NMAS 09.20

Improvised Explosive Devices (IED) Clearance

Lebanon Mine Action Center-LMAC

Chekri Ghanem Casern–Fayadieh

Tel: +961 5 956143, Fax: +961 5 956192

Email: info@lebmac.org

Website: http:/www.lebmac.org/

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Tel: +961 5 956143,
Fax: +961 5 956192
Email: info@lebmac.org

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Foreword

The National Mine Action Standards (NMAS) of Lebanon were first developed in the form of Technical Standards and Guidelines (TSG). These TSG were edited into the first edition of the NMAS in 2010 and were written to comply with the first edition of the International Mine Action Standards (IMAS). Since then, the scope of the IMAS has been expanded to include more components of mine action and amended to mirror the most recent changes to standards as required in today's operations. These changes, as well as changes in the local context of Lebanon, have necessitated a review and update of the NMAS.

As detailed in the National Mine Action Policy of 2007, the Lebanon Mine Action Center (LMAC) has the responsibility to execute and coordinate the Lebanon Mine Action Program (LMAP) on behalf of the Lebanon Mine Action Authority (LMAA), including the development and amendment of standards. Such standards shall be developed in a participatory approach that shall involve international, governmental, and nongovernmental organizations.

The NMAS shall be reviewed as needed to reflect amendments in the IMAS as well as incorporate changes to international obligations and local requirements. Such revisions shall be made available on the LMAC's website www.lebmac.org or can be obtained through contacting the LMAC via the email info@lebmac.org.

Acronyms

EO	Explosive Ordnance
EU	European Union
GoL	Government of Lebanon
HMA	Humanitarian Mine Action
IAs	Implementing Agencies
IED	Improvised Explosive Device
IM	Information Management
IMAS	International Mine Action Standards
IMSMA	Information Management System for Mine Action
LAF	Lebanese Armed Forces
LMAA	Lebanon Mine Action Authority
LMAC	Lebanon Mine Action Center
LMAP	Lebanon Mine Action Program
NMAS	National Mine Action Standards
QA	Quality Assurance
QC	Quality Control
QM	Quality Management
UNDP	United Nations Development Programme

Introduction

The world is experiencing an unprecedented increase in the use of IEDs in areas of conflicts. In Lebanon this newly identified threat is especially close and present. In military operations, an IED when encountered represents an obstacle to overcome. In humanitarian mine action, IEDs can present a problem that affects a broad range of the local population, and their presence requires an effective response to manage and remove the special risks that IEDs represent.

IEDs can present a greater hazard than other EO. Frequently, their irregularity in shape, size, initiation system and disguise, means that IEDs present a higher risk to both the local population and to the deminers/searchers tasked with locating and destroying them. The inventive complexity and creative "genius" of an IED depends on the imagination and creativity of the person(s) responsible for its fabrication. In asymmetric conflicts, often their goal is simply to manufacture substitutes for munitions they do not have access to. Typically, these can include bombs, rockets, mortars and mines.

An IED can be designed to detonate on delivery or after a time delay. They may also be command detonated or victim initiated in a variety of ways. Many are designed to act very similarly to conventional munitions and, until recently, very few of these devices were designed to specifically target the individual who is sent to find and destroy them. However, in areas where improvised bombs or mines are widely used, it is increasingly common for some of them to have been fitted with multiple initiation systems including improvised proximity and anti-disturbance devices that deliberately target those seeking to find and remove them.

Effective search and Clearance activities in areas with an IED threat requires especially high levels of planning, training, preparation and risk management as described in this standard.

Improvised Explosive Devices (IED) Clearance

1. Scope

This NMAS provides standard principles and guidance for the implementation of IED search and Clearance operations in Lebanon. Its requirements shall be applied by all implementing agencies (IAs) that intend to operate in areas affected with IEDs.

This NMAS does not cover working with Chemical, Biological, Radiological or Nuclear (CBRN) hazards.

2. References

A list of normative and informative references is provided in Annex A.

Normative references provide cross-referencing to other standards referred to in this standard and which form an integral part of the provisions of this standard.

Informative references provide a list of documents that may be consulted for a clearer understanding of this standard.

