United Nations Peacekeeping Missions Military Explosive Ordnance Disposal Unit Manual

Third edition
2025

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Preface

It is my distinct honour to introduce the newly revised *United Nations Peacekeeping Missions Military Explosive Ordnance Disposal Unit Manual*.

The complexities of modern conflict demand a unified and cohesive approach to dealing with explosive threats. This manual represents a critical step forward in harmonizing explosive ordnance disposal (EOD) and improvised explosive device disposal (IEDD) into a single, comprehensive document. By integrating these related disciplines, we ensure that our personnel are equipped with a holistic understanding and the best possible guidance to address the full spectrum of explosive hazards that they may encounter in United Nations peacekeeping operations.

This revision is especially important as it complements and builds upon the foundations laid by the simultaneously reviewed *United Nations Improvised Explosive Device Threat Mitigation Handbook*. Together, these documents provide a robust framework for addressing the multifaceted threats posed by explosive devices, reinforcing our commitment to operational excellence and the protection of our forces and the civilian populations we serve.

This review is a collaborative effort, bringing together the expertise of military professionals, field practitioners and technical experts from across Member States to the United Nations. I extend my deepest gratitude to everyone involved in this task. Your dedication and hard work have produced a manual that will undoubtedly serve as an indispensable resource for years to come.

We believe that the present manual will guide our EOD and IEDD units, ensuring that they operate with the highest standards of professionalism, safety and efficiency.

Lieutenant General Cheryl Pearce
Acting Military Adviser
Office of Military Affairs
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Stans, Switzerland – February 2024

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Purpose and rationale

The *United Nations Peacekeeping Missions Military Explosive Ordnance Disposal Unit Manual* serves as a comprehensive resource to aid troop-contributing countries (TCCs) in equipping their contingents for deployment to United Nations peacekeeping missions confronted with a conventional explosive ordnance (EO) or improvised explosive device threat.

The manual explains the different capacities of an explosive ordnance disposal (EOD) unit in terms of conventional munitions disposal and improvised explosive device disposal, as well as other specializations, and explains the specific requirements of the United Nations to enable dedicated planning and employment of the various capabilities and functions in support of a United Nations mission.

The manual does not address any military tactics, techniques and procedures. These remain the prerogative of individual Member States. For TCCs nominating EOD units, it is a requirement to adhere to the competencies stated in this manual.

Scope

The present manual is primarily written at the operational and tactical levels. It is based on United Nations guidance reflecting lessons learned, feedback from field missions and input from peacekeeping practitioners experienced in United Nations military EOD unit peacekeeping operations.

It serves as a reference for TCCs, commanders and their staff in the planning and deployment of EOD forces and the coordination of all tasks related to the disposal of EO. It complements the *United Nations Improvised Explosive Device Threat Mitigation Handbook* in the employment of specialists to neutralize explosive devices, as well as the flow of information to ensure consistent and complete reporting.

The manual also serves as a reference for United Nations planners developing the statement of unit requirements that, together with the memorandums of understanding between the United Nations and TCCs, will form the basis for a United Nations military EOD unit deployment.

History

The present manual replaces the second edition, *United Nations Peacekeeping Missions Military Explosive Ordnance Disposal (EOD) Unit Manual*, as well as the United Nations Improvised Explosive Device Disposal Standards (May 2018).

Reference

The present manual should be read in conjunction with relevant United Nations policies and other United Nations manuals, especially the United Nations Strategy on Counter Improvised Explosive Device (C-IED) for Peacekeeping Operations, the *United Nations Improvised Explosive Device Threat Mitigation Handbook*, the United Nations Peacekeeping Missions Military Engineer Unit Manual and the *United Nations Infantry Battalion Manual (UNIBAM).* This will provide a more comprehensive understanding of United Nations standards, policies and procedures related to EOD in support of peacekeeping operations.

All United Nations guidance documents referenced are available from:

- The Policy and Practice Database (for personnel in the United Nations system): https://unitednations.sharepoint.com/sites/PPDB
- The Peacekeeping Resource Hub: https://peacekeepingresourcehub.un.org

1. Employment concept for military explosive ordnance disposal units

United Nations explosive ordnance disposal (EOD) units are enabling forces designed to support the force and sector commanders to fulfil their mandates as safely as possible. EOD units can contain separate capabilities, depending on their deployment configuration, including conventional munitions disposal (CMD), improvised explosive device disposal (IEDD),[1] and chemical, biological, radiological and nuclear (CBRN) EOD components.

EOD units can deploy as an individual unit and be tasked by the force headquarters to serve a general area (i.e. sector support), a dedicated unit or mission-specific support.

EOD units may also deploy as a dedicated and organic enabler in support of a larger force (e.g. an infantry, engineer, or combat transport formation/unit), for example serving as route clearance for patrols and convoys. Generally, such EOD forces will be solely dedicated to that contingent, supporting only their specific missions.

EOD forces are most appropriately used in two separate methods: as a quick-response force, held at forward operating bases waiting for units in an area (e.g. a sector) to locate an explosive hazard, or embedded within their parental units (e.g. infantry, transport) to enable faster response times and reduce tasking lead times. Infantry battalions should ideally be deployed with sufficient strength of embedded EOD teams to be able to support all given tasks organically.

EOD units are also sources of advice and should be relied upon by the sector and force leadership for mobility planning, force protection and to a limited extent with regard to electronic warfare/electronic countermeasures (ECMs) concerning radio-controlled improvised explosive devices (IEDs), explosive ordnance (EO) evidence collection and exploitation, host-nation support, local population engagement and explosive hazard awareness training.

IEDD in particular, but EOD overall, contributes to counter-improvised explosive devices (C-IEDs). The modern United Nations C-IED approach is a holistic application of the three pillars: prepare the force to operate in a respective threat environment, defeat the device and degrade the network. The three pillars characterize a collective effort to defeat an IED system. In the context of United Nations missions, the term IED threat mitigation is preferred to C-IED, given the specificity of the military concept of the term, which is not comprehensive enough to a United Nations approach.[2]

CMD, IEDD and CBRN EOD provide different knowledge, skill set, equipment, planning and support. Requesting an IEDD capability where CMD would suffice might prevent this unit from being emplaced

1 IEDD is defined as the location, identification, rendering safe and final disposal of improvised explosive devices. Final disposal refers to the final elimination of explosive ordnance hazards by EOD personnel. This may include demolition, neutralization, burning or other proper means. In some cases, the render-safe procedure (RSP) is the final disposal.

2 See *United Nations Improvised Explosive Device Threat Mitigation Handbook*.

where it is more needed; requesting a CMD capability where IEDD is needed is dangerous, as it exposes the unit to a threat they are not trained or equipped to handle. Statements of unit requirements must clearly articulate the explosive mitigation capability required for the mission.

The requirement for deploying an EOD unit depends on the threat assessment for the specific mission environment, taking into consideration EOs assessed to have been used previously in an area of operation, as well as actual or potential future perpetrator capabilities. The required unit structure, strength and equipment, along with the required EOD operator's training and competencies, will depend on the mission mandate, troop ceiling, tasks and rules of engagement. These criteria directly influence the EOD force configuration.

1.1. Explosive ordnance disposal terminology

For a common understanding and use of language regarding EOD in the United Nations, some terms and common philosophy should be defined.

The main reference is the internationally recognized International Mine Action Standards (IMAS), which defines technical standards appropriate to the force generation of any EOD unit, in addition to other numerous definitions.[3]

Moreover, the *United Nations Improvised Explosive Device Threat Mitigation Handbook* provides a detailed lexicon regarding all aspects of IEDs.

Explosive ordnance is considered all munitions containing explosives, nuclear fission or fusion materials, as well as biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket and small arms ammunition; all mines, torpedoes and depth charges; pyrotechnics; clusters and dispensers; cartridge and propellant actuated devices; electro-explosive devices; clandestine devices[4] and IEDs[5]; and all similar or related items or components explosive in nature.[6]

According to IMAS,[7] EO is interpreted as encompassing response to the following munitions:

- Mines
- Cluster munitions
- Unexploded explosive ordnances (UXOs)[8]

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3 See www.mineactionstandards.org.

4 Clandestine devices are EO items that are specifically designed for concealed emplacement or appear like an innocuous item which functions when a person carries out an apparently harmless act. They utilize anti-handling devices or other conventional firing mechanisms in conjunction with a conventional initiator and main charge. In the past, the term military booby trap has been used in reference to clandestine devices.

5 A device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic or incendiary chemicals and designed to destroy, incapacitate, harass or distract. It may incorporate military stores, but is normally devised from non-military components.

6 Other definitions include demolition charges.

7 See IMAS 04.10, second edition, 1 January 2003, amendment 7, August 2014, Glossary of Mine Action.

8 EO that has been primed, fused, armed or otherwise prepared for action, and which has been fired, dropped, launched, projected or placed in such a manner as to constitute a hazard to operations, installations, personnel or material and remains unexploded either by malfunction or design or for any other cause.

- Abandoned explosive ordnances (AXOs)
- Booby traps[9]
- Other devices (as defined by the Convention on Certain Conventional Weapons, Amended Protocol II)
- IEDs[10]

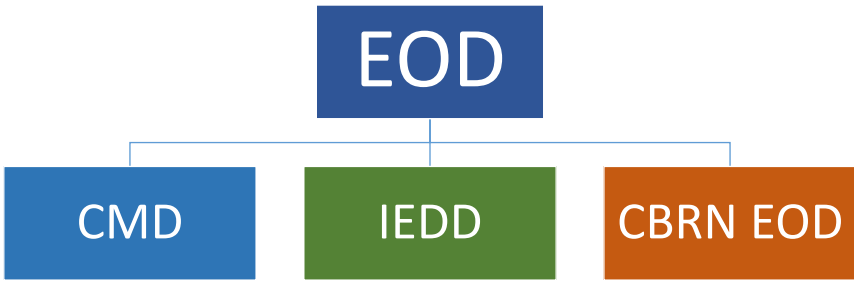
The term EOD includes the procedures of detection, location, access, identification,[11] evaluation, hazard mitigation, rendering safe,[12] recording and recovery, and final disposal of EO or any hazardous material associated with an EOD incident.

IEDD refers to the EOD procedures intended to result in the final neutralization of an IED, including detection, location, access, identification, evaluation, hazard mitigation, rendering safe, component recording and recovery, as well as final disposal.

IEDD teams are EOD teams that have additional advanced training. The decision to deploy EOD assets is typically based on, though not limited to, the following conditions:

- There is a direct and imminent threat to civilians.
- There is a direct and imminent threat to life of United Nations personnel or to United Nations installations.
- The threat may hinder the accomplishment of any current or future United Nations task or limit the freedom of movement of United Nations personnel.

Figure 1.1.
Three branches of explosive ordnance disposal



9 Any device or material that is designed, constructed or adapted to kill or injure, and which functions unexpectedly when a person disturbs or approaches an apparently harmless object or performs an apparently safe act. This can be: 1. Conventional anti-handling devices that can be used in association with mines or as clandestine devices; 2. IEDs that utilize a victim-operated firing switch, more commonly referred to as victim-operated IED. From an EOD perspective, there is a difference between an anti-handling device, which has a level of quality assurance associated with its manufacture, and the switch used in a victim-operated IED, which owing to the improvised nature of the device or parts thereof has a lower certainty of reliability in construction and method of function. For this reason, booby trap is taken as a non-technical generic term, with the terms of anti-handling device and victim-operated IED the preferred technical terms. Not all persons qualified to dispose or render safe military anti-handling devices are IEDD qualified, which is a requirement to be qualified to dispose of or render safe victim-operated IEDs.

10 IEDs that meet 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.

11 Some EOD definitions have identification and evaluation procedures under the combined heading of diagnosis.

12 Those courses or modes of action taken by EOD personnel on items of EO that cause such items to be placed in a state of tolerable risk unlikely to cause harm, injury or damage, through the application of special EOD methods and tools to provide for the interruption of functions or separation of essential components, thus preventing an unacceptable initiation.

CBRN EOD is the third branch of EOD. It is the collective term referring to the following advanced EOD procedures intended to result in the final elimination of both conventional or improvised chemical, biological and radiological weapons/agents associated with EO, including detection, location, access, identification, evaluation, hazard mitigation, rendering safe, component recording and recovery, final disposal, and area demarcation, when necessary.[13]

Disposal of CBRN EO is a task undertaken only by CBRN-trained EOD operators. Render-safe procedures (RSPs)[14] of CBRN EO are extraordinary complex procedures which will often require/involve a high degree of coordination with supporting assets (e.g. decontamination teams).

Underwater EOD is a term designating the special techniques and equipment needed to locate, identify and conduct neutralization or disposal of underwater EO.

Typically, underwater EOD is only required in a maritime theatre of operations. However, even in an exclusively land-based operation, this can become a requirement if the area of operation includes rivers and lakes that are used for the transportation of people and goods and are therefore potential targets for the employment of EO.

Owing to climate change and severe weather phenomena, this capacity might also be required. For example, if conditions led to prolonged large-scale flooding, during which an EO migrates as an underwater object, thereby endangering the safety of peacekeepers and civilians.

Only highly specialized EOD divers employing specialized underwater procedures, including specialized diving equipment, can locate, identify and conduct final disposal of underwater EO.

NOTE: Basic trained divers may be used to perform underwater location and identification. However, only trained EOD divers are permitted to perform underwater RSPs and underwater demolition.

All types of EO, including improvised CBRN EO, can be found in water, both on the surface and underwater (e.g. in the open sea, harbours, ship's hull, channels, inland lakes and rivers). To locate, identify and dispose of these types of EO, special types of diving techniques and equipment (e.g. low acoustic and magnetic signature) are required. These techniques and equipment will differ, depending on the type of ordnance expected to be present or found underwater.

The nine EOD procedures that can form part of any EOD incident are defined as follows:

- **Detection procedures**
  Those actions taken to discover the presence of an item or substance of potential EO significance.
- **Location procedures**
  Those actions within an EOD task that result in determining the presence and position of an item of EO.

13 See the latest version of IMAS Test and Evaluation Protocols 09.30/01/2022 (Conventional Explosive Ordnance Disposal (EOD) Competency Standards) and 09.31/01/2019, amendment 1, February 2022 (Improvised Explosive Device Disposal (IEDD) Competency Standards).

14 The portion of the EOD actions involving the application of special EOD methods and tools to provide for the interruption of functions or separation of essential components of EO to prevent an unacceptable initiation. RSPs are incorporated in the execution of the devised outline plan developed as a result of the task appreciation and threat assessment for the EOD task faced by an operator, in line with the philosophy and principles of EOD.

