and relevant HQ's. This is to control the flow of information and avoid confusion and contradictory statements from the field.
- 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-SS to investigate mine/ERW accidents and incidents in any way requested in order for them to meet their aims and objectives.
- Mine Action Organisation Employee Responsibilities
- Apply appropriate standards and SOPs designed to prevent mine/ERW accidents and incidents from occurring.
- Report perceived weaknesses in equipment training and procedures that may lead to a mine/ERW accident/incident to appropriate managers.
- Report any known mine/ERW accidents and incidents; and assist in the investigation as required to appropriate managers.

	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 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 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			

MINE / ERW ACCIDENT AND INCIDENT DETAILED INVESTIGATION REPORT

From: Date report submitted:

To: NMAA/UNMAS-SS

Subject: **MINE/ERW ACCIDENT AND INCIDENT DETAILED**

INVESTIGATION REPORT

Serial Number: (Year/Report Number[1])

References:

To Include:

- Initial Contact 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.

[1] E.g., if it's the tenth Investigation Report of 2014 then the number will be 2014/10

- 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:

- 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/ERW 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 Contact 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/ERW 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.

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-SS 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

[2] e. g., if it's the tenth Convening Order of 2014 then the number shall be 2014/10

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.

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.

The South Sudan NATIONAL Mine Action Authority/

United Nations Mine Action Service

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/ERW by:

Human ☐ MDD ☐ Vehicle ☐ Machine ☐ Animal ☐

Missed mine/ERW by:

Human☐ MDD ☐ Machine ☐ Other: ☐ (survey only conducted)

Report Compiled By

Agency: NMAA/UNMAS-SS Name: Position:

Location of Accident/Incident: **Date of Accident/Incident**:

[3] e. g., if it's the tenth BOI of 2014 then the number shall be 2014/10

Casualty(s): Human ☐ MDD ☐ Other ☐ None ☐

Agency Involved:

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:
1. Name of Witness
2. 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-SS 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-SS
- 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.*

me escription of Event

Details of the Mine/ERW involved

7.1 *Include a description of any mine/ERW 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.*

). 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 to Chapter 15 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	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		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	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: 1st October 2020

Chapter 16

Health & Safety, Social & Environment (HSSE)

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16.3 Work Routines 3
16.4 Staff Insurance Cover 4
16.5 Health & Safety Requirements 4
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Annex A - Prevention and Mitigation of COVID-19 during Mine Action Operations..…15

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. NMAA/UNMAS-SS 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.

c. Daily Work Routines: 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.

d. Rest Days: 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.

e. 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**

a. 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.

b. 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 sub office before work can commence.

c. 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.

d. 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.

e. 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.

f. 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.

g. 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.

h. 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.

i. 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.

j. 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.

k. Communication and Information sharing: HSSE reporting to UNOPS shall be through the relevant contractual reports.

l. 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.

m. 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 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.

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: 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.

c. 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.
d. Personnel shall not deposit human waste on the soil surface or in water courses.
e. 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.
f. 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.
g. All domestic rubbish shall be removed from the site, buried or burned on a daily basis.
h. Solid waste and ash left over from burning shall be either removed from the site or buried.
i. Containers used for storing domestic rubbish shall be vermin proof and constructed to contain spilled liquids.
j. Rubbish removed from the site shall be appropriately disposed of.
k. Any rubbish spilled during the removal process is to be cleaned up.
l. Rubbish shall only be buried with the approval of the local communities and then in locations agreed to by them.
m. 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.
n. 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.
o. Where possible, rubbish in pits shall be burned or covered over on a regular basis.

p. 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.
q. 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.
r. Waste water shall not be released if it may enter watercourses.
s. 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.
t. 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.
u. 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.
v. 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.
w. 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.

x. Any toxic waste products of demining operations shall not be buried. They shall be collected and removed to an approved disposal area.

y. 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.

z. 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-SS 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-SS 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.

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-SS.

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-SS on request.

b. All significant environmental incidents shall be reported to NMAA/UNMAS-SS 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-SS during the accreditation process.

b. NMAA/UNMAS-SS 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-SS 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. Notify NMAA/UNMAS-SS of all demining incidents in accordance with Chapter 15.

xi. 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.

xii. Develop and implement work practices that minimise unnecessary detrimental impact on the environment.

xiii. 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.

Prevention and Mitigation of COVID-19 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 mitigation measures for diseases which may occur as a result of inhaled or ingested particulates more specifically, COVID-19.

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 COVID-19 Business Continuity Plan (BCP). The BCP should be considered as a living document and updates shall be submitted to UNMAS/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. https://openwho.org/channels/covid-19

d. All medics shall receive specific COVID-19 training and shall be informed of updated guidelines issued by the WHO and UNMAS/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**

a. NTS: 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.
d. EORE: 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 COVID-19 casualty, PPE shall be worn by the CASEVAC team.
e. CASEVAC rehearsals may be carried out without physical contact.

South Sudan

National Technical Standards Guidelines

Date: 31st October 2020

Chapter 17

Management of Demining Operations

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17.1 Demining Process

a. The practice of managing Demining 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 demining management process:
   - Planning
   - Preparation
   - Clearance
   - Post-clearance

b. Specific mine action activities i.e. technical survey, clearance, EOD, MDD operations etc, that form part of the demining process that are not detailed other than making a reference to them when applicable. For further details concerning the conduct, processes, procedures, requirements and standards the relevant Chapters in this NTSG should be referred to.

17.2 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 national authority, with assistance as necessary, to establish priorities and develop a coherent national mine action programme.

17.3 **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.

17.4 **Clearance**

a. Clearance when referred to in the context of humanitarian demining is the location, identification, removal and/or destruction of mines and ERW, and for EOD may also involve access, diagnosis, render safe, 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/ERW activities, BAC, quality assurance and other.

17.5 **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.

17.6 **Contract Preparation**

a. 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.

17.7 **Training**

a. 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.

17.8 **Information**

a. 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.

17.9 **Equipment, Tools & Assets**

a. It is the responsibility of the NMAA/UNMAS-SS 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.

17.10 Accreditation & Licensing

a. 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.

17.11 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 MRE agency. This should also be addressed at a national level.

17.12 **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. 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.

17.13 **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-SS and to donors or sponsors. Where PPRs highlight shortcomings in established equipment or procedures, particularly issues involving safety, they should be more widely distributed.

17.14 **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.

17.15 **Responsibilities**

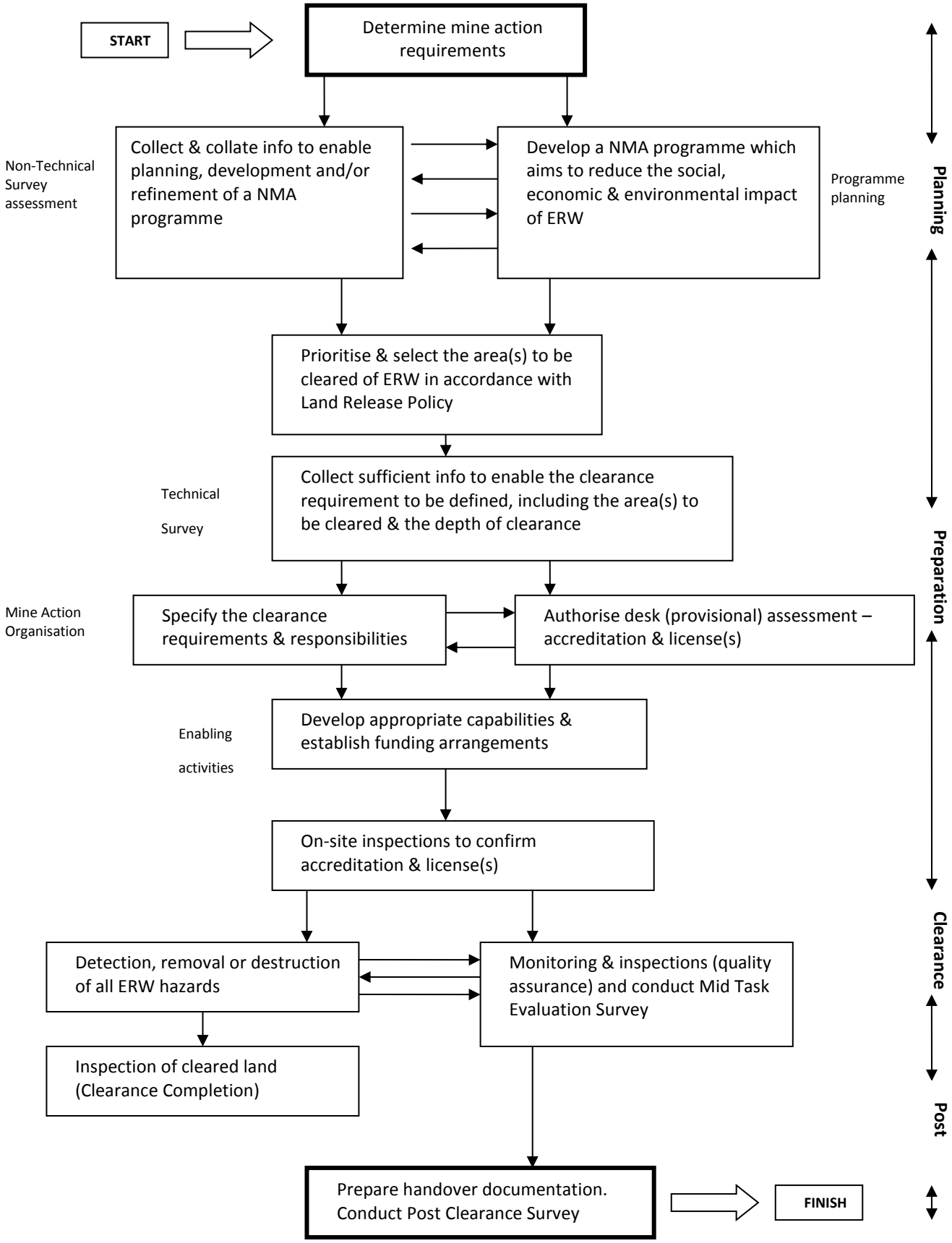
a. **National Mine Action Authority.** The national mine action authority, or the organisation acting on its behalf, is responsible for ensuring the national and local conditions that enable the effective management of mine action projects and for establishing and maintaining national regulations and 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-SS.** UNMAS-SS 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-SS 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-SS, and apply it throughout the project.