3. Key Terms and Definitions

The following terms and definitions are used in this NMAS:

- *Booby-trap:* booby-traps are defined as factory-made, victim-initiated devices that are not triggered remotely by command detonation. Booby-traps are intended to target anyone who disturbs them. They are manufactured in volume production and sold to armed forces as part of their arsenal. Booby trap devices may be used as part of Improvised Explosive Devices (IEDs). Because both IEDs and Booby-traps may be used in a similar way, in these NMAS the definition of IEDs is deemed to include Booby-traps.
- *IED Disposal (IEDD)*: the location, identification, rendering safe and final disposal of IEDs.
- *Implementing Agencies (IAs):* the term refers to commercial organizations, agencies, associations, national NGOs, international NGOs, UN bodies, and government bodies, such as the military, municipalities, and ministries working in humanitarian mine action in Lebanon.
- *Improvised Explosive Device (IED)*: all IEDs are made using some parts that were either designed for another purpose or have been made for the purpose informally (outside conventional munitions factories). An IED is a device fabricated in an improvised manner incorporating explosive material, destructive, lethal, noxious, incendiary, pyrotechnic materials or chemicals designed to destroy, disfigure, distract or harass. IEDs may incorporate conventional munitions and/or munition parts. The explosive content, detonators and fuzes may have been harvested from munitions or improvised using

non-military and/or unconventional components. Because both IEDs and Booby-traps may be used in a similar way, in these NMAS the definition of IEDs is deemed to include Booby-traps.

- *Intrusive Action*: an action that requires the removal of vegetation, rubble, soil, or any other object that may be concealing an explosive hazard.
- *Safety distance:* the acceptable and minimum distances between staff and equipment and a deliberate demolition/detonation. Safety distances need not be the same as Working distances.
- *Site Supervisor:* a suitably qualified/experienced senior person who is responsible for managing a demining site and the operations being conducted.
- *Team Leader:* a suitably qualified/experienced person who is responsible for managing a group of deminers/ searchers working within the boundaries of a worksite. The team leader reports to the Site Supervisor.
- *Working distances:* the acceptable and minimum distances between personnel and equipment at a demining worksite. Because no deliberate detonations will occur, working distances may be less than safety distances.

In addition to the above terms, NMAS 04.10 provides a glossary of terms and definitions used across all NMAS.

As in the IMAS, the terms 'shall', 'should' and 'may' are used across all standards to indicate the required degree of compliance. For any organization working in Lebanon, the use of 'shall' indicates a compulsory requirement. The term 'should' indicates the national preference which may be varied with LMAC approval. The term 'may' indicates a suggestion that is not obligatory.

4. Improvised Explosive Devices (IEDs)

All IEDs are made using some parts that were either designed for another purpose or have been made for the purpose informally (outside conventional munitions factories). An IED may often be disguised by having a harmless appearance intended to deceive its victim(s). The whole improvised device may not be assembled until it is placed and the explosive hazards should be expected to vary even when the initiation systems are similar.

A conventional munition with an improvised initiation system that allows it to be used in a way for which it was not designed is an IED. An IED may be designed to fire conventional munitions, so greatly increasing the hazard radius.

The simplest IEDs are improvised versions of conventional munitions such as bombs, landmines, mortar bombs, rockets and grenades. When an armed group does not have access to these, they may arrange for improvised versions to be informally manufactured in large batches. The features of the original may be varied in a manner that is unexpected. A

common example is when a pressure activated mine large enough to destroy a vehicle is designed to be initiated by the weight of a person.

All IEDs may be designed to be victim-initiated, command detonated, set to explode after a set time, or all three. Multiple fuzed initiation systems should be presumed until the actual systems used are known.

IEDs may be intended to be found. They may be left visible, or innocent civilians may be told where they are so that they will report them. Whenever a device is reported or easily seen, the specialist IED team should expect that other hidden devices have been placed to be initiated as they approach. Even when a device that was not easily visible is found, the team members should expect there to be other IEDs in the vicinity because multiple devices are often placed to deliberately target either those who come to destroy the first device or curious members of the public who may gather to see what is happening.