- **Access procedures**
  Those actions taken to facilitate freedom of movement to the location of an item of EO necessary for subsequent EOD procedures.
- **Identification procedures**
  Those actions taken to establish the make-up and characteristics of an item of EO.
- **Evaluation procedures**
  Those actions taken to analyse the results obtained from EOD identification procedures to assess the mode of action or initiation the EO has and the associated hazards it presents to the locality or environment in which it has been found.
- **Hazard mitigation**
  Application of control measures intended to reduce the likelihood of the initiation of an item of EO and/or the consequences of such an initiation.
- **RSPs**
  The actions taken on items of EO, which cause such items to be placed in a state of tolerable risk unlikely to cause harm, injury or damage, through the application of special EOD methods and tools to provide for the interruption of functions or separation of essential components, thus preventing an unacceptable initiation.
- **Recording and recovery procedures**
  Those actions taken to document and retrieve items of EO or components thereof that are in an acceptable state of safety. These procedures include the reporting of EOD incidents.
- **Final disposal procedures**
  Those actions within EOD, which include demolition, neutralization, burning or other appropriate means that result in the elimination (complete destruction) of EO hazards. In some cases, the RSP is the final disposal.

CMD refers to any operation, including detection, location, access, identification, evaluation, hazard mitigation, rendering safe, component recording and recovery, and final disposal conducted on ammunition that is used as a conventional weapon. CMD activities may occur as follows:

- As part of mine-clearance operations, upon discovery of explosive remnants of war (ERW).[15]
- To dispose of ERW discovered outside hazardous areas (this may be a single item of ERW or a larger number inside a specified area).[16]
- To dispose of items of conventional ordnance that have become hazardous by deterioration, damage or attempted destruction.

1.2. Explosive ordnance disposal philosophy

EOD teams are guided by a common philosophy, which includes the following:

15 ERW refers to UXOs and AXOs.

16 Within such ERW disposal activities, individual items can be disposed of as they are found or turned in for disposal, in what may be called spot tasks or the disposal of stray ammunition in some nations. There are also larger-scale ERW disposal operations referred to as battlefield area clearance, which is defined as the systematic and controlled clearance of hazardous areas where the hazards are known not to include mines.

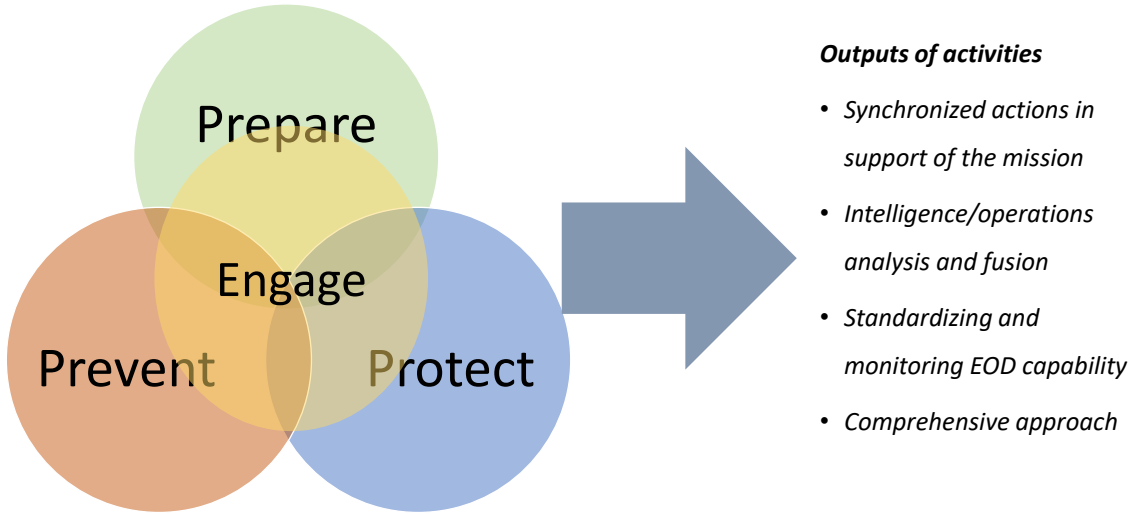
- **Preservation of life.** The safeguarding of human life takes precedence over all else. While this includes the lives of EOD personnel, there will be incidents where the safety of other United Nations personnel and civilians must take precedence over the safety of EOD personnel.
- **Preservation of property.** Property preservation is in keeping with the aim of preventing an item of EO causing damage or perpetrators utilizing IEDs to achieve their aim.
- **Removal of threat.** Removing the threat posed by an item of EO is the main purpose of EOD.
- **Collection, recording and recovery of evidence, including EO components.** The collection of biometrics in general, and EO components in particular, with the aim of supporting the development of a collective understanding of threat networks and tactics, techniques and procedures (TTPs) in the area of operation.
- **Return to normality.** All EOD TTPs must restore the situation to normality as soon as possible, commensurate with safety. This must be achieved where possible using TTPs that cause minimal damage. In unusual circumstances, it may be necessary to use TTPs that quickly clear the threat, but which may cause significant damage (e.g. in periods of prolonged or intense IED activity). In such circumstances, a rapid clearance may cause damage to property, but these are offset by a reduced disruption in United Nations operations due to EO.

The prioritization of the five parts of the EOD philosophy depends on the key operational actions defined by the Head of Military Component. In any case, preservation of life is always the priority in all EOD activities.

1.3. Explosive ordnance disposal lines of operation

Aligned to the philosophy, the activities of EOD units are oriented to four interrelated lines of operation (LOOs) (see figure 1.2).

Figure 1.2.
Output activities of explosive ordnance disposal units oriented to the four lines of operation



The first is to **prepare** United Nations civilian and uniformed personnel (military and police) to operate in explosive threat environments. General awareness will help to identify and communicate visible indicators, enhance the early detection of devices and minimize exposure of personnel to the threat. Specific peacekeeping-intelligence gathered in the area of operation will guide specialist actions to render safe devices to counter the EO threat or mitigate the effects of an incident.

The second is to **prevent** the use of explosive threat by facilitating the identification and subsequent disruption of threat networks and their ability to construct and employ explosive devices. Knowledge of technical exploitation techniques for recording and recovery of evidence by EOD teams provides technical information and peacekeeping-intelligence on the capabilities and trends of perpetrators.[17] It further supports future operational planning and resource allocation. For responsible custody and sharing of the evidence, coordination with civilian authorities, police forces and host-nation intelligence agencies is critical.

The third is to **protect** by detecting and rendering safe EO threats and mitigate their effects. This LOO requires optimization and integration of suitable technological solutions, which include:

- Surveillance of assets for information collection.
- Technical information resources to enable trend and pattern analysis.
- Qualified and well-equipped search and disposal teams.
- Support elements such as force protection and medical assets.

The fourth is to **engage** with stakeholders and partners under a comprehensive approach, to develop their capabilities to counter the explosive threat. Close coordination with host-nation security forces is essential to raise their level of expertise, in line with the mandated mission. Within the general scope of United Nations peacekeeping missions, the host nation must be prepared to take responsibility for countering this threat, upon mission closure.

Executing tasks to defeat the EO threat in accordance with the four LOOs, EOD units make an integral contribution to the implementation of a United Nations mission's mandate and provide direct support to enhance operational effectiveness[18] and efficiency[19] by:

- Ensuring freedom of movement in the area of operation by eliminating restrictions in the form of conventional ammunition or IEDs.
- Providing force protection to United Nations and other mission partners and thus increasing the protection and safety of personnel.
- Increasing safety for the local community, hence contributing to the mandate for the protection of civilians.
- Increasing the confidence and effectiveness of United Nations troops.
- Contributing to stabilization initiatives as part of post-conflict or emerging societies, through the removal of EO threats, which can impact social, economic and political development.

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17 In this manual, a perpetrator is defined as any persons, groups or organizations that have the intent and/or capacity to inflict or threaten physical violence through the use or threatened use of IEDs. The affected persons are the victims.

18 A quality of a system, process of action that achieves a desired outcome or end state.

19 A quality of a system, process of action that achieves a desired outcome or end state within acceptable time, financial, personnel and other resource constraints.

- Contributing to the degradation of IED networks by producing EOD reports and recovering IED components, including the use of basic biometrics exploitation techniques.

1.4. Explosive ordnance disposal tactics, techniques and procedures

Since the TTPs of EOD units are of sensitive security classification, such details are not provided in this manual, as the information can be exploited by those who employ IEDs to counter these techniques and procedures and utilize such knowledge to design IEDs that will target peacekeepers and EOD personnel. Troop-contributing countries (TCCs) should not be required to alter/amend their EOD TTPs for a deployment to a United Nations mission, but may have to consider this step according to the situation in the area of operation. For these reasons, exact EOD TTPs to be used are at the discretion of TCCs providing EOD capabilities to United Nations missions, with the caveat that they must be:

- Effective and efficient, and leading to the rendering safe of items of EO.
- In line with the mission mandate.
- In line with the EOD philosophy and principles.

While EOD TTPs are a national responsibility, TCCs within a United Nations mission are encouraged to share best practices and lessons learned to the benefit of all mission EOD personnel.

In addition to the EOD philosophy, all EOD tasks and operations should apply the underlisted EOD principles. These principles are derived from the EOD philosophy and are to be observed in all EOD operations and tasks.

EOD principles:

- The preferred RSP should utilize remote means.
- The operator shall be exposed to an EO item for the shortest time possible.
- Mandatory safe waiting periods shall be observed.[20]
- Operations shall be planned.
- In IEDD, the preferred RSP should utilize remote neutralization through disruption.
- The operator shall revert to remote means whenever possible.

1.5. Command and Control

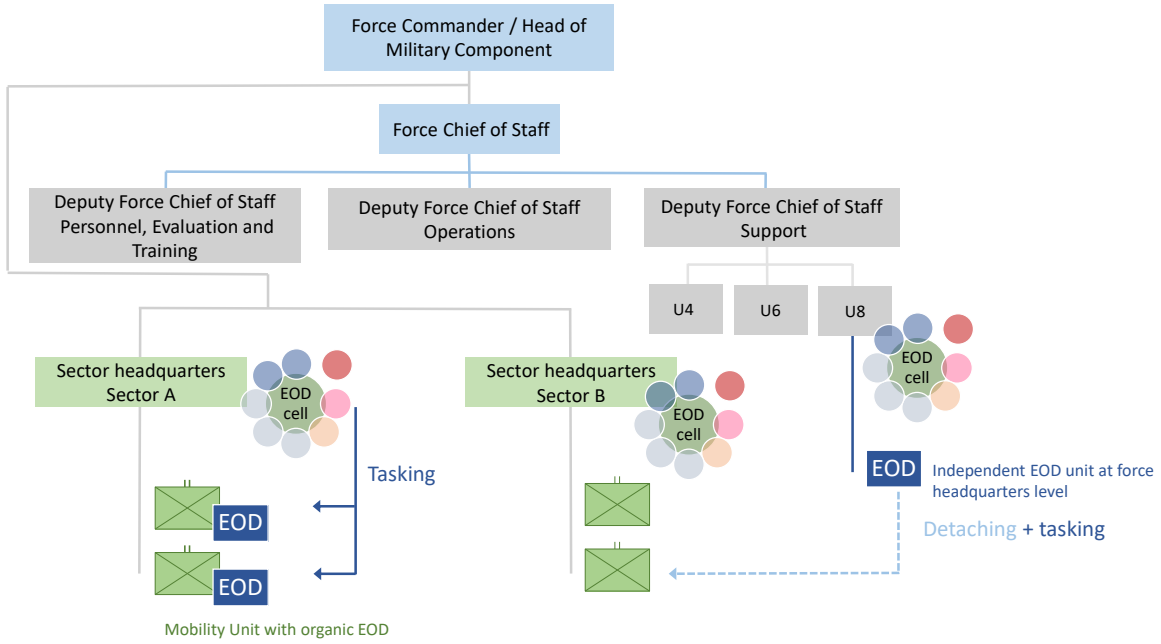
Agreement on the importance of efficient and effective Command and Control (C2) structures prior to the deployment of EOD units to a United Nations mission is essential. This ensures that timely and swift actions are taken to minimize the disruptive effects that EO can have on operations. Based on the mission analysis, the Force Commander defines the best C2 necessary for operational success.

In general, the C2 that is to be implemented in relation to a United Nations EOD unit needs to be articulated in the TCC status-of-forces agreement, signed by the United Nations, and in line with the mission mandate. However, in this first case, the unit at the force headquarters level may be tasked with

20 Safe waiting periods are waiting times that an EOD operator must allow to elapse, following positive EOD action, prior to making a manual approach. The times are mandatory and cover both the primary and secondary safe waiting periods. **Note**: the term "soak times" is used in some TCC EOD communities to refer to safe waiting periods.

supporting a specific sector or unit for operational purposes (e.g. a specific operation or due to a high threat level in a specific area), upon request or by Force Commander decision.

Figure 1.3.
Detachment or attachment of explosive ordnance disposal units and tasking



Equally, units organic to a larger force can be requested from the higher echelons to support a specific mission or unit. Appropriate command relationships must be adhered to.

For any detachment or attachment, the transfer of authority must be detailed and agreed upon by all entities involved, corresponding orders to be given and issued by the force headquarters.

Subsequently, orders must be issued defining the C2 structure, as well as the task and the relationship of the supported and supporting commander. This is especially important if EOD units, not organic to a larger force, are detached or tasked in the event of an EO incident to support another unit.

Furthermore, the relationship between EOD units, supported units, force protection units, as well as search teams (e.g. all arms search teams) and possible other assets (e.g. ECMs), must be defined.

EOD units may, on some occasions, have counter radio-controlled IED electronic warfare (CREW),[21] or ECM assets and search teams organic to them within the established C2.

In general, the commander of the supported larger force commands and controls the situation up to the moment where there is suspicion of a possible EO incident or the actual occurrence of such.

A common approach to these C2 issues during an EOD task is to establish an incident control point by the Incident Commander, in the best possible location according to the tactical situation on the ground. Typically, the tactical commander of the unit providing force protection is the Incident Commander and

21 Some references utilize the term “remote-controlled”.

executes C2 over all forces involved in the EO incident. The Incident Commander will coordinate the operation with advice from the EOD unit commander/team leader and other supporting capabilities.

In the event that the search team is part of the larger force supported by an EOD unit, the search team leader will lead until the moment of finding an actual EO.

If the EOD units have organic search assets, the EOD unit commander/team leader controls the search as well as the following actions.

CREW teams/units should be directed by the Incident Commander in close coordination with the EOD unit commander/team leader, as the employment of their equipment depends on the situational analysis on the ground.[22]

Upon completion of the EOD task, the C2 reverts to the situation before the incident and the commander continues with the given task.