START
Determine mine action requirements
Non-Technical Survey assessment
Collect & collate info to enable planning, development and/or refinement of a NMA programme
Develop a NMA programme which aims to reduce the social, economic & environmental impact of ERW
Programme planning
Planning
Prioritise & select the area(s) to be cleared of ERW in accordance with Land Release Policy
Technical Survey
Collect sufficient info to enable the clearance requirement to be defined, including the area(s) to be cleared & the depth of clearance
Preparation
Mine Action Organisation
Specify the clearance requirements & responsibilities
Authorise desk (provisional) assessment – accreditation & license(s)
Enabling activities
Develop appropriate capabilities & establish funding arrangements
On-site inspections to confirm accreditation & license(s)
Clearance
Detection, removal or destruction of all ERW hazards
Monitoring & inspections (quality assurance) and conduct Mid Task Evaluation Survey
Inspection of cleared land (Clearance Completion)
Post
Prepare handover documentation. Conduct Post Clearance Survey
FINISH

South Sudan

National Technical Standards Guidelines

Date: 31st October 2020

Chapter 18

Remote Explosive Scent Tracing

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18.1 General

a. Remote Explosive Sent Tracing (REST) has proven itself to be an effective tool for area reduction in humanitarian mine clearance, especially for use during the verification of roads.
b. This chapter provides specifications and guidelines for the planning, preparation, accomplishment and management of vapour sampling and remote analysis operations. It also describes the sampling process, the analysis process and the follow-up of mine suspected areas subsequent to the completion of the analysis process.
c. This Chapter has been written taking into consideration and in accordance with IMAS 09.43 and other applicable IMAS. Mine action organisations are to refer to these where appropriate for further guidance. Where appropriate the standards detailed in other applicable Chapters of this NTSG are to be applied.

18.2 Definitions

The following common terms and definitions apply:

a. The term 'target odour' is used to describe the scent from the target item.
b. The term ‘scent trapping’ is used to refer to the process of collecting target odour in filters.
c. The term ‘breaching’ is in the context of this IMAS used to describe the provision of safe access lanes for people involved in scent trapping.
d. The term ‘sampling operation’ is used to describe the overall field operation established for the purpose of collecting scent on filters. The term comprises the breaching and scent trapping functions as well as other related activities, such as field logistics, rescue services, medical back-up and communications.
e. The terms ‘indication’ or ‘indicated’ are used to describe the trained response given by a sniffer animal which is used to return a filter as suspect positive.

18.3 Overview of the Process

a. The system has four principal elements
b. The breaching and rescue element – the provision of safe access

c. The scent trapping element – the systematic collection of air by suction through filters.
d. The analysis element – the analysis of the filter cartridges.
e. The follow-up demining element – verify the presence of mines or ERW in the sectors that have been identified by the analysis element as potentially mined and to carry out the requisite clearance
f. Sampling operations involves the scent trapping of air and/or dust containing explosive traces near the ground surface, typically undertaken using vehicle mounted or portable sampling machines capable of sucking air through filter cartridges fitted to the end of plastic tubes. The tubes are typically placed in single or double-headed tube assemblies at the end of a long suction pipe, which is attached to the sampling mechanism. The filter cartridges currently in use in REST are made from coiled polyvinyl chloride (PVC) netting, which has the ability to attract TNT molecules. The filter cartridges are placed in a sampling mechanism, which is then carried over a "leg" of 100 – 300 m at steady walking or driving pace. During this movement, there is continuous suction, with the pipe being systematically moved from side to side in a 2-4 meter wide pattern. At the end of this "leg", the filter cartridges are changed, and the used cartridges are systematically marked and stored in plastic containers.
g. Positional recording of the start/end of legs is to be done using DGPS, map readings or manual measurement and each filter cartridge representing that particular leg shall be appropriately marked / recorded.
h. The filter cartridges are then to be checked for traces of the target odour.
i. When the filter cartridges have been analysed, a follow-up clearance will be required of all the sectors indicated as possibly contaminated. Filter cartridges with no explosive trace represent mine/ERW free sectors, and these sectors will be assessed as having no further need for mine clearance. The re-checking of "positive" sectors is normally undertaken using free-running dogs to pinpoint the exact location of mines/ERW. Manual deminers or

other suitable and accredited demining methods shall be used to finally be used to uncover and deal with the finds.

18.4 **Samples**

a. Samples taken are always unknown until they have been tested. They are therefore to be referred to as ‘probable positives’ when they are taken in the field around a confirmed item of explosive ordnance. ‘True positives’ can only be made in a controlled environment, using known quantities.
b. An area declared as positive has been tested and indications have been made in the test facility and further investigation shall be done by using clearance assets. This does not guarantee the presence of mines/ERW as some false indication may occur or scent/odour may have been picked up outside the perimeters of the sampled area, e.g. an ERW in the proximity but outside the area sampled.
c. An area declared as negative has had filters tested with no indications.
d. When referring to it must be considered whether or not it contains the target substance (normally TNT).

18.5 **Applications**

a. Whilst the REST system has no application in areas with regular or patterned minefields, it may have an application if the objective is to determine whether there is a potential mine/ERW threat in a particular area, or where the edge of such a mined area might be.
b. The REST should not be used for general area elimination without prior testing to ensure its effectiveness and reliability.
c. The REST system may be applied as a verification and elimination method when the objective is to check one or more houses for booby traps. Confined rooms with entrapped air may be ideal for the application of REST.

18.6 **Specific Roles & Responsibilities**

a. The mine action organisation is responsible for appointing specifically trained and qualified personnel to plan and conduct all aspects of the sampling operation. It is acknowledged that different organisations may be tasked to carry out the different elements of

sampling operation that they may refer to appointments differently. As such the following shall be applied appropriately and relevantly:

b. A project manager shall be responsible for managing the implementation of all field activities and for co-ordinating the breaching and scent trapping elements of the REST operation. His/her responsibilities include but are not limited to:
   - Planning and management of the overall sampling operation
   - Co-ordination between the breaching and scent trapping team
   - Establishment of appropriate security and safety arrangements
   - Establishment of appropriate medical evacuation procedures
   - Establishment of appropriate communications procedures
   - Establishment of appropriate rescue back-up procedures
   - Establishment of the appropriate logistic support elements
   - Establishment of appropriate procedures for the preparation and storage of records including the preparation of maps with plots and records of the exact location of each change of filter cartridge, marking of the filter cartridges, container boxes and other relevant information (landmarks, road condition etc)
   - Confirmation that prevailing procedures for the storage of blank and used filter cartridges are implemented and followed
   - Co-ordination of rescue operations in the event of accidents or vehicle breakdown.

c. A team leader shall be appointed to head the scent-trapping team. He/she is responsible for all activities undertaken by his/her team before, during and after the sampling operation. These include but are not limited to:
   - Inspection of sampling equipment and sampling staff before sampling operations start
   - Monitoring the sampling staff during sampling to ensure that sampling is undertaken at the correct speed and that the search pattern and change of filter cartridges are undertaken in accordance with the prevailing SOP
   - Ensuring that the filter cartridges are changed exactly at the spots marked by the marking staff

- Ensuring that the sampling staff walk steady in the centre of their lanes and that the roles of the primary and secondary scent trappers are rotated frequently

d. The breaching operation is typically mechanised but breaching may also be manually undertaken or by means of mine dog detection. When mechanised breaching is used, a breaching team leader who is responsible for his/her team before, during and after operations shall head the team. This includes but is not limited to:
   - Inspection of vehicles, accessories and other needed tools/assets prior to the breaching.
   - Ensuring that all personnel sitting inside the mine-proof vehicles are correctly strapped in during the breaching process.
   - Inspection and evaluation of the situation of the road and, if working off-road, on the work area and the suitability of the mine proof vehicles to operate on such roads or areas.
   - Inspection of the patterns created by the wheels of the vehicles during the operations with subsequent recommendations as to whether further marking of the vehicle track is required to ensure that the sampling staff can identify the right tracks to walk in.
   - The breaching team leader is normally located in the first mine-proof vehicle during operations. Radio contact is to be maintained with the second mine proof vehicle (and the third if available) as well as the project manager and the scent trapping team leader.