IEDs may be attached to something else that is designed to be seen and to attract interest. For example, a valuable or attractive item may be left in plain view so that someone will pick it up, triggering a fuze while doing so. Corpses attached to hidden devices have also been used to attract attention. For this reason, IED team members should always view any apparently interesting item with suspicion and treat it as potentially hazardous.

IEDs may also be used in suicide attacks with the IED carried on the person or in a bag or vehicle. Suicide bombers are the responsibility of the Security Forces. However, IAs working in IED clearance may have to locate and safely dispose of unused IEDs made for use in suicide attacks. Although the primary initiation system may be a mechanism with which the bomber was intended to detonate it, another initiation system using a wireless signal from a distance is frequently used as a secondary means of detonating the device. In addition, suicide bombs have often been made using improvised explosives that have a short storage life after which they become unstable and sensitive to any movement, so an abandoned suicide bomb shall always be treated as a high risk hazard.

Any IED that *may* still be viable and able to function shall be called ‘active’. Any IED that is of an age or condition that makes it unable to function shall be termed a ‘legacy’ IED. Both ‘legacy’ and ‘active’ IEDs should be treated as hazardous EO except when the LMAC has specifically approved an exception.

4.1 Initiation Systems

Generally, initiation systems used in IEDs have not been manufactured for sale on the open market, so may be unfamiliar to those searching for them. However, IED improvised initiation systems are often made to patterns and may be manufactured in batches in informal workshops, so close similarities frequently occur.

IED fuzes may be initiated by pressure, pull, pressure-release, light, movement, seismic vibration, electromagnetic disturbance, the passage of time, or the completion of an

electrical circuit either by physical means or remotely with a wireless communications device. Any combination may be used in a single IED with multiple fuzes, and some or all may be command detonated. Initiation systems that were manufactured for use in other munitions or as booby-trap switches may be used without alteration in IEDs or may be customized to operate in an unconventional way.

From a search and Clearance perspective, it is useful to separate IEDs into:

- IEDs that have an initiation system or systems that are NOT deliberately designed to target those sent to disarm/destroy them, and
- IEDs that have at least one initiation system which IS deliberately designed to be triggered by any attempt to approach, disarm, separate, disrupt or move all of part of the device.

Improvised initiation systems often have a limited reliable design life which can make them unpredictable and unstable.

When an IED works, those who made it often try to repeat their success. When an IED fails through being discovered and rendered safe, those who made it may complicate the initiation system in order to mislead the clearers into thinking that their previous knowledge of the mechanism ensures their operational safety when in fact one or more hidden means of initiation has been added.

4.1.1 Electronic noise

Whenever fuze systems that can be triggered by a wireless signal are anticipated, full electronic silence shall be maintained unless effective selective wireless signal jamming is in place. Whether or not a jammer is used, all computers, tablets, digital cameras, watches, radios and cellular or satellite telephones should be left outside the search area.

4.1.2 Magnetic influence fuzes

When magnetic influence fuzes are anticipated, all magnetic (iron and iron-alloy) materials and electronic items should be left outside the search area. Personal signal jamming systems shall not be used by the searcher during the approach. Because some fuzes may be sensitive to magnetic or electrical influence, some tools made using low-static plastics, resins, nylon or wood should be available to the IED team.

4.1.3 Seismic disturbance or movement/proximity fuzes

When seismic disturbance or movement/proximity fuzes are anticipated, the only permitted initial approach is to use a remotely controlled robot, vehicle, or aerial camera carrier. Any ground based machine shall either be light enough to allow a camera survey without initiating the device, or heavy enough to trigger a simple functional seismic fuze system. Some seismic fuzes can discriminate between the passage of a person and a machine, so the passage of the machine without a detonation does not indicate that seismic fuzes are

absent. When a heavy machine is used, it should be appropriately armored to survive the anticipated hazard with minimal damage.

4.2 Hazardous Content

The hazardous content of an IED may incorporate explosive material, destructive, lethal, noxious, incendiary, pyrotechnic materials or chemicals designed to destroy, disfigure, distract or harass. The hazardous content in all IEDs may include munitions (or parts of munitions) that were originally designed for another purpose and/or improvised explosive/incendiary materials.