Furthermore, the Force/Sector Commander must nominate a suitably qualified focal point[23] to oversee and coordinate all EOD activities and act as the commander's technical adviser and support for related EO issues. The focal point's tasks include the following:

- Provide leadership, direction and coordination for EOD-related activities within all staff branches.
- Coordinate EOD-related input into routine reporting.
- Contribute to planning and mission orders as required.
- Establish and manage guidelines on pre-initiation and blowing-in-place of EO.
- Support the planning of C-IED operations and activities.
- Assess and evaluate friendly forces and host-nation movement TTPs in support of friendly forces' freedom of movement.
- Provide general direction for the prioritization of EO-related information gathering opportunities with tactical operations.

1.6. Explosive ordnance disposal cell – staff integration and tasking authority

There are several possibilities to integrate EOD expertise and knowledge into a United Nations force headquarters/sector headquarters, thereby ensuring the capability is considered, tasked and coordinated appropriately. The *United Nations Deployed Military Field Headquarters Handbook* specifies that EOD can be integrated into the Operations Support Section.

The *Handbook* further details the possibility of operational cells. It is recommended that a separate EOD cell be established. An EOD cell is the designated entity that provides operational control, planning and administrative services related to EOD operations for assigned EOD units in a designated geographical area of responsibility, whether they are an organic part of a larger force or independent units at the force headquarters or sector headquarters level.

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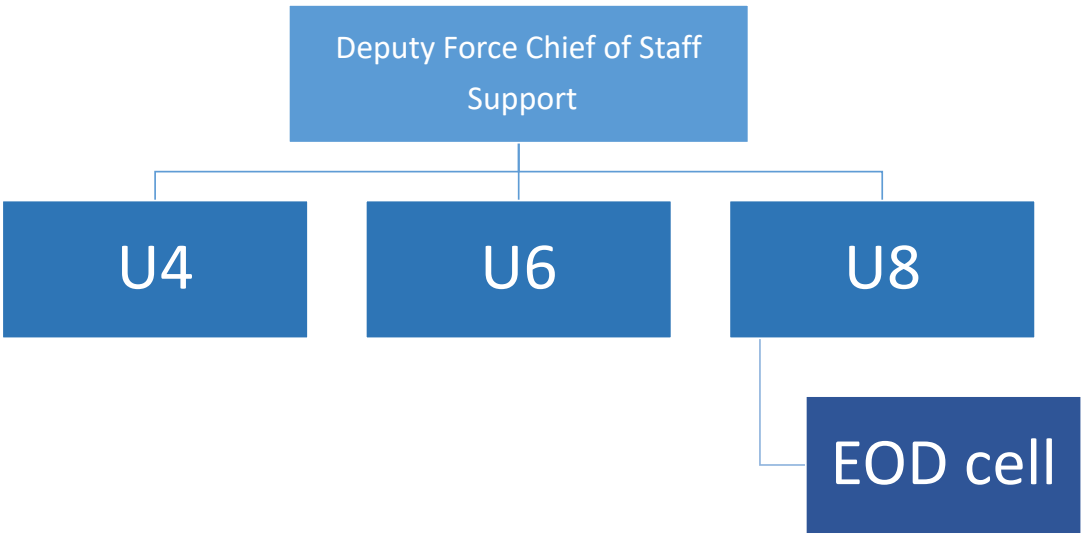
22 It is possible to attach CREW and search assets where they are not organic to an EOD unit. In such cases, they would be in support of EOD units, and the C2 relationship must be clearly outlined.

23 May be an individual who is part of an EOD coordination cell or a stand-alone focal point. In either case, they may be responsible for EOD and/or EO/IED threat mitigation.

Figure 1.4.
Staff integration and explosive ordnance disposal cell



The *United Nations Deployed Military Field Headquarters Handbook* further specifies the following responsibilities for the EOD cell:

- Advise the chain of command on EOD matters.
- Assess mine, IED and other EO threats and develop counter EO/IED standard operating procedures (SOPs) and measures (with the Mine Action Service of the United Nations, if deployed).
- Plan, coordinate, implement and monitor EOD, IED threat mitigation and demining tasks under military domain.
- Establish and operate an EO incident reporting system.
- Coordinate, liaise and assist mission EOD/demining resources and other United Nations partners in the planning of EOD and demining operations.
- Take responsibility for coordinating the detection, identification, recovery, evaluation and final disposal of EO to include IEDs.
- Coordinate requirements for EOD support (of EOD units in the mission, if applicable) with requesting units and other United Nations partners.
- Monitor the supply status of special EOD tools, equipment and demolition materials (and organize, in conjunction with the Logistics Branch (U4) and the Mission Support Division the replenishment of expendable items to keep the EOD forces operational).
- Provide CBRN advice, if necessary, to the Head of Military Component/Force Commander, with the assessment of the CBRN specialist, if the situation in the area of operation requires.
- Coordinate explosive hazards awareness training for the military component and EO/IED risk education for the local population (in coordination with the Mine Action Service of the United Nations if in situ).

The EOD cell is required to establish and maintain direct links to the Intelligence Branch (U2), the Operations Branch (U3), the Planning Branch (U5) and the Training and Education Branch (U7), as well as possibly the Civil-Military Cooperation Branch (U9), to ensure the integration of information including on EOD unit(s) employment.

The EOD cell is the force tasking authority for all EOD tasks, receiving notification of an EOD or IED incident and completed incident reports from all EOD units in their area of responsibility, subsequently providing respective tasking and control of disposal operations.

The scale and size of the EOD cell is flexible. It could be one person or a grouping of EOD qualified personnel, depending on the mission mandate, level of threat and frequency of incidents. For a cell of more than one person, a cell chief must be sourced/appointed to ensure coordination within the cell.

This structure can be replicated on the subordinate levels (e.g. sector headquarters), if the operational situation requires enhanced representation and coordination.

In a mission with no EO threat, it may be possible to staff an EOD cell with only one staff officer to provide as a minimum the advisory function for the Head of Military Component. According to the *United Nations Improvised Explosive Device Threat Mitigation Handbook*, this staff officer can be dual-hatted to also perform the task of the IED threat mitigation adviser.

However, in any mission with even only a low threat, it is advisable to supplement the EOD staff officer with a staff assistant, to ensure receipt of reports and that corresponding taskings are supported 24/7, in shifts.

With an increasing threat and frequency of EO incidents, it is recommended to strengthen the cell accordingly (e.g. by adding the following personnel):

- EOD information manager (staff officer/staff assistant), who assumes responsibility for reports and returns, as well as documentation of incidents in databases.
- EOD technician (staff officer/staff assistant), who assumes responsibility for monitoring exploitation by assessing the reports and providing recommendations for EOD units.
- EOD liaison staff officer to headquarters, who focuses on representing the EOD cell at the headquarters level, providing subject matter expertise, exchanging information with other staff departments, assisting in the drafting of orders and representing the EOD cell in various working groups.

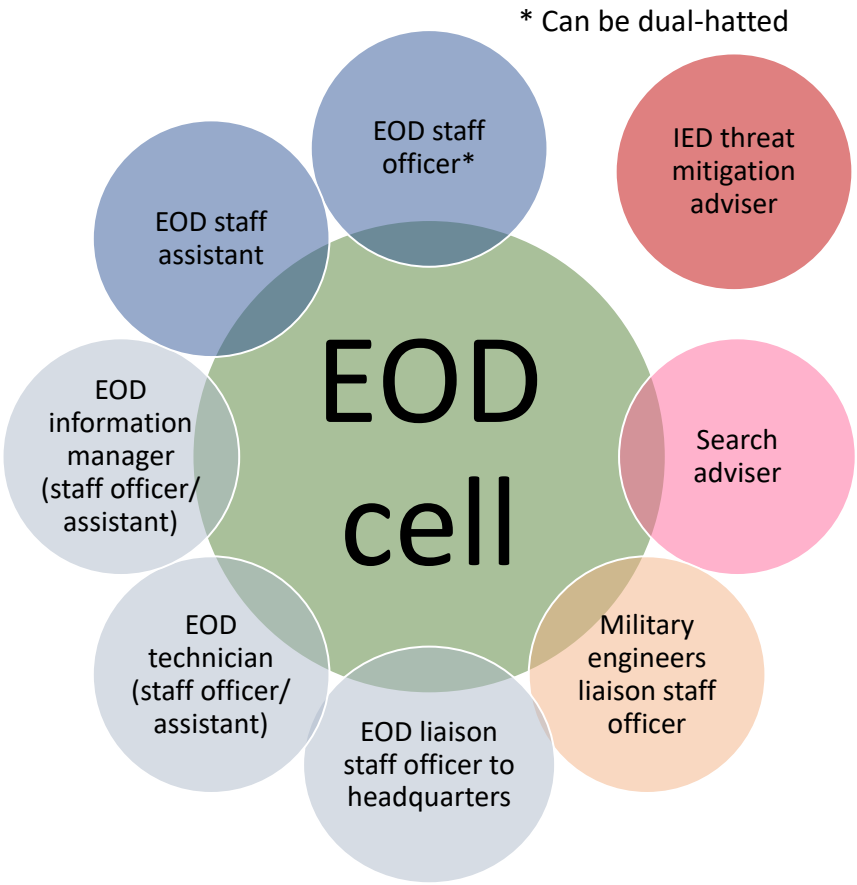
Furthermore, it may be advisable to consider the integration of a liaison staff officer of the military engineers to enable good coordination of, for example, road clearance packages.

It is also recommended to integrate a search adviser into the EOD cell where an IED threat exists.

Whichever structure is adopted for EOD integration into the force headquarters/sector headquarters, it is necessary to designate the roles of the EOD cell for EOD tasking purposes and the relationship this cell has with the associated U3 branch of headquarters. It is a force asset that requires particular close cooperation with the U3 branch. Therefore, an EOD cell should ideally be co-located with the operations centre. In any case, U3 should play an active role in coordinating with the EOD cell the management of EOD tasks, informed by intelligence (U2) and directed in accordance with the Force Commander's intent and priorities. Capabilities must be controlled at the highest level and coordinated at the lowest practical level.

Tasking may originate with other members of the United Nations force, the mission's civilian component or local authorities who submit their requests for EOD assistance to the United Nations mission. The chain of command is responsible for ensuring that EOD teams are tasked in accordance with United Nations mission SOPs. Operations should be reassessed if the required tactical support is unavailable or cannot be provided.

Figure 1.5.
Staff integration and explosive ordnance disposal cell



1.7. Explosive ordnance/improvised explosive device threat mitigation working group

Depending on the local situation, the threat and the force composition, the Force Commander may decide to provide directions for establishing an EO/C-IED working group, which includes representation from the EOD cell, headquarters branches (operations, intelligence, engineering, support) and special advisers (legal, political, police).[24] If considered relevant or as the situation requires, it may also include external representatives, such as host-nation security forces and relevant partners and agencies present in the area of operation.

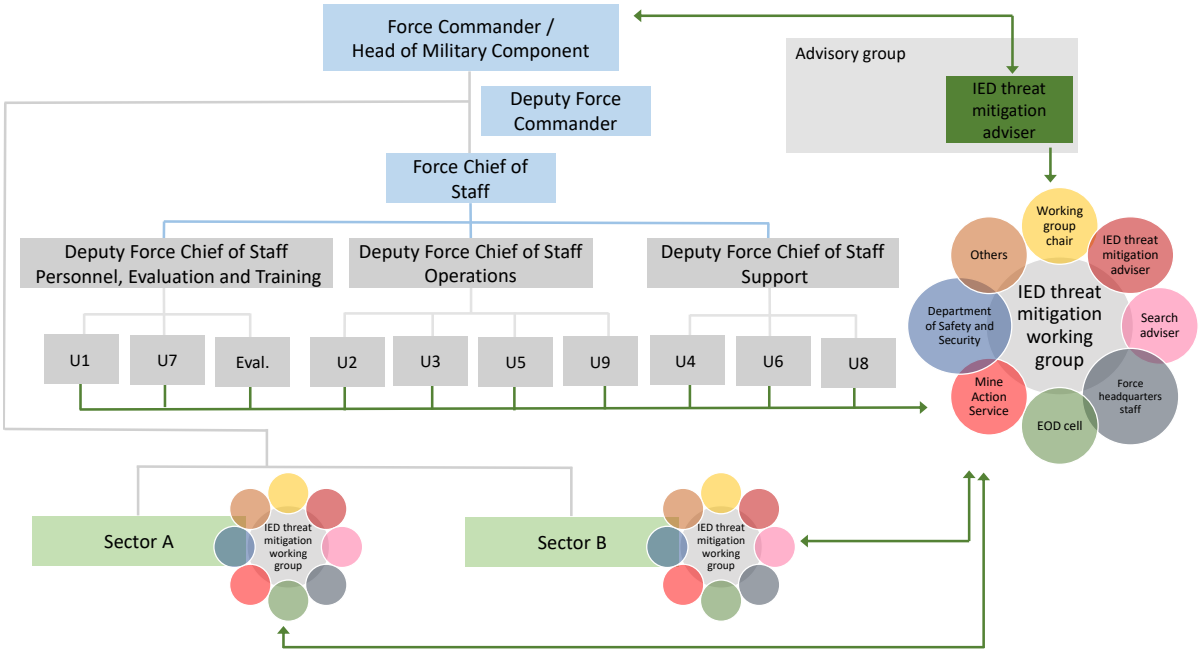
The mandate of this working group is to address the EO threats, their networks and their TTPs, using friendly capabilities (within identified limitations), lessons learned both technical (recording and recovery of EO components) and tactical from incidents, and any other explosive device-related issues that may impact operations, mission mandate execution or the security of United Nations personnel

24 See *United Nations Improvised Explosive Device Threat Mitigation Handbook*.

and civilians. Working group meetings enable the exchange of information and generate informed recommendations for the commander's decision on mission priorities and future actions.

While the EOD cell coordinates and documents the day-to-day operations of EOD teams and hence assumes more the role of U3, an EO/IED threat mitigation working group focuses on the exchange of information regarding IED incidents, trends, TTPs (own and the perpetrator's), and provides more of a U5/U7 function. The findings of the EOD cell must therefore be considered accordingly in the EO/IED threat mitigation working group and, conversely, the recommendations of the EO/IED threat mitigation working group must be implemented by the EOD cell.