18.7 Team Compositions & Responsibilities

a. A mechanised breaching team may be put together in different ways, and its personnel may have different titles and roles and responsibilities to those suggested in this standard, due to the unique character of each operation. A typical breaching team however should compose of 9 – 14 people, and their positions and responsibilities should be in line with the following principles:
   - <u>Breaching Team Leader</u> – typically responsible for the management of the breaching team including all safety, quality and operational aspects, including the maintenance of vehicles and equipment

- Medic – responsible for emergency treatment in the event of mine/UXO accidents, other accidents or illness. The medic is responsible for establishing adequate field routines for medical evacuation/treatment including management and the preparation of medical equipment.
- Driver(s) – typically responsible for driving and for first order maintenance of the vehicles
- Mechanic – typically responsible for the establishment of maintenance routines, repair of vehicles and planning/preparing the spare part requirements during the operation. The mechanic may be one of the drivers
- Logistic staff – typically responsible for logistic support during breaching and scent trapping, including fuel supply for the scent trapping teams, placing and picking container boxes on/from the ground, measuring the driving distance, plotting the exact location of change of filter cartridge and registration/storage
- Marker – typically responsible for the accurate marking and recording of the sectors that have been sampled, including the spots where filters have been changed. The marker may use a measuring tape or another measuring device to measure out the exact distance between each change of filter cartridge. The Marker typically walks behind the first mine-proof vehicle but in front of the sampling team. He/she marks the spots where filter cartridges are to be changed
- Deminers – typically responsible for emergency manual demining in the event of accidents, vehicle breakdowns or similar.

b. Scent Trapping Team. A suggested manual scent trapping team is described below, and its basic functions are outlined. In practice, such a team may be composed in any form, so its personnel may have different titles and roles due to the unique character of each operation, but the basic requirements remain. A functional breakdown of positions and responsibilities should incorporate the following principles:

- Team Leader – typically responsible for the planning and accomplishment of the sampling process. The Team Leader will normally follow behind the sampling staff where he/she monitors their walking steadiness/speed, search pattern and change of filter cartridge as well as the marking of the safe lanes provided by the breaching team. The team leader normally has a supervisory and command role.
- Primary scent trappers – typically responsible for the manual scent trapping. They will normally walk in the safe lanes/tracks (one in each lane) where they will sweep the area with the flexible tube attached to the sampling machines
- Secondary scent trappers – will typically walk 2-3 m behind the primary scent trappers. Their role is to monitor the sample pattern and the walking speed of the primary scent trappers and to change filter cartridges and decontaminate the cartridge assemblies at the long end of the flexible tube. The scent trappers are normally responsible for the maintenance of the sampling equipment and they may also be responsible for the handling, marking and storage of the filter cartridges.

18.8 **Safety**

a. The mine action organisation tasked with conducting any element of the sampling operation is responsible for ensuring that the operations is safe at all times. All processes, procedures, roles and responsibilities are to be clearly detailed in the organisational SOP. The following minimum safety standards shall be implemented:
   - Mine action organisations shall ensure people carrying sampling machines are provided safe walking access along mine suspected roads, over areas and/or into houses by taking appropriate actions.
   - Consideration must be taken during planning of the probable level of mine/ERW contamination, as this will affect the effectiveness of the sampling operation.
   - REST shall not be applied if the safety of the people involved is at risk.

- Scent trappers are to be given adequate rest periods appropriate to the current elements and in accordance with these NTSG.
- Primary and secondary scent trappers shall be frequently rotated.
- A medic shall be available at all times as per the details of Chapter 10.
- At least two vehicles shall be used in pair to support one sampling operation.
- Tracks (safe lane) created by the vehicle should be at least 30 cm wide.
- Tracks should where necessary be marked along the centre tape/paint or similar while driving to clearly distinguish them.
- The driver and other staff in the mine proof vehicle during breaching shall always be sufficiently strapped to prevent a throw-out whilst the vehicle is moving.
- All equipment carried inside the cabin of vehicles shall be adequately strapped and secured.

18.9 **Rescue Plan**

a. A rescue strategy and plan shall be prepared prior to the start of sampling operations. The rescue plan should at minimum take into account the following factors:
   - <u>The use of safe lanes</u> – the mental and physical strains undergone by the people inside a detonation wrecked vehicle, these people should not be allowed to walk out of the area in safe lanes created by the wrecked vehicle. The shock pressure may have caused dizziness and inability to walk steadily
   - <u>Manual demining element</u> – every sampling operation shall have a manual demining element capable of demining wider safe lanes from a safe area to the wrecked vehicle. Team members with other primary functions may be used as deminers provided that they have been trained and operationally accredited for manual demining. The manual deminers may also have to demine a safety zone around the wrecked vehicle, to facilitate its repair or recovery

- Secondary vehicle for rescue of personnel – a secondary vehicle may assist by transporting rescue staff closer to the wrecked vehicle. It should, however, not drive all the way up to the wrecked vehicle without prior manual demining of tracks since it is likely that other mines may detonate in the same area. It is, however, possible to demine safe lanes manually in support of the secondary vehicle
- Secondary vehicle for rescue of the wrecked vehicle – the REST system normally relies on the use of a second mine proof vehicle to rescue a wrecked vehicle. This rescue can sometimes be extremely difficult due to access limitations. The mine action organisation shall establish a rescue policy incorporating a series of different access and rescue alternatives dependent on potential situations on the ground.

18.10 **Mine Protected Vehicle**

a. If mine proof vehicles are to be used, the following principles shall be applied:
   - The vehicles shall be designed to withstand anti-tank mine detonations without putting its personnel at intolerable risk
   - The vehicle should be able to withstand anti-tank mine detonations with no substantial or irreparable damage inflicted to the vehicle itself.
   - The primary vehicle's main function is to provide safe access for the scent trapping staff. The secondary vehicle's main function is to provide rescue support. The second vehicle shall therefore be sufficiently equipped in terms of towing hooks and cables, crowbars, spares and medical equipment;
   - The vehicle shall provide a ground pressure, which by far exceeds the pressure caused by walking sampling staff equipped with protective clothing and the sampling machines.

18.11 **External QA/QC**

a. The purpose of a quality management system is to confirm that the sampling operation is functioning properly and that positive and negative areas are identified accurately. Mine action organisations are expected to implement their own internal quality management

procedures to ensure that their systems and processes function in accordance with approved SOPs.

b. NMAA/UNMAS shall implement an external quality management system to satisfy its own need to ensure that approved processes are followed, since it is responsible for recommending to the local authorities to accept Handover/Completion Certificates when they are submitted by mine action organisations.

c. The following is to be adhered to:
   - **Monitoring of the scent trapping:** Process, including the handling and shipping of filters shall be done in accordance with accredited SOP written by organisations charged with the REST function and that have been developed for this purpose.

d. **Sampling:** Sampling shall be carried out in three ways:
   - Checking areas declared as negative by using another demining asset to process the ground. Before this is done the QA Officer shall collect information regarding environmental factors during sampling, using form 'Fact & Environmental factors'. The areas shall be identified by NMAA/UNMAS at random or on suspicions. If any ERW containing explosives are found the organisation is considered to have failed the inspection and an investigation board shall be set up to determine reason for the non-conformance. All operational work shall cease until the reason for the failure is determined. Action shall be taken to ensure it won't happen again before work can resume again. All results shall immediately be reported to both the sampling and testing components. Areas declared as positives shall always be checked by other means and are therefore not subjected to sampling as described.
   - Checking an area using REST. This shall be done on some areas that have been declared as negative. The areas shall be identified at random by NMAA/UNMAS and in the vicinity where the organisation is currently operating. Areas declared as positive shall also be checked if there are suspicions that too many positives have been recorded on negative areas during the initial process (reason being that too many false positives contradict the purpose of the system). If the result shows that

an area previously declared as negative comes back as positive the QC is not considered to have failed the process until a mine/UXO is found in the area. If no items are found, the QA Officer shall inform the organisations scent trapping and testing components. If this occurs on a regular basis, more than 1 out 4 areas, an investigating board shall determine the reason why. If mine/UXO is found, the QA is considered to have failed and all operational work shall cease until the reason for failure is determined and action taken to make sure it won't happen again before work can commence again.

- Prepare test filters using the organisations personnel and equipment, but supervised by NMAA/UNMAS staff. The purpose of this is to test the sniffer animal's consistency of performance on samples from South Sudan and its ability to accurately measure the correct discrimination between positive and negative filters at the same time. These samples shall be prepared in the same way as any other operational samples. These test filters will be from areas proven to be negative (or considered to be negative) and an area containing mines/ERW. The 'probable positives' shall be taken from an area where it is known that there are TNT or any other target substance present. These test samples will then be processed through the organisations normal chain and the results will be compared with the origin of the filter. The mine action organisation shall be informed of the results as soon as they have been compared. Any corrective actions shall be determined together with the sampling organisation. The following shall be taken into consideration when preparing these test filters:

e. Follow organisations SOP
f. Use correct equipment and methods
g. Each tube must be used for the same amount of time as an operational tube would be e.g. a tube must be sampled for 5-20 minutes depending on technique. Not only in the air but make sure dust is sucked up, as per SOP, so that the filters get the same exposure as an operational sample would.
h. The 'scent' of explosive is not always on top of a mine/ERW but around it, trapped in the dust, on the ground, on the bushes and/or

on the grass and it is therefore very important to collect around the ERW at many different locations. This is due to the way we believe vapour is moving and getting trapped in dust and the crust on the surface. A minimum of 10m² shall be sampled, maximum 5m away from the target, never from only one spot and never directly on top of the target.

i. The number of 'probable positives' taken as well as position in the group of filters shall be unknown to the organisation. The number of 'probable positive' prepared should be between 5-20% of the total numbers of test filters prepared and sent in, normally the total number of test filter prepared should be between 24-100.

j. Following results are considered to be passed QC; 90% or more of the probably positives comes back as positives and maximum 25% of the probably negatives comes back as positives. If these numbers are not matched the QC is considered to have failed the process.