When any IED with an incendiary or propellant content is discovered, the task risk assessment should be updated to take note of the risk of the content igniting as work is conducted. Volatiles from nitrobenzine based improvised explosives can seriously damage lungs, so persons required to approach them shall be issued with a respirator.

Other improvised explosives such as acetone peroxide (also known as TATP, TCAP or Peroxyacetone) are heat, friction and shock sensitive so especially hazardous to move, especially when old. Except when discovered improvised explosive has been identified and is known to be stable, it shall be treated as a 'destroy-in-situ' hazard. If materials of this nature have been spread by disruption, the person making the next manual approach should be suitably protected against flash-fire. It may be considered appropriate to wear a bomb suit and closed helmet.

4.3 Unconventional features of improvised mines

Where explosives can be readily manufactured or harvested, the main charge in improvised mines is often far larger than in conventional anti-personnel mines. Electrically initiated improvised mines are generally made weatherproof by being wrapped in plastic (cling-film, plastic sheet or by using a plastic box) and sealed with adhesive tape. The whole device may be wrapped to help protect it from the elements and to conceal it as rubbish.

A common feature of improvised electrically initiated mines is that the pressure plate need not be a part of the device so need not be above the main explosive charge.

The pictures show an improvised pressure plate for initiating an improvised plastic box mine that was found in Ras Baalbek. It is initiated with an electrical detonator and has a large, separated pressure plate wrapped in plastic. Secondary fuze systems may be present and one mine may have more than one pressure plate. As with many improvised mines,

wrapping nails, nuts and bolts or small pieces of metal around the main charge may be used to convert a blast device into a fragmentation device.

The explosives used in improvised mines may also be improvised or include improvised materials. Ammonium Nitrate and Aluminum powder (ANAL) has been commonly used by terrorists. A detonator or knotted det-cord inside a small ball of conventional Plastic Explosive is often positioned inside an improvised main charge to provide the necessary shock wave to ensure detonation. Most improvised explosives are relatively unstable and sensitive to both heat and sunlight, so devices using them are usually concealed, shaded and well wrapped in plastic. When any device, fuzed or unfuzed, that may contain improvised explosive is discovered, it shall be moved remotely in case it has become sensitive enough for movement to ignite the explosive, leading to detonation.

5. Forensic investigation of IEDs

Forensic Removal of an IED refers to the deliberate disarming and dismantling of IEDs for forensic examination that is intended to lead to the identification of those involved in their manufacture and/or placement. The possible presence of unfamiliar and/or unstable anti-handling initiation systems in IEDs means that conducting render-safe procedures for forensic IED examination would represent an intolerably high risk in humanitarian mine action (HMA).

According to the International Mine Action Standards (IMAS), organizations engaged in HMA have a duty of care to their employees and must minimize their risk at all times. To achieve this, the forensic examination of active IEDs shall not be a part of HMA activities in Lebanon. The need to recognize, locate and disrupt/destroy IEDs with minimum consequences to people and property is the HMA requirement covered in this NMAS.

The render-safe of IEDs to produce HMA training items in Lebanon shall only be permitted with the direct consent of the LMAC. Consent should NOT be granted for the manual render-safe of any IED which may be active or may have unstable contents. Applications to conduct robotic render-safe procedures on IEDS shall be considered by the LMAC on a case-by-case basis.

6. Clearing IED minefields

Simple improvised mines are easily made and may be manufactured in large numbers in low-tech workshops. Some incorporate a manufactured fuze mechanism that includes a detonator while others use improvised systems to initiate a detonator.

When large numbers of improvised mines of a similar design have been placed, they may be cleared using conventional manual demining procedures (NMAS 09.13). When the devices may be hard to detect, mechanical means and/or MDD should be used until enough of the

hazards have been identified to justify confidence in a metal-detector search procedure being safe.

Where improvised mines are found, it is probable that other improvised munitions may be discovered as UXO or AXO (e.g.: butane gas container made into an improvised mortar shell). Although these may not be designed to be victim initiated, the explosives inside may be unstable and the mechanisms themselves may be in an unpredictable condition. As with all unknown explosive hazards, deminers/searchers shall use a remote system to move any unrecognized device before any attempt is made to move it by hand.