Figure 1.6.
Improvised explosive device threat mitigation working group and explosive ordnance disposal cell



2. Capabilities and tasks of explosive ordnance disposal units

The use of the terms EOD, CMD and IEDD supports a common operational language and understanding, but also serves to define the level of EOD capability required for a specific peacekeeping operation. It is mandatory to analyse and define the threat in the area of operation, if possible, differentiated between conventional munition, such as UXO or ERW, and IEDs that need to be mitigated against to define the EOD capability required.

EOD is an operational enabling function contributing to freedom of movement and force protection. To support and advise the commander on EOD-related matters (including the rendering safe of IEDs), EOD structures are integral to the United Nations military component.

In addition to freedom of movement and force protection, EOD significantly contributes to the protection of civilians[25] and child protection.[26] The deployment and use of EO profoundly impact the daily lives of the civilian population in the area of operation. The Secretary-General's reports on children and armed conflict consistently called upon all parties to conflict to engage in EO clearance, risk education and victim assistance.[27] EOD units support these efforts within the constraints of their capacities and areas of deployment and should be employed accordingly.

EOD elements are always in high demand, and there is nearly always a shortage of trained personnel. Additionally, there is a high level of risk to such personnel. Consequently, they are normally coordinated directly by headquarters and work prioritized accordingly. EOD units are in direct support of military operations and thus come under the direct tasking authority of the Head of Military Component/Force Commander, which in turn is provided by the EOD cell.

EOD units require the capability to deploy military personnel and equipment on short notice to operate into semi-permissive[28] and non-permissive environments.[29] Hence, EOD units should have dedicated force protection supporting them while executing their EOD tasks.

This force protection capability can be either a force protection element, which is organic to the EOD unit, or an element that is assigned for a specific operation to provide the required protection.

As they can be assigned to support any other entity within the area of operation, they are required to be equipped to communicate via portable means with other units, as well as with the higher echelons (e.g. via very high frequency and high frequency transmission) to ensure proper liaison and reporting. Further consideration on support for United Nations military EOD units is provided in this manual.

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25 See the Policy on the Protection of Civilians in United Nations Peacekeeping.

26 See Security Council resolution 1261 (1999) and 1379 (2001).

27 See report of the Secretary-General on children and armed conflict (A/78/842-S/2024/384), paragraph 337.

28 Semi-permissive refers to operations in a potentially hostile environment where support from the local population cannot be depended upon.

29 Non-permissive refers to a hostile environment where both adversaries and unsupportive local population pose a continuous threat.

Such requirement needs to be determined in the planning phase of a mission and agreed with the TCC of the EOD unit.

The core capabilities of an EOD unit include:

- CMD activities
- IEDD activities
- Support to mission partners

The modern approach to operations is comprehensive in nature, which is often required in C-IED activities, or wider ERW clearance operations. In this regard, other arms and capabilities are often deployed in conjunction with EOD assets on operations such as force protection, search teams and CREW assets.

The deployment of search assets, along with and in support of EOD units, is the most common. Search assets work in close cooperation with EOD assets to assist in the detection and location of IEDs, its components and IED paraphernalia.[30] They can be combined in a composite unit, or they can be task-organized from different units and brought together for a given operation or task.

Included in these considerations of search and EOD unit interactions is the use of military working dogs, such as explosive detection dogs, which complement search assets.

In general, EOD units can be tasked with undertaking the following:

- Executing EOD activity as directed, by the appropriate tasking authority.
- Carrying out reconnaissance, identification, field evaluation, rendering safe, neutralization, recovery and disposal of EO, including IEDs.
- Responding to, identifying, rendering safe and disposal of EO[31] that threaten or impede freedom of movement. This also includes destroying captured EO, as well as assisting in the disposal of unserviceable EO. This is a highly hazardous type of operation and one that must be considered carefully during the mission planning phase, as the generation of this capability is not one that can be done easily owing to its specialized nature.
- Supporting the recording and collection of EO components.
- Providing immediate EOD reports to the EOD cell after a completed operation or task and preparing a complete report including pictures/sketches and location with accurate grid coordinates.
- Assisting commanders with force protection planning and execution; reviewing force protection plans and EO threat/military search procedures; assisting in facility site surveys; and developing/implementing emergency response plans and force protection plans.
- Providing technical advice and assistance for route clearance, military search, deliberate area clearance, and minefield activities involving a known/probable threat of EO and ERW support

30 Further elaboration on search activities is covered in the *United Nations Improvised Explosive Device Threat Mitigation Handbook* and the United Nations Peacekeeping Missions Military Engineer Unit Manual.

31 The need to be able to do so in relation to conventional and/or improvised CBRN devices should be identified early in the mission planning phase, and the Organisation for the Prohibition of Chemical Weapons conferred with, to identify the required capability requirements. Where such a threat is suspected either in the form of conventional or improvised chemical or biological weapons, the Organisation for the Prohibition of Chemical Weapons should be consulted for advice on the requirements for the assessed threat being prepared for.

mortuary services activities in planning and conducting recovery and processing of remains contaminated by EO.

- Conducting and/or supporting EO accident or incident investigations.
- Conducting and/or supporting technical exploitation or post-blast analysis/investigation.
- Recording and recovery of EO components in support of developing a common threat picture.
- Providing, exchanging and evaluating information between the host nation and relevant partners and agencies, in line with the mission mandate, contributing to countering the EO threat.
- Educating United Nations personnel on EO identification, hazards and protective measures; military search/EO threat management; IED threats, hazards and response procedures; and explosive hazard marking, reporting and/or evacuation as part of predeployment training and in theatre awareness training.
- Conducting explosive hazard risk education in support of the local population, if authorized by the mission and force leadership.

2.1. Conventional munitions disposal activities

An EOD unit may undertake CMD activities to allow for freedom of action, in accordance with the mission mandate. While in practice this CMD operations include disposal of all EO, including mines, the focus is on the disposal of ERW. The term ERW refers to UXO and AXO.

UXO is defined as EO that has been primed, fuzed, 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.[32]

AXO refers to EO that has not been used during an armed conflict, that has been left behind or dumped by a party to an armed conflict, and that is no longer under the control of the party that left it behind or dumped it. AXO may or may not have been primed, fuzed, armed or otherwise prepared for use. The term ERW is often taken not to include mines whose disposal is traditionally considered under demining by militaries and mine action by non-military organizations; however, when undertaking the disposal of ERW as part of C-IED operations, it is also taken to include the disposal of mines. The disposal of ERW refers to traditional EOD in that it excludes those activities that involve the disposal of IEDs and components thereof (i.e. IEDD). Since in this case only conventional items of EO are considered, it is more accurate to refer to these activities as CMD. The disposal of ERW should be undertaken by CMD teams. However, IEDD teams are qualified to undertake CMD at least up to IMAS level 3.

Such activities contribute to successful IED threat mitigation. By removing these explosive hazards from the area of operation, it removes key components often used in IEDs. Mines and items of ERW are often used directly as the main charge in IEDs. Their fuzes in certain circumstances can also be used as part of the initiator of an IED. The removal of such components from a mission area limits an aggressor's ability to make use of ERW to construct IEDs.

32 See IMAS 04.10, second edition, 1 January 2003, amendment 11, 17 January 2023, Glossary of Mine Action.

2.2. Improvised explosive device disposal activities

IED neutralization refers to the process of preventing an IED from functioning as intended by the application of an external force that changes the environment around an IED. It can be permanent or temporary. It may not be possible to confirm neutralization purely by visual means. IEDD is an additional and specialist skill for an EOD unit, requiring specific training and equipment preferably including the use of remote control/remotely operated vehicles. IEDD-trained EOD personnel should not be put under pressure to operate outside their EOD capabilities.[33] It is therefore important that any IEDD structure deployed to a United Nations mission should be consistent with the threat, the environment and the relevant circumstances within the IED threat spectrum. When facing a significant and sophisticated IED threat, an accordingly trained, equipped and supported EOD unit with the corresponding IEDD capability will be required to respond to such a threat.

An IEDD unit's capabilities should be driven by the assessed IED threat that the unit is likely to have to respond to. An IEDD unit's capability will determine the tasks to which they are appropriately qualified and equipped to respond to efficiently, effectively and safely.

One illustrative example of an IEDD unit's capabilities being driven by the assessed IED threat is the assessment on the presence of a radio-controlled IED threat in a United Nations mission. If an assessment is made that a radio-controlled IED threat is likely or present, mission planning must then decide whether CREW assets and what type are required for the mission:

- Employed – technology type, threat frequency targeted.
- Deployed – by an existing team member or an attached ECM specialist.
- Maintained – daily servicing and checks, as well as repairs and maintenance.
- Sustained – threat fill, software, firmware and hardware upgrades, and who is responsible for each of these.

This is only one example of how the assessed IED threat informs an IEDD unit's capability, which in turn affects the task the unit is capable of responding to efficiently, effectively and safely.

2.3. Technical exploitation activities

Technical exploitation is the timely and effective collection, analysis, storage and transfer of evidence process to extract information from captured or recollected materials from perpetrators. Conducting, for example, IED exploitation allows peacekeepers to better understand capabilities and TTPs being used by perpetrators and fed into the wider intelligence picture.

This allows United Nations forces to counteract these threats by amending peacekeepers force protection and protection of civilians, or IED threat mitigation measures and other required standards.

Technical exploitation also allows teams to anticipate and possibly diffuse, as well as preventing further crimes and attacks. Furthermore, it enables the mission to transfer evidence in a manner that will best preserve its forensic value to competent jurisdictions, whether domestic or international, to ensure

33 The capabilities of EOD personnel refer to the knowledge, skill sets, attitude and competencies that EOD personnel are certified as being qualified in, in conjunction with the equipment and support available to them to effectively, efficiently and safely respond to an IED incident.

criminal justice accountability for those responsible for such crimes and attacks. Hence, whenever possible, a post-blast investigation or technical exploitation should be conducted.

Technical exploitation is usually the task of EOD teams or appropriately trained personnel to collect, analyse and assess evidence in coordination with the IED threat mitigation adviser and to provide information to the work of the IED threat mitigation working group.

Explosive scene investigation or post-blast investigation[34] are tasks, where highly skilled and experienced subject matter experts properly analyse captured material and put forward results. Exploitation activities will include collecting and analysing technical, tactical and forensic information. They should not work separately, and should closely cooperate with other cells, especially peacekeeping-intelligence.

With the outputs from exploitation/investigation, peacekeeping-intelligence analysts can then further assess the networks, perpetrator personnel, roles and relationships, and IED network capabilities, to include associated IED components and materiel. Exploitation activities should be persistent and iterative to provide accurate peacekeeping-intelligence, develop effective countermeasures and contribute to degrading the network. These activities will assist some, or all, of the following:

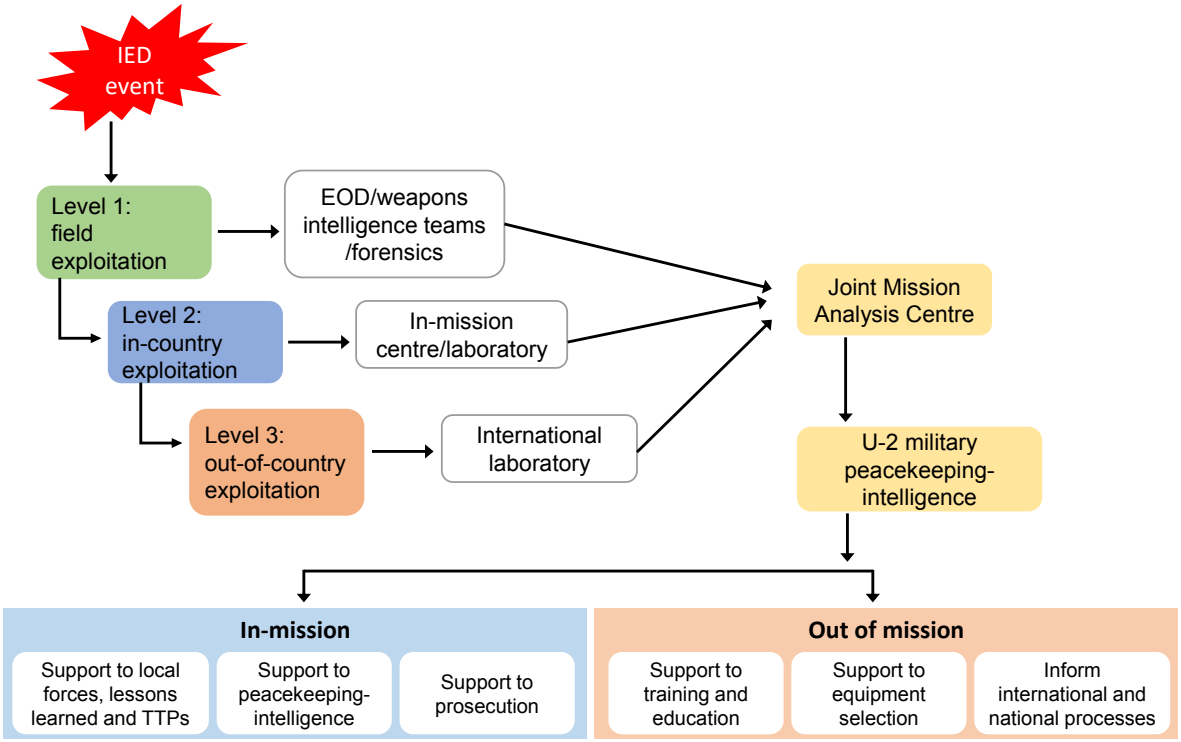
- Build understanding of an IED system's centre of gravity, particularly to identify its critical vulnerabilities.
- Identify, confirm, analyse and assess perpetrator TTPs to assess trends and patterns, as well as identifying weaknesses and ascertain advantages.
- Develop and refine friendly TTPs and contribute to hazard threat awareness training, IED training for EOD units and force protection to develop friendly force advantage.
- Develop detailed technical peacekeeping-intelligence to facilitate countermeasures for IEDs.
- Contribute to the lessons learned process, leading to more effective operations and improved force protection.
- Provide inputs to the operating framework for the peacekeeping-intelligence cycle.
- Provide evidence for legal action that may lead to prosecutions and/or other government agency action, for example, diplomacy, economic coercion or commercial pressure.

The current United Nations system has three exploitation levels. The relationship between these levels and the information flow between them and the peacekeeping-intelligence functions are shown in figure 2.1.

Flows of information should be both bottom-up and top-down and need to be coordinated by the IED threat mitigation adviser, in close cooperation with U2 and the IED threat mitigation working group. Each level of exploitation requires feedback from the all-sources analysis cell, focusing on the priority peacekeeping-intelligence requirements, as well as from the upper exploitation levels, to provide guidance on technical procedures on evidence.