18.12 **Internal QA/QC Process**

a. The mine action organisation shall detail their internal QA/QC process in their SOP. As part of the Internal QC process the organisation shall send a minimum of 3 'probable positive' with each group of samples leaving the country for testing. This should ensure that the organisation themselves can pick up any mistakes in handling and transport. The result of this Internal QC shall be available during any External QA/QC.

18.13 **Organisation SOP**

a. Organisational SOPs are to clearly define and detail, but are not limited to, the following:
   - Roles and responsibilities
   - General and specific safety
   - Medical requirements
   - Operational processes and procedures – sampling pattern, sweeping technique, filter changing procedures
   - General logistics requirements – storage of cartridges/filters, management of filters

- Scent trapping equipment to be used – type, maintenance, servicing, care, daily use, checks, repair process
- Breaching equipment to be used – type, maintenance, servicing, care, daily use, checks, repair process
- Recording and mapping procedures – planning map, master map, master trace, clearance maps
- Analysis process – site, location, back up filters, testing, storage of filters
- Details of Mechanical and Manual Mine Action follow up – must comply with relevant Chapters of this NTSG in all aspects
- MDD – refer to Chapter 9 of this NTSG and include details for all activities MDD are to be used for.
- Internal QA processes and procedures
- Reporting

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Chapter 19

Accreditation of Mine Action Organisations

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19.1 Introduction

a. Prior to any mine action organisation conducting demining operations in South Sudan they are to be accredited by the NMAA/UNMAS-SS Accreditation Board.

b. The board shall assess the mine action organisation's ability to plan, manage and conduct demining operations safely, effectively and efficiently in compliance to 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

a. 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:
   - They shall provide evidence of a relevant contract in South Sudan and/or appropriate funding and
   - They shall provide evidence of registration as a UNOPS vendor,
   - The company are registered with the NMAA.

b. Accreditation shall be completed over three phases, each phase only being undertaken on successful completion of the previous one. Within the South SUDANMAP, accreditation shall be conducted by boards specifically formed for a particular phase of the accreditation process. The three phases are as follows:

c. **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 organisation should also

submit their Code of Conduct, which includes gender related issues. The status of the applying organisation and specific circumstances surrounding the application shall determine the documentation that is requested by NMAA/UNMAS-SS to be submitted.

d. **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-SS 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 to this chapter and the relevant accompanying 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-SS Ops/QA resources; on receipt of the signed training declaration, NMAA/UNMAS-SS 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-SS. In such circumstances the operational accreditation assessment shall be conducted on-site as soon as is practically possible after deployment.

e. **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 organisations own SOPs, the NTSG and with IMAS. The following applies:

- Whenever practical and possible operational accreditation assessments shall be conducted on completion of training and

prior to their task deployment (MDD & Medical Assets i.e. medics shall always be assessed prior to deployment and shall only be allowed to deploy into an operational environment when accredited).

- Operational assessment shall commence on request of the mine action organisation and on 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 and that the mine action organisation team/asset is seeking accreditation for. It shall cover the competency of individuals, teams, support, supervisory and managerial elements in all relevant facets of the pertinent activity.
- All operational personnel who hold an EOD level 2 certificate or above are to be issued with a Personal Training, Accreditation & Demolition Log Book by the demining organisation which shall be presented as part of the Operational Accreditation. The Log Book shall be maintained by the user and then retained by the NMAA/UNMAS-SS office at the end of contract. In the event that the same user returns to the South SUDANMAP the same Log Book may then be re-issued.
- In cases where a team stands down (e.g. rain season, security situation), if the composition of the team has not changed a period of training shall be carried out which shall be monitored by NMAA/UNMAS-SS Ops/QA officers and specialists as applicable; and the team shall be granted 'Operational (Provisional) Accreditation'. The team can deploy on operations once the Training Declaration has been submitted and accepted. Once the team has undergone 2 x External Quality Assurance visits Full Accreditation shall be awarded.
- In cases where a Team Supervisor moves from one team to another, within the same organisation, the accreditation criteria shall be directed by the UNMAS Chief of operations.
- In cases where a Team Supervisor moves from one organisation to another full accreditation must be achieved.

- In exceptional circumstances i.e. the unavailability of NMAA/UNMAS-SS accreditation resources, the mine action organisation may be granted 'Operational (Provisional) Accreditation' accompanied by written authority allowing it to deploy specified team/assets to NMAA/UNMAS-SS designated mine action tasks. In such circumstances operational assessment shall be conducted on-site as soon as is practically possible after deployment.

19.3 **EOD and Demolition Order Examination**

a. **Senior Management:** The organisation senior management who have operational responsibilities shall undergo a Demolition Order Quality Assurance written exam as issued by the NMAA/UNMAS-SS office prior to taking post in that position.

b. **EOD Examination** – All team Supervisors (including Technical Field Managers, Team Leaders, including relief staff) are to sit and pass an EOD written exam as issued by the NMAA/UNMAS-SS office prior to taking post in that position.

c. **Demolition Order Examination** – All Team Supervisors (including Technical Field Managers, Team Leaders who can be tasked to operate independently, including relief staff) are to sit and pass a Demolition Order written exam as issued by the NMAA/UNMAS-SS office prior to taking post in that position.

d. Once an individual has passed the relevant exam(s) for the position there is no requirement for periodic retakes unless directed by the UNMAS Chief of Operations.

19.4 **Accreditation Board Composition**

a. 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-SS OPS/QA Officers
   - NMAA/UNMAS-SS OPS/QA Officer Assistants
   - NMAA/UNMAS-SS Chief of Operations
   - NMAA/UNMAS-SS Specialist

b. The following applies:

- The board shall comprise of appointments suitably qualified and experienced in the roles for which they are appointed and shall be able to apply the accreditation requirements in a fair and equitable manner.
- When accreditation is required for specialist activities i.e. MDD, medical, MRE etc then the accreditation body shall include the relevant NMAA/UNMAS-SS 'specialist' or in his/her absence an NMAA/UNMAS-SS representative with relevant qualifications and operational experience that shall allow him/her to carry-out the relevant role and responsibilities.

19.5 **Board Responsibilities**

a. 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 impact unnecessarily on 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 with independence, impartiality and 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.

b. Whenever possible and/or practicable boards shall comprise of those appointments detailed with 'primary responsibilities'. Depending on the accreditation phase, on the practicalities and circumstances, on the specific requirements and availability of

appointments at the time, the board may require input or assistance from some or all of the other appointments listed.

c. Desk (Provisional) Accreditation Board:
   - The Head of the NMAA/UNMAS-SS – primary responsibility for authorising desk (provisional) accreditation to the mine action organisation that is required to conduct mine action activities on the South SUDANMAP.
   - NMAA/UNMAS-SS Chief of Operations – primary responsibility for conducting desk (provisional) assessment and for the production and issuing of the relevant certificates.
   - NMAA/UNMAS-SS Ops/QA officers and specialists to support and assist as requested.
   - Operational (Provisional) Accreditation Board:
   - NMAA/UNMAS-SS 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.

d. Operational Accreditation Board:
   - The Chairperson/Programme Manager of NMAA/UNMAS-SS – primary responsibility is to authorise the mine action organisation teams/assets to conduct mine action tasks that they have been accredited for on the South SUDANMAP.
   - NMAA/UNMAS-SS Chief of Operations – primary responsibility for organising and conducting operational accreditation assessments and for the production and issuing of the relevant certificates.
   - NMAA/UNMAS-SS Ops/QA officers/specialists – primary responsibility for assisting in conducting operational accreditation assessments.

19.6 **Duration, Suspension and/or Termination of Operational Accreditation**

a. **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 (Oct 01st – Jun 30th).

b. **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 management capabilities of the Mine Action organisation

c. **Termination:** The following list, although not exhaustive, details possible reasons when the NMAA/UNMAS-SS 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 goes out of business.
   - If the accredited organisation does not wish 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 inadequate measures are taken following the suspension of an accreditation.
   - Failure to uphold management capabilities of the Mine Action organisation.

d. **Note:** Before the termination of an accreditation agreement, the NMAA/UNMAS-SS 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.

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-SS COO.

On written acknowledgement from the NMAA/UNMAS-SS 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-SS.