In some barrier minefields using improvised mines laid in a patterned way, randomly selected mines may have been given other initiation systems designed to target those clearing the mines. To reduce the risks for deminers/searchers, all improvised mines shall be moved from a distance using remote means (either turning it over or dragging it from its original position so that the underside and area around/beneath it can be examined) before they are approached with a view to destroying them.

7. Specialist IED teams

All members of a specialist IED team shall be selected to ensure that they have the following personal characteristics:

- a logical problem-solving approach;
- patience;
- the ability to work independently;
- a non-competitive attitude; and
- supervisory experience.

Every team member who may be required to enter the Suspected Hazardous Area should have experience and qualifications equivalent to IMAS EOD Level 3 in terms of the ability to locate, recognize and safely dispose of the anticipated devices. Persons with a recognized EOD Level 3+ C-IED qualification should be preferred.

However qualified, all persons selected as specialist IED team members shall be thoroughly trained to conduct the approved search and destroy/disrupt procedures using tools and equipment that have been approved by the LMAC.

Specialist IED teams can vary in size to suit the task.

When remotely controlled unmanned assets are used, the asset operator shall be experienced in its use and in the SOPs relevant to its use. An asset specific SOP shall be submitted for the LMAC's approval before the asset is deployed.

The IA management shall ensure that their specialist IED team members are always fully aware of the security situation in the working area.

7.1 Specialist IED team SOPs

IAs which undertake specialist IED tasks shall develop SOPs for the implementation of specialist IED activities and submit them for the LMAC's approval. The IA's SOPs shall include their proposed SOPs for:

- a rapid response capability covering IED spot-tasks on roads and in public places;
- the unmanned robotic approaches using any robotic assets they intend to deploy;
- procedures for searching for IEDs in buildings;
- procedures for searching for IEDs in vehicles;
- procedures for destroying discovered IEDs; and
- procedures for dealing with discovered improvised explosives and IED components.

Approval shall only be granted when the IA's SOPs ensure that all the requirements in this NMAS are followed at every IED task. These include ensuring that:

- appropriate written task risk assessment and task Clearance plans are produced;
- all necessary liaison with local authorities, security forces, police, fire and medical services is conducted before and during deployment;
- all team members are appropriately trained and equipped;
- every member of the team is in a suitable physical and mental condition to conduct the work required of them;
- the area of the task where the team will work is appropriately marked and recorded with maps;
- the IED searchers/deminers are deployed in accordance with an approved Clearance plan;
- appropriate and approved methods of search and disruption/destruction are conducted, and that full destruction is the ultimate result;
- the work of each team member during each work period is correctly recorded and the task Clearance reports are compiled and submitted as required by the LMAC; and
- QC is conducted on the areas searched at closer intervals noted in the approved task Clearance plan.

8. Safety principles and considerations

In all IED tasks, the following safety principles shall be applied:

- tasks should be conducted using remote procedures and equipment whenever possible;
- minimum wait times shall be applied, with variations that are longer permitted;

- a written task Clearance plan including a risk assessment shall always be made before work begins;
- the task risk assessment shall be updated as work progresses and appropriate changes shall be made to the tools and procedures used to ensure that risk is always minimized;
- only one team member at a time should approach a suspected IED;
- IEDs should be destroyed in-situ whenever practicable;
- time spent close to the device should be as short as possible; and
- confirmed IEDs and their parts should be disrupted and destroyed without forensic examination, unless otherwise approved by the LMAC.

All other safety rules applying to manual demining operations should also be applied.

8.1 IED Team medical support

Every IED team deployment shall be supported by an appropriately trained medic with a dedicated ambulance vehicle and with the medical equipment that is required when conducting demining operations. As with all demining work in Lebanon, the IA shall plan a CASEVAC route to the nearest medical facilities.

8.2 PPE variations

All staff who enter the safety distance for a suspected IED hazard shall be provided with PPE that meets the minimum NMAS 10.30 guidelines.

Whenever the anticipated IED hazard is of a size that would predictably defeat the protective qualities of the NMAS compliant PPE, a bomb suit should be made available.

At the discretion of the IA management, IED searchers may be permitted not to wear a bomb suit when approaching a large IED but shall always wear the minimum NMAS protection. This is because a bomb suit may increase discomfort and limit movement in a way that makes an accident more likely to happen. Wearing the lighter NMAS compliant PPE provides some protection from a partial detonation.