34 Explosive scene investigation and post-blast investigation both quantify on-site investigation within the technical peacekeeping-intelligence process and are often used in an interchangeable manner. This manual aims to use explosive scene investigation as the broader term for a level 1 exploitation, as it includes post-blast investigation, which is the term used for investigations conducted where EO has detonated.

Figure 2.1.
Levels of exploitation, responsibilities and effects



The three IED exploitation levels are as follows:

- Level 1 refers to tactical collection and exploitation. Tactical units may have dedicated teams to perform an initial forensic analysis to develop actionable information, while providing expertise and materiel to preserve and collect materials of interest for exploitation. These teams may have specialized training on forensic-enhanced site exploitation techniques and be equipped with automated technologies to provide forensic analyses.
- Level 2 refers to in-country operational exploitation and analysis. The operational environment includes a modular and scalable deployed forensic capability that may augment the tactical-level capability in support of the Force Commander. Material from an objective is collected, preserved and shipped to forensic facilities (centres/laboratories) with advanced equipment and technology for exploitation by trained and qualified forensic examiners/technicians. Their analysis is documented in a forensic report that is shared with user communities. A forensic analysis may result in identifying, sourcing and tracking materials used to create IEDs and contribute to force protection.
- Level 3 refers to out-of-country exploitation and analysis. International laboratories and centres provide scientific and technical experts, as well as technological equipment, to encompass all the forensic fields and provide the most comprehensive analyses of collected materials of an incident. Some national-level expertise may be provided in support of in-mission centres and laboratories.

Technical exploitation can and should be conducted without limitations, since the findings will contribute to understanding patterns and trends. Careful consideration must be made to separating

exploitation of device components, which will contribute to force protection measures, and the exploitation of biometrics for prosecutorial purposes.

Exploitation of biometrics will be mission-specific and dependent upon several factors, such as the rule of law and capacity of police forces. The collection, custody, use and responsible sharing of forensics and biometrics exploitation are considered and ad hoc implemented in concerned United Nations peacekeeping operations where the threat exists.

Clear policy should exist between local security services regarding the ownership of any evidence collected from IED sites to preserve United Nations impartiality and provide the ability to collect technical evidence. Evidence collected should be recorded in the report, and evidential logs should be maintained.

The common investigative entities within the military component to conduct level 1 exploitation are the military EOD experts and weapons intelligence teams (WITs), military police or gendarmerie, and any mission military personnel qualified and trained to this effect. A WIT refers to a small unit that deploys and undertakes technical exploitation in support of wider EOD efforts in an area of operation.

EOD units conduct an initial technical exploitation, a "Quick Look" (see annex B) to provide a timely assessment of an EO incident. More details are provided with the completion of an EOD report, which requires more time and is usually completed after returning to the base of the EOD unit.

Planning during the force generation phase for an IED-affected United Nations mission must consider where such capabilities will lie and establish how IED components and other related evidence that is recovered should be handled to support judicial prosecution of the perpetrators involved. Options where such capabilities can reside are within EOD teams, within military police units or as stand-alone dedicated WIT. The decision depends on the IED threat level in the mission and the capabilities of those tasked to undertake weapons technical peacekeeping-intelligence.

2.4. Explosive ordnance disposal reporting

The uninterrupted flow of information is essential for the conduct of safe and effective operations. Headquarters, troops and units under an EO threat need to communicate in a timely, clear and concise manner so that corresponding activities can be planned and executed successfully. It significantly contributes to overall enhanced situational awareness, enabling each headquarters, regardless of the level, to not only undertake informed decision-making, but also adapt to ongoing operations based on the response and impromptu situations that may arise.[35]

The reporting of all explosive incidents should include, where possible and at the earliest stage, technical and tactical information to understand the TTPs of the perpetrators. The primary tool to record and maintain data regarding all explosive incidents is the Unite Aware platform and the Situational Awareness and Geospatial Enterprise (SAGE) database to allow continuity and exchange within United Nations missions and with United Nations Headquarters.

As those systems are not always accessible, especially not at temporary operating bases, company operating bases, outposts or on longer patrols, standardized reporting formats are to be used to communicate incidents and initiate mitigation measures.

35 See *United Nations Deployed Military Field Headquarters Handbook*.

United Nations missions are to provide unified reporting formats, which can be used using mobile communication means (radios). Standardized report and message formats enable easier interpretation and the efficient exchange of information. The standardization of forms is particularly important in combined operations, as they reduce the impact of different operating languages and ease the collation and transmission of complex information. Standardized specimens of the following EO/IED reporting forms are presented in annex B.

At the same time, the adopted format of the EOD report should not be restrictive in not allowing an EOD operator to provide as much relevant information as possible. An endorsed IED/UXO report is provided in annex B.

The reporting templates are designed to be used in any explosive-related event, ranging from all IED-related events (IED, explosion, find, cache, false, hoax, turn-in) to indirect fire, including complex attack and UXO/ERW events.

To be fully effective and ensure the maximum benefit, reporting must be:

- Accurate: timings, locations, events, among other things, must be precise.
- Complete: all available information relating to an incident must be gathered and all incidents must be reported.
- Linked: any links to individuals, geographic areas and conditions should be readily identified and understood.
- Timely: peacekeeping-intelligence and lessons learned should be disseminated to the right recipient at the right time.

Figure 2.2.
Reporting scheme

Time	From	To	When	Format	Means
Immediate	Unit/individual uniformed personnel	Headquarters	IED incident	**Explosive ordnance/IED incident report**	Radio/mail
Immediate	Headquarters	EOD	Receiving explosive ordnance/IED incident report (and unit)	**EOD task order** (consist of validated explosive ordnance/IED incident report)	Radio/mail
ASAP-3h (return to base)	EOD team	Headquarters	Initial situational overview and first assessment	**EOD Quick Look**	Mail
Depending on the incident: • **Red** • **Amber** • **Green**	EOD	Headquarters/ database	EOD task order completed	**EOD report**	Mail
No later than 24h	Level 1 technical exploitation (WIT, post-blast investigation)	Headquarters	(If there is no WIT or post-blast investigation team available, the technical exploitation-1 report will be substituted by the EOD report)	Technical exploitation-1 report	Mail
ASAP	Level 2 technical exploitation		Detailed assessment of all collected evidence with detailed analysis	Technical exploitation-2 report	Mail
ASAP	Headquarters/ IED threat mitigation working group	All units/individual uniformed personnel		**EOD/IED awareness report**	Mail

All commanders are responsible for ensuring that their personnel are familiar with the reporting format and can use these under stress.

While operational security is always a consideration with reports, it is vital that EOD reports are given the widest appropriate possible circulation. This ensures that appropriate action is taken regarding lessons identified and that training, equipment and procedures are developed to adjust to the EO threat faced.

Reporting is typically the final phase in any EOD task or operation; however, initial EOD reports (e.g. the EOD "Quick Look") are to be generated at the earliest possible time to inform other units immediately about the threat. Proper technical exploitation usually takes some time to complete, while the dissemination of certain details should not be delayed awaiting all information to be assembled.

An example for pre-determined priority settings and recommended timelines is as follows:

- Red: Immediate – submitted immediately after return to base
  - Incidents that include death, serious injury, missing in action affecting the unit or mission
  - Detainee in custody
  - Force countermeasures/TTPs defeated
  - New TTPs, emplacement methods
- Amber: Urgent – submitted no later than 12 hours after return to base
  - Death, serious injury, missing in action
  - Emerging perpetrators TTPs suspected
  - Existing TTPs improved
- Green: Routine – submitted no later than 24 hours/1 day after return to base
  - All explosive incidents that do not imply new TTPs or causing serious damage or injuries

2.5. Support to mission partner activities

All the above-mentioned capabilities are mutually interrelated and contribute directly to improving security for peacekeepers by eliminating threats from EO in the form of conventional munitions or IEDs, or by contributing to developing a more comprehensive threat picture through technical exploitation, which in turn contributes directly to the security of peacekeepers and the local population.

In addition, EOD units have the capacity to support mission partners and can carry out further tasks to support the implementation of the mandate. These include:

- Mobility planning advice
- Force protection advice
- Electronic warfare support in countering radio-controlled IED threats – counter radio-controlled warfare CREW assets
- Host-nation support
- Local population engagement
- Force explosive hazards awareness training

2.5.1. Mobility planning advice

Mobility and the effort to maintain freedom of movement in an IED threat environment are one of the key operational activities undertaken. The perpetrators utilizing IEDs often deploy them specifically to reduce or prevent that freedom of movement, which in turns often produces local security vacuums and non-permissive or semi-permissive environments in which such perpetrators have freedom to operate and from where they can project their power. Therefore, the maintenance of freedom of movement within an IED threat environment is always a key focus of IED threat mitigation and one in which considerable effort in relation to EOD activities is invested.

While generally many of these activities contribute to maintaining freedom of movement in an IED threat environment, the provision of advice to those involved in mobility planning is a direct support to freedom of movement. Such advice comes in terms of terrain and route analysis to identify vulnerable points[36] and vulnerable areas[37] that might need to be avoided, countermeasures taken to reduce the risk of IEDs at these locations or advice on the priority deployment of route clearance assets, such as heavy engineering plant to clear such vulnerable points and vulnerable areas.[38] This is a key input into the overall United Nations common operating picture.

2.5.2. Force protection advice

Force protection advice is a broad area that involves assistance from technical experts, such as those involved in EOD activities, in the provision of appropriate technical advice in relation to the EO threat in the area of operation. Its purpose is to mitigate this threat against personnel, vehicles and friendly force locations. This may include advice on:

- The level of personal protective equipment required to be worn inside and outside United Nations facilities.
- The type of vehicles and their level of protection to be employed for operations (e.g. patrols).
- Technical briefs on EO or IED characteristics and effects, for example explosively formed projectiles or directionally focused fragmentation charges.
- The level of overhead protection required against indirect fire threat (especially for unconventional threats).
- Perimeter defences against the use of IEDs designed to cause breaches (e.g. used for complex attacks), as well as entry point layout (including blast mitigation measures to counter vehicle-borne improvised explosive device threats).

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36 Vulnerable points are those specific points where it is particularly advantageous for an adversary to position an ambush, using either IEDs, small arms and light weapons, or both. Vulnerable points are typically characterized by prominent or restrictive feature or choke point on the ground. Several factors pertaining to enemy capability, intent and ground use will contribute to the vulnerability of a specific point.

37 Vulnerable areas are those areas where the ground lends itself to IED or small arms and light weapons attack. Common characteristics of vulnerable areas include (acronym POLICE THESE): previously used tracks and patrol routes; often used positions; linear features; interior of buildings; canalized routes; extended long stretches of road; tactically important areas; high ground dominated areas; escape routes into and out of areas; successive vulnerable points in proximity; and exit or entry of areas of urban/rural interfaces.

38 See *United Nations Improvised Explosive Device Threat Mitigation Handbook*.

Force protection advice can also extend to the provision of tactical advice in terms of the IED threat mitigating TTPs to be used by troops operating in such an environment.

2.5.3. Electronic warfare support

Electronic warfare refers to military action to exploit the electromagnetic spectrum, encompassing: the search for, interception and identification of electromagnetic emissions; the employment of electromagnetic energy, including directed energy, to reduce or prevent hostile use of the electromagnetic spectrum; and actions to ensure its effective use by friendly forces.

Electronic warfare support measures refer to that division of electronic warfare involving actions taken to search for, intercept and identify electromagnetic emissions and to locate their sources for immediate threat recognition. It provides a source of information required for immediate decisions involving ECMs, electronic protective measures and other tactical actions.

Electronic warfare support is an asset used in an environment where radio-controlled IEDs are a threat. ECMs can be utilized to mitigate the risk posed by radio-controlled IEDs through its use of electromagnetic energy to prevent or reduce an IED perpetrator's effective use of the electromagnetic spectrum.

ECMs utilized to mitigate the threat posed by radio-controlled IEDs are best referred to by the term CREW. There are three methods by which CREW assets can be utilized to mitigate the threat of radio-controlled IEDs.

- **Electronic jamming:** the deliberate radiation, re-radiation or reflection of electromagnetic energy, with the objective of impairing the effectiveness of hostile electronic devices, equipment or systems.
- **Electronic deception:** the deliberate radiation, re-radiation, alteration, absorption or reflection of electromagnetic energy in a manner intended to confuse, distract or seduce enemies or their electronic systems.
- **Electronic neutralization:** the deliberate use of electromagnetic energy to either temporarily or permanently damage adversarial devices that rely exclusively on the electromagnetic spectrum.

In general, CREW assets are deployed to mitigate the threat posed by radio-controlled IEDs, either as a force protection asset to a larger force or to support specifically EOD units.

CREW assets can be utilized as a force protection IED threat mitigation asset to move from, through or to an area with an assessed radio-controlled IED threat in it. This can be for either a logistical or an operational move, mounted on vehicles or dismounted on personnel (carried, for example, in a backpack).

When it is assessed that the deployment of CREW assets mounted on vehicles is necessary, additional planning considerations are required. For example:

- CREW asset deployment typically involves the employment of a suite of systems appropriately chosen to mitigate the risk posed by the assessed radio-controlled IED threat to provide a degree of assured protection against radio-controlled IEDs in a "bubble" encompassing the personnel within. There are several complex and competing factors that influence the effectiveness of this protective envelope.
- Concrete figures (e.g. range of protection provided by CREW assets and percentage of effectiveness) are very difficult to estimate and should never be considered a fact.

- Parameters, such as effectiveness and protective coverage, may vary depending on multiple external factors (terrain, weather, infrastructure, etc.) and change from employment to employment.
- The use of CREW assets must be in line with the relevant United Nations mission guidance.
- The employment of such assets should be coordinated at the force headquarters level to deconflict frequency use and possible conflict with the employment of other assets (e.g. unmanned aerial vehicles).
- CREW assets should be provided in sufficient number to provide effective coverage for all vehicles of personnel part of the specific operations.
- For the effective employment of CREW assets, an accurate and updated radio-controlled IED threat picture is required to determine the technology type to be deployed.

Capability and funding covering software updates and life cycle management are essential to maintain the ECM assets operational. The qualifications and number of dedicated technical experts required will be dependent on the type of CREW assets deployed. The consequence of not sourcing this capability appropriately can be extremely detrimental to forces operating in an area of operation with an IED threat, because:

- Not upgrading the hardware, firmware and software as the threat evolves can lead to CREW becoming ineffective. This can expose troops to a radio-controlled IED threat they believe they have protection against and in turn lead to troops losing confidence in their equipment.
- The deployment of inappropriately trained and/or inexperienced personnel in charge of the deployment, use and maintenance of CREW assets can result in ineffectiveness in mitigating the radio-controlled IED threat.