Serial	Process description	Responsibility			Remarks
		Mine Action Organisation	Accreditation/Monitoring Body (Sub-office QA/Ops personalities & others as req'd)	NMAA/ UNMAS-SS 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-SS 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-SS website.	✓			
13	Applicant drafts organisational SOPs covering **all** proposed mine action activities that comply with NTSG and submits to NMAA/ UNMAS-SS 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 on the South SUDANMAP, then SOPs shall be reviewed by the NMAA/UNMAS-SS.
15	Do SOPs meet the desk assessment requirements and comply with NTSG?			✓ **YES** or **NO**	If **YES** go to Ser 19.
16	Notify applicant of required amendments, changes to SOPs.			✓ If **NO** in Ser 15	Send appraisal form attached to email/letter

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Chapter 20

Route Verification

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20.1 Route verification

a. For the purpose of this NTSG Route Verification comprises of the Non-Technical Survey, Technical Survey and Clearance of roads, routes and tracks used by vehicles and pedestrians. This Chapter defines the minimum standards and procedures for Route Verification in South Sudan and shall be read in conjunction with other relevant chapters within this NTSG. All activities detailed within this Chapter shall be conducted in accordance with approved and accredited SOP's of the organisation conducting the Route Verification.

b. The two distinct phases for the route verification in South Sudan are listed below:

- Phase 1 Route Survey (NTS/TS);
- Phase 2 Route Clearance (clearance of the road width plus 0.5m either side of the road or as otherwise designated on the Implementation Plan).

c. 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-SS.

d. In addition, depending on the hazard and type of task (e.g. suspected Anti Vehicular mine threat on a well-used road), the team may be required to conduct clearance and NTS/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 Route Verification activity a comprehensive desktop analysis shall be conducted and presented in a written form. 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 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.
- Knowledge of any previous mine UXO accidents / incidents along the route or in the area.
- Security threat in the area.
- History of conflict in the area.
- Previous vehicle use of the route.
- Weather and terrain – route conditions, obstacles.
- Other general 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 samples and resources should be acquired.

d. The authenticity and accuracy of survey data shall be determined by analysing the Type, Source and Details as per Chapter 1

e. Survey information gathering should provide a source of continually updated data and not merely a 'single snap-shot' of the situation.

20.2.1 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. Following the Survey, routes shall then be classified into the following categories:
   - Not Surveyed - Annotated the colour GREY on NMAA/UNMAS-SS maps.
   - No Evidence of Mines/UXO – Annotated the colour ORANGE on NMAA/UNMAS-SS maps.
   - Mined – Annotated the colour RED on NMAA/UNMAS-SS maps.
   - Cleared – Annotated the colour GREEN on NMAA/UNMAS-SS 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.

20.2.2 Not Surveyed

The "Not Surveyed" category is further defined within the following parameters:

a. 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 on:
   - Any previous mine or UXO accidents or incidents in the area or along the route.
   - All reported and/or suspected locations of mine/UXO contamination
   - The quantities and types of explosive hazards
   - Information on the local soil characteristics, vegetation and climate.

b. Note; If insufficient information is collected during the conduct of the survey, to confidently categorise the road as "No evidence of Mines/UXO", then its category shall remain "Not Surveyed".

20.2.3 No Evidence of Mines/UXO

Category is further defined within the following parameters:

a. A recognised Survey has taken place along the route with regards completing the Route Assessment Form and:
   - There is no information or suspicion of mines being laid or 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.

b. Note that in addition to NTS and depending on indications based on the parameters listed above, the survey process may include the TS of Culverts, Bridges, Vulnerable Points as well as any other areas that may contain hazardous items indicated during the oncoming NTS. An agreed linear distance before and after the location shall be also considered.

20.2.4 Suspected or Confirmed as Mined

This Category is further defined within the following parameters:

a. A recognised Survey has taken place (the survey shall only be conducted on known safe areas and shall not be conducted along the suspected route) 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, although, no recorded mine incidents / accidents

- There is reliable information that mines have been laid and there have been a number of 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.

20.2.5 "Cleared"

a. A route, that has been physically and systematically processed by a demining organisation to ensure the removal and/or destruction of all mine and UXO hazards to a specified depth in accordance with NTSGs.

20.2.6 Route classification

a. 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 Assessment shall be retained and a copy of the survey result included in the task dossier 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 road/route.

b. Information should be made available in a form which is appropriate for its use and subsequent review. This may include reports, summaries, maps, GPS tracking, and electronic media. Whenever possible, use should be made of standard and proven information management systems and GIS, such as IMSMA.

c. The Route Survey information shall be used to justify the judgement used in the classifying of route portions, or cancellation of previously reported danger areas, either 'no

evidence of mines' or 'mined areas'. This information should be referred to during all internal and external quality assurance checks and future route enquiries.

20.3.1 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 the Route Assessment Form and Survey and Hazard Report Form for all identified hazardous areas they encounter during the conduct of the survey, even if these hazards do not directly impinge on the Road/Route.
c. NMAA/UNMAS-SS 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-SS Chief of Operations.

20.4 **Phase 2. Route Clearance**

a. Following the Phase 1 Route Survey, those areas that have been categorised as being Mined, shall require an initial further assessment and following this integrated clearance assets to systematically process and clear the area. In addition, an ongoing assessment shall be conducted for the life cycle of the task and any fresh finds or conclusion added to the existing IP.

20.4.1 Depths

a. During route clearance operations the mine action organisation shall ensure the removal and/or destruction of all AT mines and UXO from the road/route to a depth of 20cm; all AP mines shall be removed and/or destroyed to a depth of 13cm. These clearance depths shall only be varied by an amendment to the Implementation Plan, which requires appropriate authorisation from NMAA/UNMAS-SS.

20.4.2 Width

a. The stipulated clearance width shall be agreed between NMAA/UNMAS and the clearance implementing partner prior to commencement of the clearance and clearly recorded in the IP and be based upon the current width of the route and its final intended purpose, but in general, the clearance width shall be the actual width of the road with an additional 0.5m on each side. These distances may be amended with the approval of NMAA/UNMAS-SS 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.

20.4.3 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 integrated clearance assets shall be tasked directly by the NMAA/UNMAS-SS to clear those identified contaminated areas.
b. When insufficient information is made available from the Route Survey regarding specific hazardous areas, then a further assessment shall be conducted to identify those specific hazardous areas.
c. In order to expedite the assessment and identification of specific hazardous areas and to allow for the subsequent clearance, one or more of the following assessment tools may be utilised:
   - Ground Penetrating Radar
   - 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 verify identified hazardous areas. Following this identification, a mine action organisation

shall be requested to submit an Implementation Plan to the NMAA/UNMAS-SS 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 IP, as well as any further such areas, shall be subjected to clearance. These route/road sections will be, post completion, changed to Green.

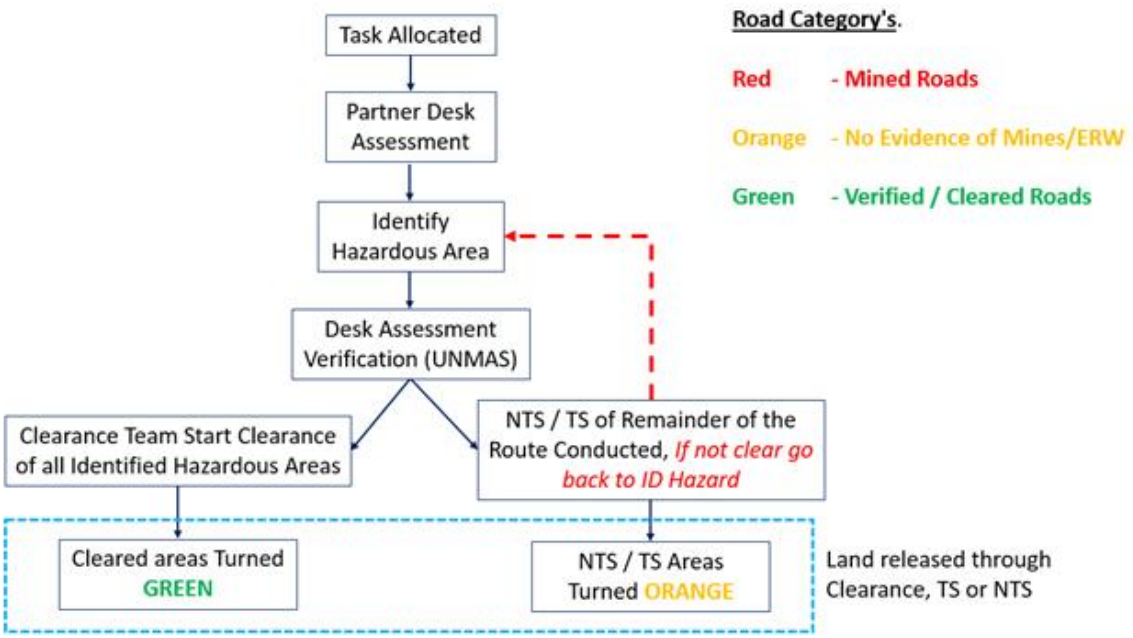
g. The remaining sections of the road, although subjected to NTS (gathering information along the length of the route) and small sections of TS clearance (culverts, bridges, choke points and similar) shall be re-categorised as Orange as this has not been subjected to a 100% clearance.

h. The methodology for this process shall remain flexible to allow, where applicable, for rapidly switching between clearance and detailed NTS/TS.

i. Due diligence shall be exercised at all times by all concerned in this process to ensure safe and efficient implementation.

j. All information, including but not limited to, DGPS readings and any subsequent mapping shall become the property of the NMAA/UNMAS-SS.

k. This concept of operation should dramatically increase the speed of assessment by which actual mined areas of routes are identified and subsequently cleared.