A suitable respirator shall be worn by any team member who is required to deal with IED contents that may include harmful volatiles. This may not be necessary during search but is necessary during and after disruption whether or not that disruption initiated a detonation.

Strong and impermeable protective gloves shall be worn by any person required to handle improvised explosive materials.

8.3 Blast trauma

Research into blast induced neuro-trauma has shown that persons who experience the pressure wave from a large explosion can suffer internal injury, especially brain injury,

without any obvious physical damage. This occurs with or without the protection of PPE. Brain injury can result even when the head is not struck by the pressure wave because the blast wave passes through body fluids.

The consequences of blast induced brain injury can take time to manifest but can be severely disabling, so must be avoided. It is not clear how best to protect against this. Until otherwise informed, the safety distance when destroying an IED should be augmented by being protected behind solid walls or lying flat on the ground whenever the detonation of a large device is a predictable possibility or is deliberately conducted.

8.4 Working distances

During conventional EO search and Clearance operations, 'working distances' may be used when no deliberate detonations will take place. 'Safety distances' are applied whenever items may be detonated by mechanical processes and whenever deliberately destroying explosive devices with charges or disarming devices using LMAC approved procedures.

Whenever working at non-minefield tasks at which IEDs are anticipated, the safety distance should be applied as a working distance whenever practicable. Generally, no more than one team member should be inside the hazardous radius at any one time. Supervision shall be conducted from a safe distance. A site specific communication system should be selected, tested and applied.

9. Jamming wireless signals

When approved by the LMAC, jamming equipment able to block wireless signals may be used in any areas where wirelessly activated initiation systems are anticipated.

Both limited-range and wide-range all-bands (WiFi, GPS, VHF, UHF, LoJack, RF 315/433, 3G, 4G) signal jammers may be used. Limited-range jammers (up to 40 meters range) can be carried by individual searchers. Wide-range high-powered jammers (up to several hundred meters range) may be used to cover an entire task area from one place. When this is the case, every care shall be taken not to obstruct the aerials attached to the jamming device at any time.

The power requirement of a wide-range jammer may require the use of a generator in areas where grid electricity is either unavailable or unreliable.

The effective range of any jamming system in use shall be checked at the start of the day and at regular intervals throughout the working day.

Remotely controlled assets shall only be used at the same time as a wireless signal jammer when it is possible to 'unblock' the specific bandwidth used by the remote control system.

When the quality of a jamming system is not assured, the effective range of the system shall be checked frequently during its use.

9.1 Locating wireless signals

An electronic device capable of locating the parts of an IED initiation system that may be emitting electromagnetic signals should only be used when fixed to a remotely controlled robot or vehicle unless there is complete confidence that the use of the detector will not initiate the system it locates. Its use shall not be permitted if it may compromise other safety measures.

10. Before specialist IED team deployment

When engaging in any task where IEDs are anticipated, information shall be gathered about the hazards from all possible sources. When possible, this should be done by an LMAC approved NTS team using the standards given in NMAS 08.10. When the task is an emergency response or the LMAC determines that the NTS team may be at intolerable risk, the gathering of information may be conducted by a combined team of NTS members with a specialist IED team tasked with the IED clearance. When this occurs, the minimum sources of information are:

- any organization that has conducted similar tasks in any area where the same combatants have been active;
- local people who may have seen devices being placed or people acting suspiciously;
- anyone who has found an IED; and
- the survivors of any IED incidents in the area.

10.1 Pre-deployment Task Risk Assessment

Before entering the suspected IED area, the IA shall write a task risk assessment that justifies the approach that will be taken. Each task risk assessment shall determine whether there is reason to expect the IED(s) to be active and whether there is a command-detonation threat to the team as they work. If there is a command detonation threat from IEDs that may be active, the task shall not be conducted until that risk has been removed.