Specialist EOD use of CREW assets refers typically to the use of ECMs by either search teams or IEDD personnel operating in an environment that is assessed to have a potential radio-controlled IED threat. Typically, such CREW assets will be person-portable and are referred to as manpacks; however, it is also common for such personnel to deploy in CREW-fitted vehicles to mitigate such threats while in transit or when stationary in the area that they establish their incident control point. Separate planning considerations are required in the deployment and use of manpacks compared with vehicle-mounted CREW systems. Expert advice must be sought by commanders when the decision to deploy such assets is identified.

As specialist EOD use of CREW assets often involves personnel deliberately going into areas with an assessed radio-controlled IED threat, the highest levels of assured protection from their CREW assets are required and may consist of multiple systems to provide redundancy, to allow specialist techniques to be applied. If units are deployed with multiple CREW systems, special consideration should be given to ensure all CREW assets, both mounted and dismounted, are deconflicted with each other and friendly forces communication systems.

2.5.4. Host-nation support

EOD units can, if permitted under the mission mandate, undertake host-nation support activities, which can involve support to the United Nations country team, local government, federal government, international aid agencies and non-governmental organizations to facilitate these partner activities and contribute to host-nation stabilization and security.

EOD units may undertake host-nation support, including:

- Provision of training
- Capacity-building in EOD capabilities
- Removal of ERW from abandoned storage sites and wider ammunition security management[39] initiatives. Such activities should be appropriately coordinated with the appropriate United Nations country team agency to ensure compliance with United Nations mandates and unity of effort, for example ammunition security management initiatives coordinated with any disarmament, demobilization and reintegration or security sector reform involved in such programmes in the country. Consideration of such host-nation support activities requires the input and advice of the appropriate EOD focal point.

Capacity-building and training tasks are done under the authority and direction of the Head of Mission/ Special Representative of the Secretary-General. At times, a mission may have a mandate to build local humanitarian or host-nation security force EOD capabilities.

Unless specifically tasked by the mission, no TCC, contingent or individual should engage in EOD training or mentoring host-nation security forces or other entities and personnel. When mandated and tasked to assist in the development of host-nation EOD capabilities, United Nations planners, during force generation, should examine what is the current existing host-nation EOD capability, what is the required level of competence, and how this can be leveraged through the provision of appropriate TCC EOD training and mentoring to develop the required capability.

When permitted, joint United Nations and host-nation EOD operations can benefit from the connection that local forces have with the population, to gain information which otherwise would not be disclosed to peacekeepers. Such ventures also foster local empathy with the mission objectives and will support enhancing the overall security, perception and underline legitimacy of the mission.

Respect for local culture and behaviour is a key requirement for successful host-nation support. However, peacekeepers should be sensitive to local population views and perceptions of host-nation security forces when undertaking such joint operations. At a tactical level, collaboration with host-nation security forces to act as interpreters during EOD operations may be beneficial, given the interpreter is trusted by the United Nations commander.

Capacity-building and training activities for host-nation security forces must take into consideration local requirements and should aim towards a self-sufficient and self-sustainable operational capability of host-nation security forces in the long term.

Capacity-building and host-nation support can be combined with effort, such as recovering land contaminated with ERW for a collective economic purpose of the local population.

Where available, close cooperation between EOD unit commanders/staff and the mission's various civilian elements (e.g. civil-military cooperation focal point, United Nations funds, programmes and agencies, international organizations, non-governmental organizations, the host nation's civilian security forces and local organizations) is recommended to support the efforts of the capacity-building.

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39 Often referred to as weapons and ammunition management or physical security and stockpile management. Physical security and stockpile management involves providing the necessary infrastructure and national capacity for States to safely secure and account for weapons and ammunition under government control.

2.5.5. Local population engagement

The use of IEDs by perpetrators typically results in initial and sometimes long-term loss of freedom of movement in mission areas, with the affected IED threat environment resulting in a security vacuum in which such perpetrators have freedom and control to operate within and from where they can project their influence.

The consequence of this lack of control is a loss of legitimacy for host-nation security forces and peacekeepers. The local population (who may not have been hostile to the host nation or to United Nations forces prior) are less likely to cooperate, or perceived as less likely to cooperate, with the host nation or the United Nations for several reasons. This may lead to a semi-permissive or even non-permissive environment in which EOD operations must be conducted.

EOD activities are most effective when conducted with the support of the local community. Conducting successful EOD operations, on the other hand, contributes to maintaining or regaining freedom of movement, providing a secure environment to the local population and the possible provision of information.

Local population engagement can also lead to an improvement in the security situation, for example by providing risk education on how to deal with EO. On the one hand, this helps to prevent possible casualties on the part of the civilian population and, in the best case, can lead to the local population being alerted when EO is detected, initial measures (e.g. cordoning off) already being taken and the EOD forces being directed to the site.

For this to succeed, it is necessary to build a relationship of trust, which can only be achieved over a longer period and to which risk education can effectively contribute by demonstrating to the population that their protection is an essential concern of the peacekeepers.

When interacting with civilians, all mission components, including EOD units, must be mindful in their activities and engagement with individuals and communities not to expose civilians to risk or to cause harm, including by exposing civilians to possible reprisals for cooperation with the mission. Missions must follow a "do no harm" approach at all times, including an appropriate risk assessment of the effects of this engagement.

For this purpose, it is recommended to partner with appropriate units and specialists, such as an engagement platoon,[40] and to conduct key leader engagement.

While all elements of a mission have a mandated responsibility to protect civilians, United Nations EOD units have special capabilities to provide physical security to the local population and prevent harmful action by perpetrators.

40 See *United Nations Engagement Platoon Handbook*.

3. Organization of military explosive ordnance disposal units

3.1. Organizing principles

The nature of the EO threat faced by United Nations missions can be typified by their evolutionary nature and often a dynamic change. This is particularly the case for missions with a predominant IED threat. The reasons for those challenging conditions are as follows:

- Perpetrators who utilize IEDs typically modify and develop the devices and their TTPs to circumvent the mitigation measures by the host nation or the peacekeepers.
- Ongoing conflicts typically see the introduction of new or modified conventional munitions by perpetrators as they seek to defeat the defences introduced to protect their opponents.
- The available information on the World Wide Web allows for unconstrained and immediate IED knowledge and capability transfer between groups, as well as theatres of operation.
- The illicit transfer of conventional munitions to perpetrators from unsecured stockpiles (e.g. small arms and light weapons and other weapons).

EOD units will be assigned missions of search, disposal and component recording and recovery to effectively mitigate EO threats in support of force protection and protection of civilians. For that purpose, EOD units need to be:

- Flexible and adaptable – The ability to rapidly align and refocus to meet diverse mission requirements requires well-led disciplined EOD units, highly trained and competent throughout the spectrum of EOD operations. The wide variety of operational tasks that an EOD unit will face requires mental and operational flexibility to re-mission or re-configure rapidly or to conduct simultaneous operations across the spectrum of EOD operations. A single EOD unit will be expected to conduct a variety of operations of varying threat levels and durations, against various EO hazards, in a short period of time. Priorities and resources fluctuate between phases of any United Nations mission, and flexibility is required to deal with both unpredicted and unpredictable changes in the EO threat picture. The ability of an EOD unit to rapidly adjust to new demands and tasks as the unit reacts to emerging threats in operational scenarios is paramount to mission success.
- Interoperable – The development of a joint and combined approach that adopts a multifunctional ethos to effectively engage with other participants in multinational and inter-agency EOD operations revolves around interoperability. This requires EOD units to be capable of operating seamlessly with other forces, actors and agents across the spectrum of EOD tasks. Interoperability is required across the lines of EOD personnel, C2 structures, training, materiel and infrastructure common to all TCCs having EOD units. Harmonization between TCC TTPs is necessary. Interoperability is also required with non-military actors to be found in the mission areas (e.g. International Civilian Police cordons and security personnel).

- Sustainable – The provision, replacement and rotation of EOD personnel and materiel with the necessary means and facilities to fully meet operational demands. Assessment of the likely duration of the requirement for the provision of EOD capabilities to a United Nations mission needs to be made in the force generation phase so that the replacement and rotation of personnel and materiel can be planned for. This assessment should consider rest and recuperation of personnel, as well as the natural wear and tear of EOD materiel requiring maintenance, repair and replacement during both normal and high tempo operational periods.
- Deployable – Deployment considerations and criteria are a multifaceted concept developed through appropriate decisions on and investment in doctrine, organization, training, materiel, leadership, personnel, facilities and interoperability. The deployability of EOD assets is key to the success of any such capabilities. States of readiness and rapid response times are key to effective EOD operations if dealing with timed IED threats, as well as mitigation of the disruptive effect that EO threats can have in general. The deployability of EOD capabilities requires appropriate analysis of the operational environment to determine the transport requirements (e.g. road vehicle type, air transport and boat transport) into the areas that the capability is likely to have to be deployed. Such analysis must also take account of changes in deployability with changing seasonal weather and terrain conditions.

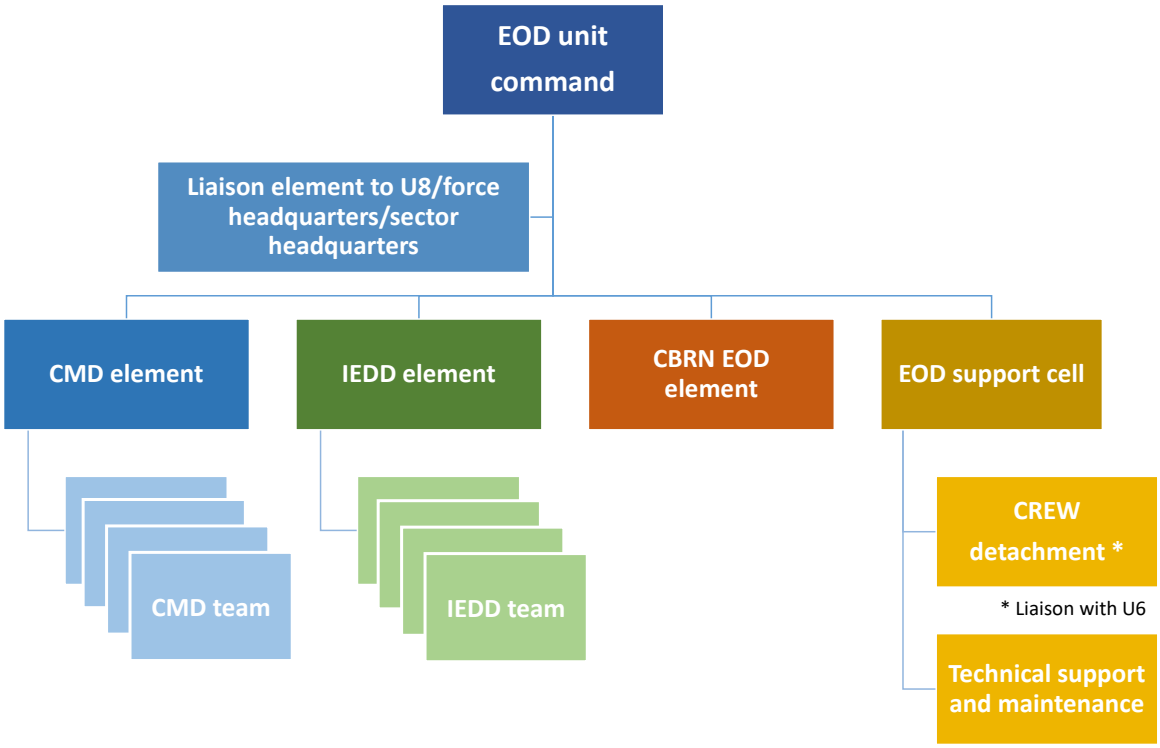
3.2. Personnel requirements

The United Nations military EOD unit organizations described in this manual are a recommended baseline for planning and preparation purposes equally for TCCs, as well as United Nations Headquarters and United Nations missions.

Actual personnel requirements and unit configurations will vary widely based on mission requirements and United Nations-TCC memorandum of understanding negotiations. However, when sourcing a United Nations military EOD unit, several points should be considered:

- Rank structure – TCCs have the flexibility to adjust the rank structure according to their national organizational norms. Nevertheless, TCCs must ensure that their personnel have the requisite ability and qualifications.
- Participation of women – TCCs should make every effort to include women military personnel in United Nations EOD units, as their presence is a significant advantage in situational awareness when meeting the local population. The integration of women military personnel in United Nations EOD units may be crucial to interact with the female locale population (e.g. searching women, questioning witnesses to an incident, especially in mission areas with cultural sensitivities surrounding male interaction with local women and children). Wherever possible, women military personnel should be included among the command and staff, operations, logistics and interpreter personnel.
- Specialist skills – Technical and specialist personnel should be fully qualified in their respective areas of specialization, in line with the competencies outlined in IMAS.
- Communications – All personnel within the units should be capable of communicating in English to support reporting of their actions and capable of operating the unit's communications equipment.

Figure 3.1.
Generic structure of explosive ordnance disposal units



3.3. Generic structure of explosive ordnance disposal units

EOD units must always be scalable in size, modular in function and mission tailored. The EOD unit size and composition depend on the mission size, composition and requirements it supports and the physical characteristics of the mission area.

A generic statement of unit requirements (SUR) for an EOD company, detailing the structure, post and functions, is available via the Peacekeeping Capability Readiness System.[41]

EOD units may be required to perform the following roles in United Nations mission settings:

- CMD functions
- IEDD functions
- CBRN EOD functions
- Mission support activities

3.3.1. Explosive ordnance disposal unit command element

The EOD unit command element with the commander of the unit is responsible for the unit's subordinate elements operating effectively and efficiently in an integrated manner. The commander is

41 See https://pcrs.un.org/SitePages/Home.aspx (Resources, Force and Police Generation Process, Generic Military Units SURs).

responsible for the well-coordinated command, control and communication of all EOD-related matters and employment of these capabilities. Commanders will act as the appropriate level EOD focal point to higher command, utilizing their qualifications and those of their unit subordinates in mitigating the EO threat. Coordination between engineer advisers in relation to mobility and force protection issues may be required.

3.3.2. Conventional munitions disposal element

A CMD element is capable of any EOD operation conducted on ammunition which is used as a conventional weapon assessed as being required in a United Nations mission. A CMD element should have the following components:

- C2 element to include an experienced CMD operator as subunit commander, along with the required administrative support staff
- Ammunition focal point
- CMD teams, to include qualified CMD operators and drivers[42]
- United Nations missions that have an assessed requirement for specialist CMD capabilities[43] can have an appropriately qualified CMD team or teams as part of the CMD unit.