20.4.4 Route Clearance Method of Operation

a. The NMAA/UNMAS-SS Chief of Operations may authorise a variation to these specific methods of operation to suit specific situations, provided the required and defined level of detection and clearance is still being achieved.

b. During manual and MDD clearance or their combination, individual signals located within identified suspected or confirmed hazardous areas shall be investigated. The minimum area to be cleared shall be task specific and specified in the Implementation Plan. In addition to a clearance activity, this method should be applied for a targeted clearance of culverts, “choke” points or road junctions.

c. In areas where the hazardous area cannot be detailed nor specified due to a high concentration (Lines of Disengagement), then the route shall be cleared using a Linear Feature Road/Route Clearance Method of Operation.

d. The Follow On" and "Arrowhead Formation" methods described below are exemplary as other methods may apply as approved by the NMAA/UNMAS-SS.
e. Both methods of operation are completed in much the same way as any linear feature is cleared such as a road, track, pipeline, power line or other such linear feature.
f. 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.
g. 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 IP.
h. The following applies during the conduct of clearance using 'Follow on':

- The task shall start from a baseline which is set out at the beginning of and at right angles to the linear feature.
- A 2 metre wide access lane should then be cleared parallel to and at the edge of the linear feature. The access lane should be cleared by clearing two times 1 metre wide adjacent lanes.
- In the event that an already cleared section of road can be used for the access lane, then there is requirement for further clearance.
- As the access lane progresses and on reaching 50 m (or 75m for directional / fragmentation mines), the first crossover lane may then be cleared perpendicular to the linear feature and past the opposite edge of the linear feature to the required clearance width requirement.
- Crossover lanes should be at 25m or 50m spacing depending on the mine type hazard. The task is then simply cleared using the access lane as the base lane and progressively clearing the crossover lanes at right angles to the feature.

- When a mine or item of UXO is found by the main clearance party the item shall be marked, the lane closed and another lane worked. The item shall be destroyed at the end of the working day.
- If MDD assets are utilised to initially clear the area then the task should start again from a 2m baseline which is set out at the beginning of and at right angles to the linear feature. As the access lane progresses and on reaching 10 m, a crossover lane may then be cleared at right angles to the linear feature and past the opposite edge of the linear feature to the required clearance width requirement. Crossover lanes shall then be cleared at 10m spacing, a 10 x 6m search and clearance block has now been prepared for the MDD assets to clear.
- The task is then simply cleared using the access lane as the base lane and progressively clearing the crossover lanes at right angles to the feature at 10m intervals to prepare and subsequently clear the 10m x 6m search and clearance blocks.

i. The following applies during the conduct of clearance: Arrow Head Formation:

- The task should again start with a 2 metre wide baseline which is set out at the beginning of and at right angles to the linear feature; once this is completed the first clearance lane may be started at right angles to the base lane.
- As the first clearance lane progresses and on reaching 25 m (or 50m for directional / fragmentation mines), the second clearance lane may then be started at right angles to the base lane.
- When a mine or item of UXO is found by the main clearance party the item shall be marked, the lane closed and another lane worked. The item shall be destroyed at the end of the working day.
- The task is simply cleared by placing more clearance lanes at right angles to the base lane when the safety distance is achieved. Annex B to this NTSG Chapter details the “Arrow-Head Formation” Method of Operation.

j. On used roads, where AP mines can be ruled out, road/route clearance teams with GPR capability may apply a relaxed variation of the “Arrowhead Formation” (example):

- A baseline is formed at the width of a road with additional 0.5 meters to each side;
- The searchers map in 2 or more adjacent 1 x 50m lanes, 10 meters apart;
- The mappers are followed by a QC component (either MDDs or GPR) conducting 100% QC;
- The QC component is followed, if applicable, by MDD conducting signal discrimination, followed by the signal investigation (excavation) support deminers;
- When a mine or UXO is found, the team follows the normal demining procedures.

20.5 Marking

20.5.1 Post Road Clearing Marking

a. In those highly hazardous concentrated areas (Lines of Disengagement), where contamination still exists to the flanks of the cleared route and it is not possible to conduct clearance operations in the immediate future, Permanent Fencing shall be erected as detailed at NTSG Chapter 3. This shall act as a physical and visual barrier to stop any possible movement of humans and/or livestock.

b. The Permanent Fencing should extend at least 10m each side of the outer boundaries of the contaminated area, with both sides of roads being fenced; the fencing itself shall be placed 50cm inside the actual cleared area.

c. The marking of any cleared area following clearance has to be unambiguous and permanent. The Bench Mark, Start Point and each Turning Point shall be physically marked and situated in accordance with NTSG Chapter 2.

d. 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.

e. 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.

f. All turning points / perimeter coordinates shall be indicated on the IMSMA Completion report and associated map submitted. Instances where the ground may be unsuitable for picket insertion, then a large rock / pile of rocks shall be placed. When marking for a Suspension Task, the rocks shall be painted red/white and when marking for a Completion Task the rocks shall be painted white. Metal pickets shall not be used to mark TPs/IPs.

20.5.2 Post Route Clearance Documentation

a. 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 Survey and Hazard report shall be compiled clearly explaining the area yet to be cleared.

20.5.3 Road/Route Rehabilitation and Reconstruction

a. 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 with permanent fencing so as to allow work to continue safely.

South Sudan

National Technical Standards Guidelines

Date: 31st October 2020

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 utilized. 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.

a. 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 on the presence of explosives which it has been trained on (depending on operational requirement and threat), firearms and ammunitions.
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 one time.
e. An EDDT should not be used if there is specific evidence of a victim operated device.

1.4 Training.

1.4.1 Maintenance and Corrective Training.

a. Training will 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. EDDT shall undergo a minimum of one (1) maintenance training session per week. The number of training sessions per week should increase 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, correct/false/missed indications, problems identified, and corrective actions taken. This will be submitted to NMAA/UNMAS S Sudan 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 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 will 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. Prevention of contamination to the substance and/or the environment it is placed 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 period of more than two (2) weeks where there has been no training.
b. The internal QA evaluation process shall follow the guidelines for quality assurance test that is attached as 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, and the document should 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 S Sudan 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 South Sudan to 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 organizations prior to the evaluation period. The manager, or the senior supervisor, of the organization being evaluated, shall have 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 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 South Sudan QA 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 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 organization shall ensure that detailed CVs of each dog handler are submitted, as well as information about each of the dogs intended for deployment. This includes; name, microchip number, breed, sex, age, comprehensive detailed training records (for a minimum of one (1) month), previous accreditations, vaccinations and any known vices.

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 South Sudan during 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 detection 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 organization SOP is followed correctly.
   - 100% indication of all explosive hides per EDD.
   - 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, submissive, 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:
   - First fail – re-evaluation at a time requested by 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 will 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. SOP shall be sent through to NMAA/ UNMASS S Sudan for approval prior to operational accreditation.

b. SOP shall include, but are 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 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 for which they have been accredited.

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 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 will stop and the EDD given a rest. A break of approx. 10 minutes should be considered for every working hour.
f. General search sequence.
g. Ordinarily, search activities will adhere to the following format:
   - Pre search assessments/risk assessment;
   - Formulate plan;
   - Carry out search SOPs;
   - Report findings and/or short comings.

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 used.
c. Atmospheric pollution may prevent an EDD from working effectively; therefore, EDD shall not be used in areas where the atmosphere is excessively polluted by gases, smoke or odours from petroleum products, fertilizer, chemicals, domestic burning or factory exhausts, that markedly affect the EDD capability to detect.
d. EDD have a limited capability for 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 recover 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 S Sudan informed.
b. All organisations will comply with IMAS 09.44 Standards of Occupational Health and General Dog Care.

1.8.1 Medical.

a. All EDDs will deploy to their country of operations with a veterinarian certificate fit for duty with 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, behavior 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 will 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 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 South Sudan EDD Accreditation test

Substances are divided into groups based on the origin. UNMAS / UNOPS will use substances from applicable groups, either “live” substance or reliable controlled/verified scent signatures. Substances used will be recorded in on-site assessment protocol.

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

Test procedure

1. General conditions

- test is performed in controlled circumstances;
- dog handler will follow instructions given by the Test Manager;
- dog must be in good health / physical condition;
- dog must be silent during the exercises;
- commands will be given to the dog in normal tone (verbal correction is not allowed);
- assessment will be performed with the dog on and off leash as instructed by the Test Manager;
- exercise starts and ends on the command of the Test Manger;
- passive indication: static and silent indication (without leaving the indicated source).

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 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 behavior.
- The EDD shows environmental issues.
- 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 behavior or physical punishment is used. i.e. handler does not follow the instructions of the Test Manager.
- The EDD shows uncontrollable barking (loud / high sounds) behavior.
- 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 has been employed.

5. Re-test procedures

In case of failure the EDD team will be given the opportunity to be re-tested following below sequence:

- Accreditation test. If failed;
- After 7 days (1 week), re-test. If failed:
- After 30 days (one month) re-test. If failed:
- After 365 days (one year) re-test.

5. Exercise description and items benchmark:

Exercise number: 1

Search and indication for explosives hidden in transportation means

Exercise description:

Area for searching in transportation means: a search area including 1 – 6 types of transportation means

Requirements: Search shall be conducted on and/or off leash, according to organizations SOP, following the instructions of the Test Manager. Passive indication is mandatory. 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 all hides in the exercise is mandatory. No false indications are allowed.

Set up: The number of hides is unknown for the handler (1 to 6). Products / substances used in the evaluation are in accordance to the substance list in this document.

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 transportation means.

Exercise timing: up to 25 minutes for the entire exercise.

Exercise number: 2

Search and indication for explosives hidden indoors

Exercise description:

Area for searching indoors means: a search area i.e. accommodation, hotel, airport, office buildings, stores, storage house etc. The search area can vary from 50 to 500 m².

Requirements: Search shall be conducted on and/or off leash, according to organizations SOP, following the instructions of the Test Manager. Passive indication is mandatory. 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 all hides in the exercise is mandatory. No false indications are allowed.