The assessment should consider the following, as a minimum:

- the time that has passed since the device(s) are likely to have been deployed;
- the possible continued presence of hostilities in the area;
- the types of initiation systems that may have been used;
- whether and when any people, animals or vehicles have been close to the suspected hazard;
- the types of main charge, munitions, raw explosives, improvised explosives, incendiaries, etc. that have been used in other devices placed by those who are suspected of having deployed these devices;

- the possible consequences of a detonation (blast radius, fragmentation, shaped charges, fire, launch of munitions, etc);
- the availability of any remotely controlled robot, machine or aerial camera system; and
- the availability of any wireless signal jamming equipment.

The Risk Assessment should be used to determine:

- the probability of there being a command detonation hazard;
- the distance between searchers that is appropriate;
- the appropriate approach to the area;
- the appropriate close-in approach to any suspected device located;
- the equipment that the IED team will need;
- the number of IED searchers that can search at the same time while maintaining safety distances; and
- any coordination that is needed with other public services such as the fire service and those responsible for any public utilities that may be affected by the work.

When the risk assessment identifies too many hazards to manage because of the condition of a damaged building or wrecked vehicles, it may be necessary for parts or all of the damaged building or obstructions be removed by machines before any manual search is conducted.

When an IED task risk assessment determines that there is a risk of a command detonation hazard targeting the team, the IED team shall not enter the area until the risk has been removed. When likely Firing Points from which a command detonated device may be initiated are inside the search area, the IED team should not enter the hazardous radius until the relevant security forces have searched the possible firing points and declared them safe.

An IED task risk assessment should allow for any additional hazards in the vicinity. Examples are damaged and unstable buildings that may collapse or fuel tanks that may be ignited if any detonations occur. Glass from windows overlooking a blast may be expected to fragment inwards. Glass from windows shielded from a large blast by being around a corner may be drawn outwards and cause a significant fragmentation hazard outside the building.

Depending on the anticipated remote initiation method, it may be possible to use wireless signal jammers or to otherwise disable a remote initiation capability. When the predictable risk of a command detonation cannot be removed, no member of the IED team shall enter the hazard radius for the IED.

If there is a possibility that a command detonation will occur, the LMAC may authorize the specialist IED team to work when equipped with appropriate remotely controlled tools that allow the device to be located and disrupted/destroyed from a safe distance.

10.2 IED Clearance plan

An IED Clearance plan based on the conclusions of the task risk assessment should be prepared by the IA and submitted to the LMAC operations section for approval before starting work at an IED task. When engaged in conventional demining Clearance plans are often similar from task to task. When searching for IEDs, the IED Clearance plan may have to be deliberately varied from task to task.

When a conflict is or may be ongoing, it is essential that deployments do not follow a set pattern. In the past, those placing these devices have sometimes placed dummy or 'easy' devices in order to observe what the response is and then design the next device to target those responding. To limit the potential for this occurring when conflict may be ongoing, the IED team management should ensure that routines are varied and that the public is kept out of sight of the team whenever possible.

All IEDs that are known to have been originally placed with a remote detonation system that is jammed or no longer considered viable should be presumed to have additional anti-disturbance initiation systems that may still be viable.

The IED Clearance plan should take account of the types of initiation systems anticipated. Any risk that the search procedures used will initiate the device should be considered in the IED task risk assessment and the appropriate safety distance enforced.

10.3 Deployment Liaison

When searching buildings, whenever possible the IA should liaise with the fire service to ensure that they are able to respond and ensure that any fires are promptly contained and controlled in a way that does not put those responding at risk from any remaining IED hazard. Liaison with other public services such as the electricity provider may also be appropriate to ensure that the consequences of any detonation are limited.

The IA's Liaison officer shall ensure that anyone who claims ownership of the land or buildings being searched understands that the IA cannot be held liable for any loss or damage incurred before, during or after the work is conducted.

11. Communications

Reliable communication between the IA's site supervisor and the IA's base should be in place during all times when work in the SHA is being conducted. During the search for IEDs, on-site communication using HF or VHF radios and mobile telephones may not be safe.

When this is the case, the IA shall equip and train its staff to use an alternative on-site communications system that has been approved by the LMAC.

12. Quality management during IED tasks

Conventional methods of conducting QA and QC during demining activities may not be possible during specialist IED search for safety reasons. Methods that may be used are described below.