Depending on the EO threat and the intended procedure to mitigate, a CMD team can be composed very differently. It is conceivable that CMD teams only consisting of CMD level 1 trained personnel might be considered sufficient for a mission. Equally it is feasible to source teams with all three CMD levels, including specialists with a CMD level 3+ qualification.

The person with the most experience should be designated as team leader. Whenever possible, the team leader should be trained to at least one level up to enable appropriate measures in case of unexpected and/or complex situations, which might occur even after a thorough threat assessment.

This is determined by an assessment of the area of operation, the threat and the intended course of action against the threat.

3.3.3. Improvised explosive device disposal element

An IEDD element is capable of location, identification, rendering safe and final disposal of IEDs assessed as being required in a United Nations mission. An IEDD element should have the following components:

- C2 element to include an experienced IEDD operator as unit commander, along with the required administrative support staff.
- IEDD teams to include, at a minimum, a qualified IEDD operator acting as team leader, an IEDD qualified assistant and a driver. Other possible elements of an IEDD team may include CREW asset operator(s) or weapons technical peacekeeping-intelligence specialist(s).

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42 Qualified CMD operators refers to IMAS levels 1–3 qualified personnel.

43 Specialist CMD capabilities refers to IMAS level 3+ qualified personnel to any of the following CMD competencies: mixed EO item logistic demolitions >50 kg net explosive quantity; management of specialist demilitarization activities; ability to plan demilitarization activities; guided weapon system AXO where the missile is fitted in the launcher; intact cluster munitions; disposal of depleted uranium EO and depleted uranium hazards and the clearance of armoured fighting vehicles; guided missiles containing liquid propellant disposal; maritime EO disposal.

An IEDD team will, at a minimum, consist of one IEDD assistant and one IEDD operator. This team is qualified to handle the majority of IED types.

An advanced IEDD team consists of, at a minimum, one IEDD assistant, one IEDD operator and one advanced IEDD operator. This team will be qualified to handle any IED type with some specialist exceptions, such as underwater and CBRN variants. More details can be found in annex C.

3.3.4. Chemical, biological, radiological and nuclear element

A CBRN element should be capable of any operation conducted on ammunition with biological, chemical or nuclear elements, which is used as a conventional weapon, assessed to being required in a mission. A CBRN element should have the following components:

- C2 element to include an experienced CMD 3+ operator for the required specific threat (biological, chemical or nuclear) as the subunit commander, along with the required administrative support staff.
- Ammunition focal point.
- CMD teams with qualified CMD 3+ operators equipped with the required specific skill set and drivers.

3.3.5. Explosive ordnance disposal support cell

The EOD support cell provides suitably qualified technicians responsible for all technical support required in terms of maintenance, care, repair, sustainment and upgrade of EOD hardware, firmware and software equipment to sustain the EOD capabilities that the unit is supposed to provide to the mission, sector or unit.

In the case that CREW assets are part of an EOD unit's capabilities, the support cell will provide a suitably qualified technician to maintain the device and to act as liaison to the Communication and Information Systems Branch (U6) for frequency management. It is broadly broken down into two branches:

- Technical maintenance section
- CREW detachment

3.3.6. Ammunition technical officer

In accordance with the *United Nations Manual on Ammunition Management* and the generic SUR, EOD units should provide an ammunition technical officer. In field missions, regular ammunition management is the responsibility of the TCC. The ammunition technical officer/technical expert must be qualified through a national ammunition technical officer's course, according to the International Ammunition Technical Guidelines 01.90.[44]

44 See also *United Nations Manual on Ammunition Management*.

3.4. Requirements of explosive ordnance disposal units

Because IEDD and CBRN EOD teams are scarce resources that take a long time to train, and are expensive to appropriately equip, maintain and sustain, it is necessary to source an EOD unit according to the specific requirements and threat in the area of operation. As an example, an IEDD team should not be sourced if the threat is ERW in the area of operation.

CMD teams, on the other hand, are very proficient in ERW disposal but can only support demining activities to a limited extent, as they usually do not have the necessary equipment to carry out that task.

Associated activities should not be conducted by EOD units, such as:

- Stockpile management
- Small arms and light weapons management
- Physical security and stockpile management/weapon and ammunition management

Other related activities can be supported by EOD units, if there are no other forces available, but they should not be the primary tasks, such as:

- Risk education
- Advocacy[45]
- Victim assistance
- Stockpile destruction
- Mine action
- Demining/humanitarian demining
- Battlefield area clearance

Having identified the required capability and number of CMD and IEDD teams required for a United Nations missions, the appropriate EOD support cell and EOD unit command element need to be determined to define the EOD unit structure and composition.

3.4.1. Conventional munitions disposal capability requirement

When planning for a CMD capability, planners should examine the following:

- The extent of ERW in the mission area and the type of EO present – an assessment of the types of EO present should be undertaken and a list of items compiled. If the extent of ERW is not known, it may be necessary to first plan for an ERW survey of the area of operation to obtain a clear understanding of the threat, including:
  - The geographical spread of the ERW threat
  - Accessibility to ERW threat sites and areas, considering:
    - Terrain and routes from an all-year-round perspective
    - The local security environment (permissive, semi-permissive or non-permissive)
  - The distance and accessibility between these sites and areas from United Nations locations
  - The time frame for the removal of these ERW hazards from the mission area
- Identification of any items of conventional EO that presents specific hazards and/or require specialist CMD skills, such as:

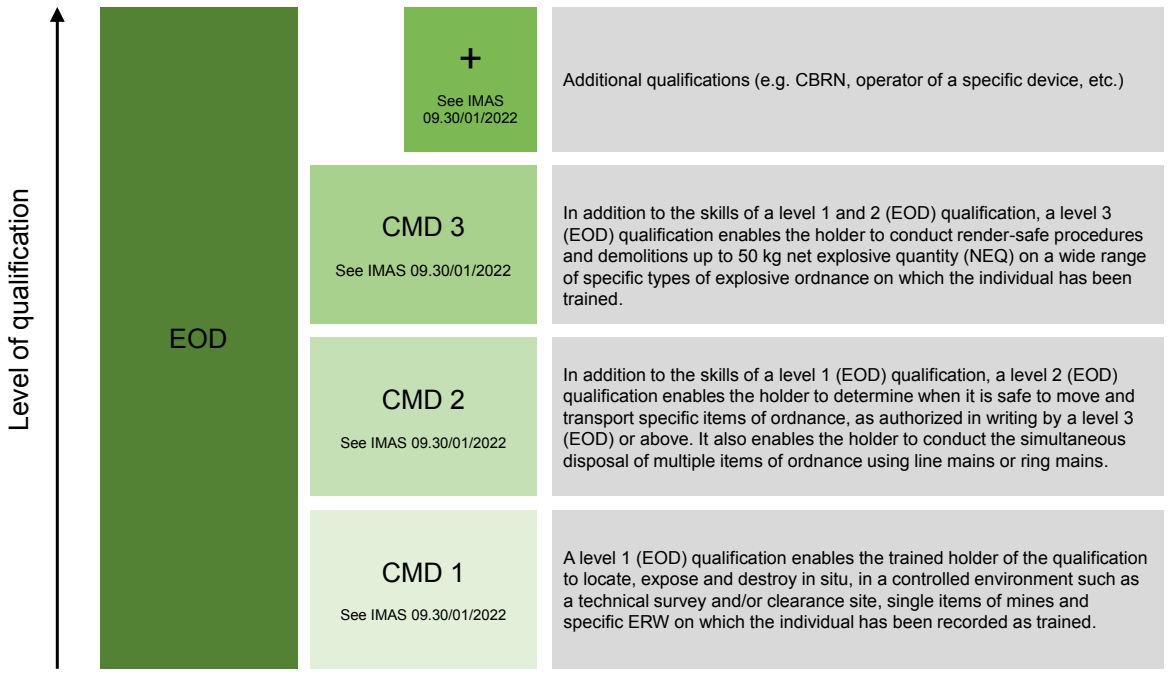
45 In the context of mine action, the term refers to public support, recommendation or positive publicity with the aim of removing, or at least reducing, the risk from, and the impact of, EO.

- Mixed EO item logistic demolitions >50 kg net explosive quantity[46]
- Management of specialist demilitarization activities
- Ability to plan demilitarization activities
- Guided weapon system AXO where the missile is fitted in the launcher
- Intact cluster munitions
- Disposal depleted uranium EO and depleted uranium hazards and the clearance of armoured fighting vehicle
- Guided missiles containing liquid propellant disposal
- Maritime EO disposal

- The presence of barrier or other types of minefield in the mission area and the requirement to remove them and the likelihood of the mines therein being used in IEDs.
- The presence of maritime EO natures and their potential use in IEDs.
- Large stockpiles of ammunition at abandoned or unsecured storage locations and the possible requirement for logistical disposal of such stocks.
- The presence of clandestine devices and the likely deployment/emplacement of these hazards.

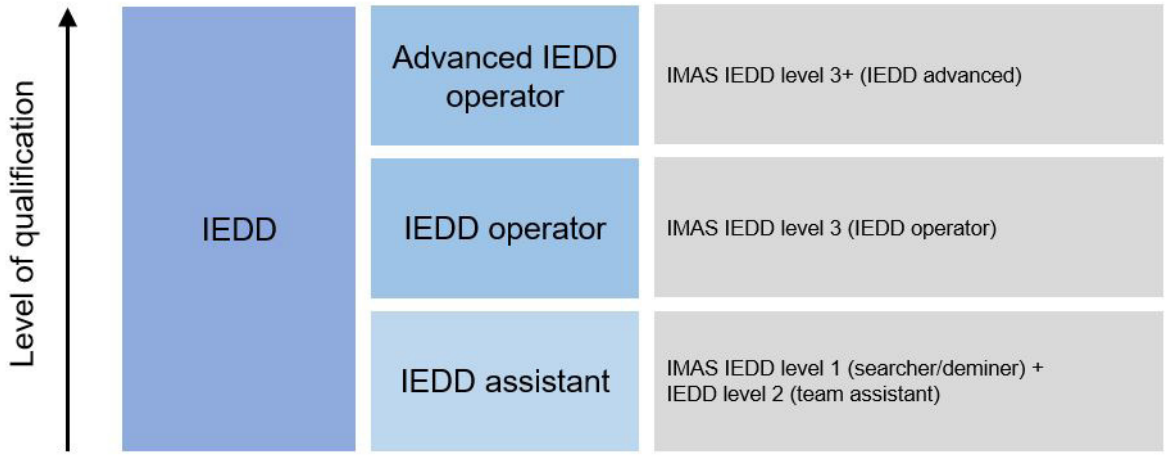
When the information is compiled through the above-mentioned assessment of the area of operation for conventional EO threats, the type(s) of CMD teams can be identified, along with any specialist CMD skills that are required. A mission may require any combination of the three levels of CMD competencies, including even specialized CMD 3+ skills as listed, or alternatively stand-alone specialized CMD 3+ teams in addition to CMD teams levels 1–3.

Figure 3.2.
Explosive ordnance disposal/conventional munitions disposal qualification levels



46 The total explosives content of an ammunition, unless it has been determined that the effective quantity is significantly different from the actual quantity. It does not include such substances as white phosphorus, war gases or smoke and incendiary compositions, unless these substances contribute significantly to the dominant source of potential harm of the hazard division concerned.

Figure 3.3.
Improvised explosive device disposal qualification levels



3.4.2. Improvised explosive device disposal capability requirement

Two components define an IEDD unit's capabilities:

- Personnel – IEDD unit minimum qualification and training standards
- Materiel – IEDD critical equipment[47] requirements

To plan, define, source and deploy the most appropriate IEDD capability, it is essential to have a clear understanding of the IED threat in the area of operation, which is challenging to achieve.

- It is often challenging to get a clear and accurate assessment of the IED threat in the area of operation prior to EOD units or weapons technical peacekeeping-intelligence personnel being deployed in the mission area supporting to build up an operational picture and obtain the relevant information required for an analysis. Such analysis will inform about the sophistication of the IED threat from a technical perspective and the tactical sophistication of the IED threat perpetrators who are utilizing them.
- If a level of required capability is determined and deployed to defeat the IED threat in an area of operation, perpetrators may adjust their technical and tactical sophistication to circumvent any setbacks they experience due to countermeasures implemented by the EOD units. Therefore, it should be planned for an evolution in the IED threat and the flexibility to react agile to deploy a higher qualified IEDD capability to respond effectively to such changes.

Besides the existing IED threat, there are additional aspects that must be taken into consideration to help to define the required capability, as well as the equipment the IEDD team needs to deploy with, such as:

- The number of expected IED incidents per day, week and month.
- The geographical spread of the IED threat.
- The number of military and police units that are expected to have an organic IEDD capability.
- The number of main supply routes, patrol routes, etc. (based on detailed terrain analysis of the area of operation) with potential vulnerable points and vulnerable areas to be travelled on.

47 Critical equipment is the minimum equipment deemed to be essential for an IEDD capability to be effective, efficient and safe.

- The distance and accessibility between friendly force locations in the area of operation.
- The scope of the mandate in terms of EOD support activities that will require an IEDD team.

3.4.3. Chemical, biological, radiological and nuclear explosive ordnance disposal capability requirement

CBRN EOD is a highly dynamic and complex branch of EOD due to the variety and potential impact of the conceived, synthesized, extracted, processed, eventually produced, distributed and used substances and actors it deals with. Accordingly, in addition to having appropriately qualified personnel and adequate material, coordination with other actors in the area of operation, such as environmental agencies, police, the host nation, among others, may be required.

To define the required CBRN EOD capability and the equipment, it is important to analyse in detail the potential threat and to constantly update the information to allow for an understanding of the sophistication of the explosive device associated with CBRN elements from a technical perspective, as well as the modus operandi of the perpetrators who are utilizing them.

In addition to the knowledge and skill set for CMD and IEDD teams, more information on the following is required:

- Accessibility to CBRN EO threat sites and areas (the local security environment)
- The geographical spread of the threat
- The classification of contaminants possibly employed by the perpetrators, associated with EO

Some specific additional capabilities are required by the CBRN EOD team to appropriately address a CBRN EO, such as:

- Vertical thermal gradient analysis
- Development of plume predictors
- Forensic analysis support for confirmation of contaminants
- Specific medical evacuation
- Capability for predicting and applying antidotes based on the potential contaminants used by perpetrators (e.g. atropine for nerve agent; oxygen and sodium thiosulfate for chemical asphyxiant)
- Decontamination assets/installations

3.4.4. Explosive ordnance disposal support cell capability requirement

When the required CMD and IEDD teams of an EOD unit have been determined, the EOD support cell requirements to maintain and sustain these capabilities can be finalized.