Set up: The number of hides is unknown for the handler (1 to 6).). Products / substances used in the evaluation are in accordance to the substance list in this document.

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

Exercise name: Search detect and indication on explosives, weapons and/or ammunition hidden outdoors.

Exercise Description:

Area for searching: a search area i.e. open field, industry areas, parking lot, forest, railways, train platforms, bridges, stadiums, routes 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 organization's SOP, following the instructions of the Test Manager. Any and all indication(s) shall be passive in nature. 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 to the substance list in this document.

A varied number (0 to 6) of blank distractors can 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

Exercise name: search and indication for explosives in luggage / objects rows

Exercise Description:

Area for searching: objects are lined up after each other in several rows. The distance between each object is approximately 1 meter. Each object shall be searched. The objects can be: i.e. luggage, bicycle, tires, boxes, envelopes, home appliances, computer etc. The number of objects will be between 10 and 30.

Requirements: The entire exercise shall be assessed based on search procedures both tactically and technically. Passive indication is mandatory. Type of indication is announced by the dog handler before starting the exercise. The dog handler must await acknowledgment from the Test Manager before approaching / communicating with the dog during indication. Finding and correctly indicating all hides in the exercise is mandatory. No false indications are allowed.

Set up: The number of hides is unknown for the dog handler (1 to 6). Products / substances used in the evaluation are in accordance to the substance list in this document.

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: 31st October 2020

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 SSUDANMAP

a. Diagram 1 depicts the lifecycle of a task that is applied and implemented within the South SUDANMAP.

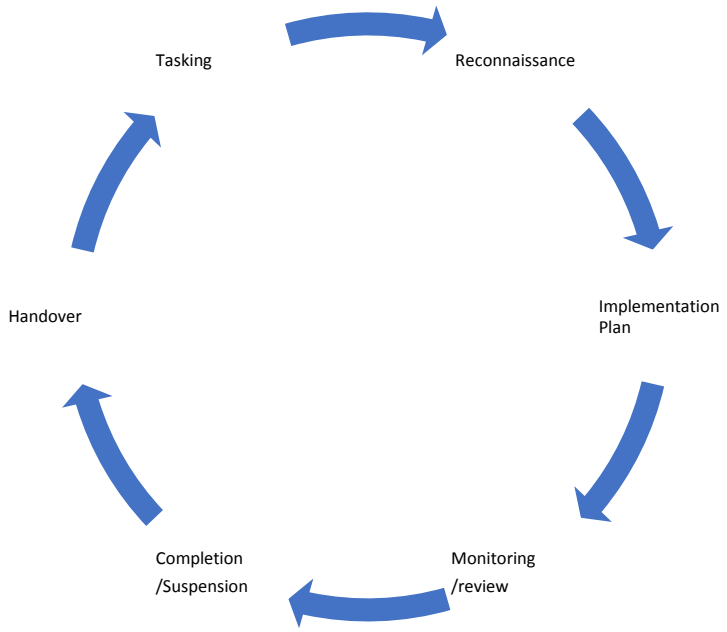

Figure 0-1 Task Cycle

22.3 Tasking

a. The NMAA/UNMAS-SS 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 production of the Task Dossier is the responsibility of the NMAA/UNMAS-SS sub-office Operations Officer. All available 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.

c. Task Order Once ready, the task dossier shall be issued to the relevant mine action organisation. On acceptance the authorised mine action organisation representative shall sign the tasking order. The NMAA/UNMAS-SS sub-office is to then archive a copy of the complete task dossier along with the signed task order.

22.4 **Joint Reconnaissance**

a. After the Task Dossier has been issued a joint reconnaissance should be planned and conducted by the mine action organisation representative(s) and the NMAA/UNMAS-SS sub-office Operations Officer. A joint discussion and assessment shall then take place culminating in the formulation and agreement of a proposed plan.

22.5 **Implementation Plan (IP)**

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 the proposed clearance depth. The IP templates for both clearance and route verification tasks can be found at Annex A and B 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-SS. 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 shall be submitted to the NMAA/UNMAS-SS sub-

office that issued the task within 4 working days from the signing of the tasking order or 4 working days after the completion of the joint reconnaissance if one is conducted. 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-SS Sub-office Responsibility. The NMAA/UNMAS-SS 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. 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 e.g. minefield polygon coordinates if established. 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-SS Chief of Operations. Once satisfied the Operation Officer shall sign-off on the implementation plan and then submit it to the NMAA/UNMAS-SS 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-SS 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.

e. NMAA/UNMAS-SS The Operations Assistant shall file the signed implementation plan and copies of the completed document shall then be distributed for filing, storing or further action as appropriate. .The signed and approved implementation plan shall become a mini-contract from a contractual point of view between the NMAA/UNMAS-SS 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-SS sub-office and the mine action organisation as per chapter 14 of this NTSG. In addition, the mine action organisation shall submit a Daily Report / Weekly IMSMA Progress Report. Once the information from the Progress Report is verified, it shall be entered into IMSMA. Progress Reports 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 handover 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 uncleared 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-SS for authorisation and can be agreed on site with NMAA/UNMAS-SS representatives, recorded on the site operations sheet and signed by NMAA/UNMAS-SS and organisation representatives. Amendments concerning safety shall be required to be forwarded to the NMAA/UNMAS-SS Chief of Operations. 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.

c. In the event that the projected completion of the task is affected a Timeline Extension Request shall be submitted to the relevant NMAA/UNMAS-SS

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
- Reason for delay
- Site Progress map

d. Acceptance of the Timeline Extension Request by the relevant NMAA/UNMAS-SS sub office shall also be done via email. A copy of both emails shall be retained in the Site File.

22.9 **Task Completion**

a. Task implementation shall only be considered complete once the mine action organisation has submitted the Completion Report to the NMAA/UNMAS-SS sub-office. The NMAA/UNMAS-SS 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:

- All original documentation belonging to NMAA/UNMAS-SS shall be handed to NMAA/UNMAS-SS with the completion report.
- Attached to the completion report shall be 2 x A3 scale maps indicating the different assets that completed the task.
- The completion report shall be used to verify that the task has been completed as per the tasking order and the implementation plan.

22.10 **Task Suspension**

a. When a task is suspended, the NMAA/UNMAS-SS sub-office QA Officer/Ops Officer shall conduct a QA evaluation with the mine action organisation and generate an IMSMA Suspension Report. If and when the task recommences a joint reconnaissance shall be conducted by the NMAA/UNMAS-SS sub-office Ops Officer/QA Officer and the tasked mine action organisation. If a different mine action organisation is employed, the NMAA/UNMAS-SS 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.

22.11 **Formal Handover/Declaration**

a. After all documentation processes are complete a formal Handover and Declaration Certificate as at Annex C 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-SS (usually the Chief of Operations).
   - Final receipt by responsible authority.

22.12 **Archiving Task Documentation (NMAA/UNMAS-SS)**

a. Once all documentation as per the contents sheet are compiled and recorded the task shall be considered complete. The final action shall be for the IMSMA Officer to verify all information against the database. Thereafter the documentation shall be archived.

22.13 **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 suspension 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.

22.13.1 Preparing a Task Site Map

a. Stage One –
   - From the Benchmark, record the bearing and distance to the Start Point.
   - From the Start Point, record all perimeter coordinates (bearings and distance) to each turning point, using a DGPS or compass and measuring tape, returning to the Start Point.
   - Ensure that the information is gathered in a clockwise direction only.
b. Stage Two –
   - Select a point on the map for the Benchmark and the Start Point, plot all perimeter coordinates from the Start Point onto the map using a protractor and ruler. Ensure that the perimeter coordinates are plotted in one direction only.
c. Stage Three –
   - Draw/record all other relevant symbols and information
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 and start date
   - Team Leader's Name
   - BM and grid reference
   - SP and grid reference
   - North Pointer

- Scale
- Legend
- Control Point/administration area
- Mines/UXO located
- Cleared areas

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 skip areas remaining shall be annotated on both the map and the Completion/Handover report as a polygon or if the skip area is less than 2m x 2m, a single coordinate.

22.14 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.