12.1 Internal QA

Every person in a search team should be appropriately trained to conduct internal QA so that each can be used to conduct internal QA on another.

The area searched during each work period shall be recorded by the Team supervisor. This means that the person responsible for any anomaly found during the QC check will be readily identified.

12.2 Internal QC

After each working day, the specialist IED Team supervisor shall ensure that a QC check of the entire area worked by the team members under his/her control is made, randomly checking that every area has been appropriately searched and marked. If an anomaly is found, the entire area searched by that searcher during that work period shall be searched again by another searcher.

12.3 External QA

Whenever searching in areas where IEDs are anticipated, only one person at a time is allowed to be in the hazardous area during the search. External QA shall be limited to Quality Assurance checks of the equipment, documentation and command structure at the Control Point and visual assessments made from a safe distance, when possible.

12.4 External QC

Quality Control checks conducted by LMAC may be made immediately after an area has been declared safe. When the QC is conducted in a timely manner, the specialist IED Team supervisor should provide all possible assistance.

13. Reporting

All work conducted by the specialist IED teams shall be recorded and reported as required internally and as required by the LMAC. Reports shall be submitted on time. Whenever IEDs are found and it is safe to do so, a record of their type and composition should be made and submitted to the LMAC for future reference.

14. Roles and Responsibilities

14.1 Role of the LMAC

The LMAC shall:

- ensure that Specialist IED team data collection, analysis, and documentation satisfy quality requirements and the standards set in this NMAS and that the process is subject to QC oversight;
- assess SOPs for specialist IED tasks that are submitted for accreditation by IAs;
- accredit those IAs that submit appropriate SOPs to conduct specialist IED tasks;
- assess and approve specialist IED Clearance plans, as appropriate;
- use all available information to prepare and allocate specialist IED tasks;
- be proactive in monitoring the quality of specialist IED work and assessing any short-comings in the processes and procedures used, taking appropriate corrective actions as a priority;
- ensure the adequate involvement of local authorities and local communities in specialist IED tasks;
- ensure that 'all reasonable effort' has been expended before any land is released as a result of specialist IED team Clearance; and
- monitor land following release and respond with an appropriate review of the entire IED clearance process if any EO hazards are found.

14.2 Role of IAs

Before conducting any specialist IED task, the IA shall:

- obtain accreditation from the LMAC to conduct specialist IED tasks;
- train and equip specialist IED teams to work to the NMAS requirements when carrying out specialist IED tasks;
- ensure that IED task data collection, analysis, and documentation satisfy quality requirements and the standards set in this NMAS;
- provide comprehensive specialist IED task reports, including detailed maps, in the format required by the LMAC;
- support the LMAC's QC review of the quality of data collected and of the processes and procedures approved for specialist IED tasks;
- prepare an IED Clearance plan and obtain LMAC's approval for it before starting a task;
- ensure the appropriate involvement of local authorities and the local community during specialist IED tasks; and
- ensure that 'all reasonable effort' has been expended before declaring any land clear and recommending it for release.

The documents listed below constitute normative references and form an integral part of the provisions of this standard:

- Current LMAC and IMSMA reporting formats (request copies from the LMAC);
- NMAS 07.30 Guide for the Accreditation of Mine Action Organizations and Operations;
- NMAS 07.11 Guide for Land release;
- NMAS 12.10 Mine/ ERW Risk Education; and
- NMAS 04.10 Glossary of Mine Action Terms, Definitions, & Abbreviations used in the Second Edition of the NMAS.

NMAS 09.20, 1st Edition: Amendment Record

The NMAS are subject to a comprehensive or partial review by the Review Board periodically. Changes in the context as well as safety requirements and efficiency considerations may necessitate amendments to individual NMAS standards more frequently. If this occurs, such amendments shall be given a number, dated, and detailed in the table below. The amendment should also be indicated on the header under the NMAS edition number.

Whenever the formal review of the NMAS is completed, a new edition shall be issued. Amendments that have taken place before the review date shall be incorporated in the new edition and the amendment record table cleared. Consequently, the recording of amendments shall start again until the next review.

The most recent revisions of the NMAS shall be posted on the Lebanon Mine Action Center (LMAC) website on www.lebmac.org.

Number	Date	Amendment Details