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 to Chapter 22 IMPLEMENTAION PLAN for CLEARANCE TASKS

1. **IMPLEMENTATION PLAN**

TASK DOSSIER ID: **TEAM ID:**

Task ID	State	County	Payam	Estimated task size (m²)	Type of task	Work days	Start date	End date

MINIMUM ESTIMATED ASSET CAPABILITY			
Asset	Minimum EST daily capacity (m²)	Methodology	Remarks

Threat	Min daily clearance rate (m²)	Estimated size of area (m²) to be released	Type of clearance	Duration (days)
Days required for site set up and completion				
			Total days to complete Task	

2. TASK OBJECTIVES (to be IAW Task Order).

3. ASSETS

4. TIMELINE

5. TASK IMPLEMENTATION

1. **<u>Phase 1</u>:**

i. **Desk Top Assessment:**

ii. **Constraints:**

iii. **Site Specific Health & Safety considerations (UNOPS contracted Partners only):**

iv. **Site Specific Social and Environmental considerations (UNOPS contracted Partners only):**

2. **Phase 2 – Site set up:**

3. P**hase 3 Clearance:**

4. **Phase 4 - Completion and Handove**r:
5. **TECHNICAL NOTES (if applicable):**

6. **SIGNATURES**

ACCEPTANCE OF IMPLEMENTATION PLAN		
Prepared and Submitted by org representative		Signature
Name:		
Position:		
Organisation:		
Date:		
Approved by org representative		Signature
Name:		
Position:		
Organisation:		

Date:		
Accepted by UNMAS Sub-office		Signature
Name:		
Position:		
Organisation:		
Date:		
Verified and Approved by UNMAS COO		Signature
Name:		
Position:		
Organisation:		
Date:		

7. MAP (North up showing HA number, CP, Access Lane, and any known hazards):

Annex B to Chapter 22 IMPLEMENTAION PLAN for ROUTE VERIFICATION TASKS

1. IMPLEMENTATION PLAN

TASK DOSSIER ID:				**TEAM ID:**			
Route - Hazard ID	**State**	**County**	**Payam**	**Estimated task size (m²)**	**Work days**	**Start/End Date**	**Type of Task**
							Road Clearance

Threat	**Min Daily Clearance Rate**	**Estimated Length of Route (Km) To be Released**	**Type of Clearance**	**Duration (Days)**

2. Route Map of (Total route length approximately xx km)

3. TASK OBJECTIVES

4. ASSETS

MINIMUM ESTIMATED ASSET CAPABILITY			
Asset	**Minimum daily (km/m²)**	**Description**	**Remarks**
VMR3/F3 Black cap			
VMR3 Clearance			
VMR3/ MDD QC			

5. TIMELINE

Asset	**Minimum daily (km/m²)**	**Area to be cleared**	**Days to complete**	**Remarks**
GPR Clearance				
GPR / MDD QC				
Completion Marking				

6. TASK IMPLEMENTATION

Team Composition:

The clearance team will consist of:

-
-
-

The QC Team will consist of:

-
-
-
-

Clearance Team Methodology:

QC Team Methodology:

Culverts:

Clearance Team Culvert Methodology:

QC Team Culvert Methodology:

MDD Clearance Team Methodology:

MDD QC Team Methodology:

7. OTHER FACTORS

- Vegetation:
- Site Specific Health & Safety considerations (UNOPS Partners only):
- Site Specific Social & Environment considerations (UNOPS Partners only):

8. CASEVAC PLAN

9. SIGNATURES

ACCEPTANCE OF IMPLEMENTATION PLAN		
Prepared and Submitted by org representative		
Name:		
Position:		
Organisation:		
Date:		
Approved by org representative		Signature
Name:		
Position:		
Organisation:		
Date:		
Accepted by UNMAS Sub-office		Signature
Name:		
Position:		
Organisation:		
Date:		
Verified and Approved by UNMAS CCO		Signature
Name:		
Position:		
Organisation:		
Date:		

Methodology for the use of strimmer's during Ground Preparation:

Safety:

Methodology:

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:	

Maps / Images of released area to be attached: (Completion Maps / images)

South Sudan

National Technical Standards Guidelines

Date: 31st October 2020

Chapter 23

Land Release

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23.1 Introduction

a. 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.

b. The land release process may be applied to a suspect 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.

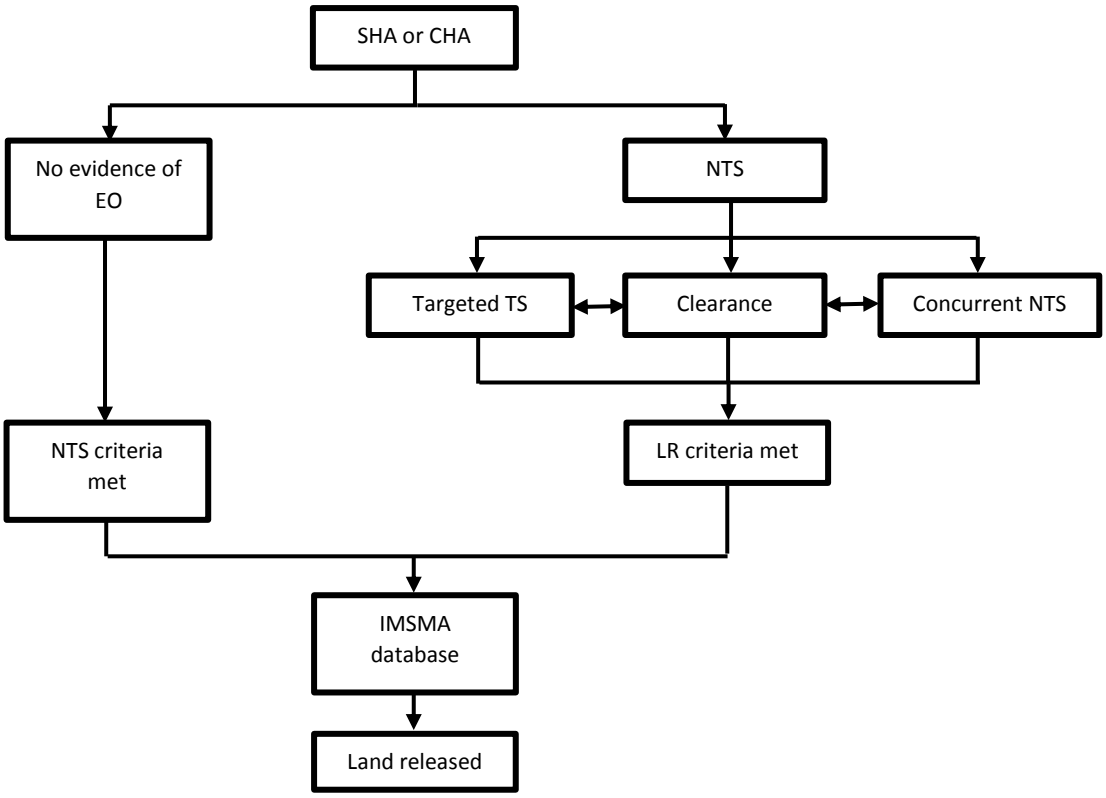
23.2 Scope

a. This document defines the process and policy of releasing contaminated land or land under suspicion of EO contamination in South Sudan.

23.3 Land Release Process

a. 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 TS and an ongoing NTS.

b. 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**

a. 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.

b. 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

a. 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.

b. 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 of evidence through interviewing people with confirmed knowledge of the area under survey.
   - Obtaining information of the area under survey by physical intervention.

c. The principles of information gathering by non-technical survey and technical survey is covered in detail in Chapter 1.

d. 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.

e. 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.

f. The new information provided by Mine Action organisations may include the following:
   - CHAs that are being occupied or utilized by the local population without incidents;
   - Newly cultivated areas within previous CHAs;
   - 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

a. 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 is provided in the following chapters of the NTSG:
     i. Chapter 1, Survey.
     ii. Chapter 4, Manual Mine Clearance.
     iii. Chapter 7, Battle Area Clearance.
     iv. Chapter 8, Mechanical Demining.
     v. Chapter 9, Mine Detection Dogs.
     vi. Chapter 20, Route Verification.

23.7 Confidence in Released Land

a. 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.

b. 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-SS.

23.8 All Reasonable Effort

a. “All reasonable effort”, in the South SUDANMAP 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 some 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.

b. “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.

c. The sufficient and reliable information shall be obtained on a case by case basis, through tactical and operational analysis and approved by NMAA/UNMAS-SS 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;
- The degree of land use.

23.9 The Land Release Principles in South Sudan

a. 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.

b. The Land Release methodology is based on the universal application of the references in IMAS and the NMAA/UNMAS-SS 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-SS. 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.

c. Due to their productivity and efficiency, the South SUDANMAP relies heavily on machines to treat landmine affected areas.

d. 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.

e. 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?

f. 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.

g. 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.
h. 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.
i. 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.
j. 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.
k. 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.
l. '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-SS and the clearance organisation.
m. '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.
n. 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-SS and the clearance organisation.

23.10 Quality Management

a. Refer to Chapter 14 of SSUDANMAP NTSGs.

23.11 Documentation

a. 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-SS.

b. Minimum data/information collection requirements for mine action in South Sudan are defined in the Chapter 22 Task Administration of South SUDANMAP NTSGs.

23.12 Implementation and Tasking

a. Refer to Chapter 22 of SSUDANMAP NTSGs.

23.13 Risks and Liability

a. 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.

b. 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'.

c. 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.

d. 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.

e. 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.

f. 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.

g. 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

a. 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.

b. Mine action organisations shall plan and conduct a post clearance survey of the areas they have previously released, minimum six months from task completion. A further survey may be conducted on NMAA/UNMAS-SS request.

c. NMAA/UNMAS-SS 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

a. In general, the NMAA/UNMAS-SS 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.

b. Demining organisations shall gain accreditation to conduct land release activities and comply to NTSGs.
c. For specific responsibilities and obligations of the NMAA and demining organisations refer to NTSG Chapters listed under 23.6 Land Release Criteria.

Annex A to Chapter 23 Cancelled Area report

SHA No:	**Nearest Town:**

IMSMA recorded SHA _____ located in the vicinity of _____

at Grid Reference

Longitude:	
Latitude:	

visited o

Start Date:

This SHA is matched with TD No. SS-XXX

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 and the target list"

"We the undersigned agree that the reported hazardous area should be cancelled in accordance with NTSG requirements"

Name: …… Name: ……..

Signature: …….. Signature: ……

Clearance Company: Community Liaison Assistant

Local Contact Person No.1* ……Occupation: ……

Address: ……

Ph: ……

Signature: ……

Date: ……

Local Contact Person No.2*……..