It is possible that the maintenance and sustainment of CMD element's capabilities can be done within the CMD element itself, without the need for technicians in a separate EOD support cell.

3.4.5. Explosive ordnance disposal unit command capability requirement

When the CMD and IEDD elements of an EOD unit have been identified, the EOD unit headquarters' element requirements for C2 of these capabilities can be determined.

3.5. Explosive ordnance disposal equipment

The contingent-owned equipment (COE) framework encompasses major equipment, personal protection equipment, ammunition and explosives to enable the troops to protect themselves and carry out their mandated tasks. The equipment is included in the SUR according to the operational tasks assigned to the unit. Troop- and police-contributing countries are obliged to deploy personnel, major equipment and self-sustainment pursuant to the signed memorandum of understanding.

All major equipment to support an EOD unit is listed in the COE Manual.[48] Equipment not listed in the COE Manual but deemed necessary by either party to the memorandum of understanding may be agreed on during the negotiations. In this case, reimbursement will follow the special case guidelines as described in the COE Manual.

Demining and EOD equipment should perform in compliance with the relevant standards described in the present manual, as well as IMAS.

The COE Manual also explains different procedures and conditions under which units deploy, for example wet and dry lease, or a contracting method known as a letter of assist for specific support requirements not already included under a memorandum of understanding or available through a commercial contract, by which the United Nations acquires special supplies or services from a Member State.

TCCs that can provide CMD or IEDD teams with equipment of a higher standard or capability than that listed in the COE Manual are encouraged to do so. Better protection, more capable search or identification assets all contribute to enhance the safety of the personnel from EOD units. By providing better equipment to the EOD units, helping them to conduct their risky tasks, TCCs also contribute to employing this high-value resource more effectively to implement the mandate and protect the civilian population.

3.6. Operational ammunition

EOD units, as part of the deployment, must ensure to provide sufficient means to dispose EO (conventional or IEDs), either in situ or after collection and at a later stage. In addition, EOD teams are also responsible for the disposal of unserviceable ammunition within the mission.[49]

To that end, appropriate calculations must be made based on available data from the mission regarding the number and type of incidents involving EO to deploy EOD units with the appropriate resources. Depending on the development of the situation in the mission, it might be required to resupply accordingly to maintain the capability of proper disposal.

The *United Nations Manual on Ammunition Management* (see its annexes) provides guidance for the required amount of operational ammunition. However, it is essential for EOD units to contact the mission in good time before deployment to determine the required quantity of operational ammunition.

EOD teams use existing demolition sites in consultation with the respective commander, or have the necessary demolition sites created in coordination with military engineers to avoid the accumulation of ammunition that should be destroyed so as to not pose an unnecessary security risk to the mission, and tying up forces to guard them.

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48 See Manual on Policies and Procedures concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions (A/75/121).

49 See *United Nations Manual on Ammunition Management*, chapter 4.

4. Support to explosive ordnance disposal units

All necessary procedures to follow to prepare and enable the deployment of a military engineering unit are specified in the following guidance/documents:

- *United Nations Manual for the Generation and Deployment of Military and Formed Police Units to Peace Operations*
- Generic Guidelines for Troop Contributing Countries Deploying Military Units to the United Nations Peacekeeping Missions, including logistical support for units

A possible deployment of a military engineering unit for a mission is initiated by the pledge of the TCC. With the successful selection of the unit all necessary coordination of the force generation process with the corresponding logistics planning are initiated.

At this point, any problems the TCCs may face in equipping or supporting their contingents are identified and staffed for resolution at United Nations Headquarters. Problems are assessed based on a combination of the data given by the TCC and assessments carried out by the Department of Peace Operations (DPO) and the Department of Operational Support (DOS), recognizing that TCCs may not possess all of the equipment needed for a particular United Nations mission. The possible solution is negotiated between the TCC and DPO/DOS to mitigate the shortcoming through logistical arrangements, as outlined in the COE Manual.

All necessary procedures to follow to prepare and enable the deployment of an EOD unit are specified in the Generic Guidelines for Troop Contributing Countries Deploying Military Units to the United Nations Peacekeeping Missions, including logistical support for units.

The EOD unit is mandated to meet self-sustainment standards as outlined in the SUR, the memorandum of understanding between the United Nations and the TCC, the COE Manual[50] and the letters of assist.

It is understood that logistics is generally a national responsibility during multinational operations. United Nations EOD units will use internal support capabilities and processes to ensure good stewardship of assets and resources. However, EOD units usually do not have their own support units, such as communication detachment, medical care and logistical support elements. They can fulfil the tasks assigned to them, but they are not necessarily self-sufficient as units.

In United Nations missions, the internal United Nations system logistic structure provides continuing support through a system of lead nations, civilian contracts, a United Nations force logistic support group, or a combination of the three.

50 See Manual on Policies and Procedures concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions (A/75/121).

An EOD unit will require both routine and emergency logistical, training and administrative support for manning, arming, fuelling, repairing, moving and sustaining all classes of supplies, from both national and United Nations sources.

Accordingly, the support required by an EOD unit must already be identified in the force generation process and the capacities with which this can be provided accordingly in the area of operation. Future rotations in the deployment of troops must also be considered.

4.1. Explosive ordnance disposal unit commander's role and responsibility

It is the commander's responsibility to ensure operational readiness, which includes requesting appropriate support in a timely manner and indicating the operational constraints if he or she does not receive this support. This includes:

- Maintaining full accounting of all unit personnel and equipment.
- Maintaining an accurate status of required on-hand supplies and forecast emerging requirements.
- Maintaining an accurate status of training readiness of the overall EOD unit and any subordinate units and forecast for emerging requirements.
- Ensuring all equipment is maintained and is in working order, with commensurate operationally required supplies to operate the equipment.
- Effectively communicating the unit's supply, personnel, training and equipment readiness status to higher headquarters.
- Requesting logistical, training and administrative support, as needed, to affect all of the above.

4.2. Search teams

In the United Nations mission setting, the success of IED threat mitigation efforts is largely dependent on information-based operations against IEDs and precursors. The ability to locate and detect IEDs is crucial within defeat the device, which requires a proactive rather than reactive approach. A key enabler in these efforts is locating and detecting IEDs and their components before they can achieve their desired effects.

Search is a key enabling activity in EOD and refers to the capability to locate specific targets using threat assessments, systematic procedures and appropriate detection techniques to locate and detect concealed threats.[51]

In support of EOD, search is used in support of CMD, as well as IEDD activities, primarily to locate and isolate emplaced IEDs and to find IEDs when in transit or concealed prior to emplacement, or components thereof prior to assembly.

In its broadest terms search can be broken down into all arms search capabilities and specialist search capabilities.

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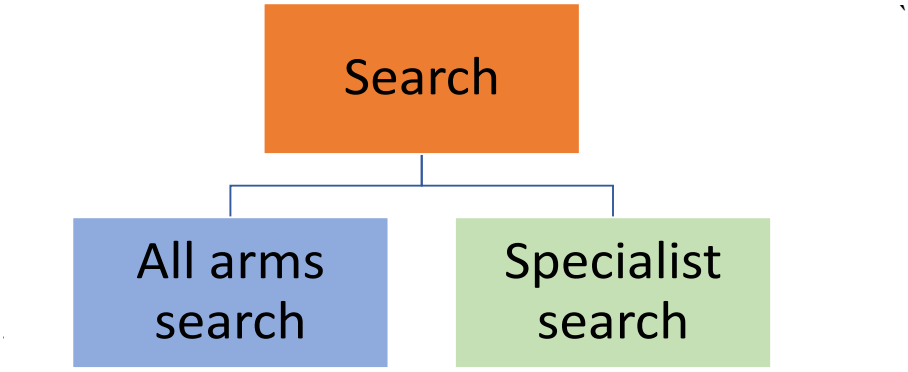
51 Conventional weapons systems, items of ERW and improvised explosive threats and components thereof and in particular IEDs.

All arms search. Search capabilities employed by non-specialist members of a unit. There are different levels of all arms search capabilities.

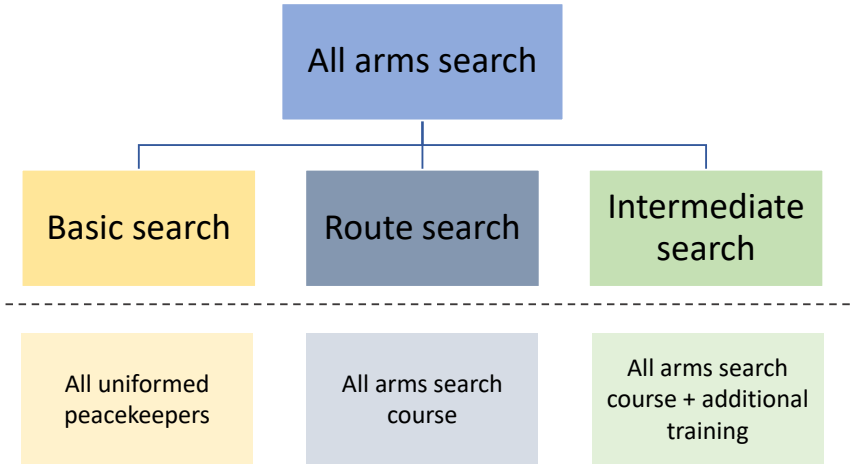
Specialist search. Search capabilities employed by advanced search personnel trained, equipped and qualified to do so. Information regarding specialist search is contained in the United Nations Peacekeeping Missions Military Engineer Unit Manual.

Figure 4.1.
Search capabilities



All mobility units[52] are to count with an all arms search team composed of trained searchers, equipped with precision search equipment and ECMs, capable of conducting basic search procedures, route search or even intermediate search. More details can be found in the *United Nations Improvised Explosive Device Threat Mitigation Handbook* (annex B).

Figure 4.2.
All arms search capabilities



52 Mobility units are defined as units moving outside the secured perimeter of a United Nations installation to execute any given task.

Specialist search is a key operational capability of combat engineers. It refers to the capability to conduct search operations in an area where the operating environment is assessed to be non-permissive,[53] or a hazardous environment exists, and includes:

- Protective building search
- Aircraft search
- Vessel search
- Hazardous environment search
- Secondary vehicle search

Details regarding specialist search can be found in the United Nations Peacekeeping Missions Military Engineer Unit Manual.

All arms search and specialized search teams will often work in concert with an EOD/IEDD team.

EOD units usually do not have their own search teams. If all mobility units have appropriately trained and equipped search teams, this is not necessary. However, depending on capacity in the United Nations mission, it may be necessary to discuss with the TCC that is providing an EOD unit whether an organic search team is required.

Search teams usually will provide EOD teams with an initial assessment of the situation on the ground and may already have a "find" that they can hand over. In this respect, a coordinated and trusting cooperation is extremely important. Nevertheless, an EOD team will always verify by their own means the assessment from any search team.

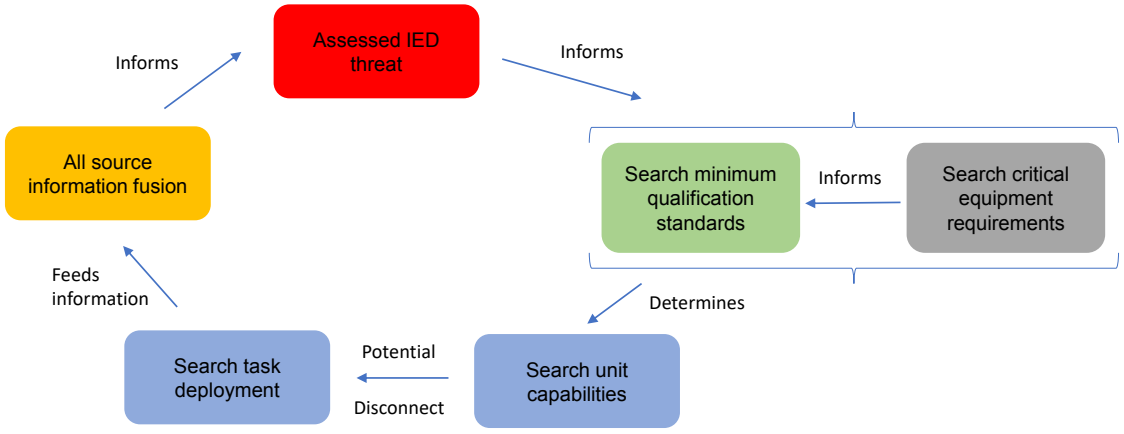
An understanding of the IED threat (capability, ground and intent) is key to identifying the required search capabilities for IEDD efforts. Once the assessed IED threat for a mission has been identified, an assessment on the required search minimum standards and critical equipment requirements should be undertaken.

A technical understanding of the type and complexity of the IED threat is key to identifying the search equipment required. This leads to several search levels that vary according to factors, such as:

- The assessed threat level is typically classified as being high or low.
- The complexity of the environment that the search is to be undertaken, for example confined spaces, contaminated environments or environments requiring self-contained breathing apparatus.
- The specialization of the search equipment to be utilized, for example non-linear junction detectors and probe camera systems.
- The assurance required from the search (e.g. venue search prior to a visit by a dignitary).

53 Activities undertaken where the assessed risk posed by specified threats is assessed as probable. For example, where specific U2 indicates the presence of emplaced IEDs.

Figure 4.3.
Search capability factors



4.3. Force protection

EOD units are designed for their strength to eliminate EO and are therefore not able to monitor or protect their own actions. They always need a force protection element in order to concentrate on their actual task. The composition of the force protection elements is essentially determined by the threat, the terrain, the probable duration of the EOD operation and the distance to the nearest United Nations site (e.g. if it is required to resupply).

Ideally, the force protection element will secure the incident control point and the entire perimeter three-dimensionally, which includes not only ground forces but also air assets, either in the form of manned aircraft or with unmanned aircraft systems or surveillance balloons.

Close coordination between the leader of the force protection element and the EOD team leader is key, as the latter is responsible for the security of the EOD team. Accordingly, activities of the EOD team must be paused or even ceased completely if the security situation does not allow this.

Additional force protection elements may also be included to prevent the replacement of cleared EO, if the convoy/patrol continues with the operation.

4.4. Military engineering

Since EOD units do not have heavy engineering equipment, it may sometimes be necessary for military engineers to support with their equipment. This may be necessary for, among other things:

- Obtaining access to location of EO, especially where ERW or IEDs are suspected or confirmed.
- Clearing roads from obstacles, including clearing vegetation and scrub around junctions.
- Improve and secure culverts to prevent their use as IED emplacement locations.
- Improve the road surface to hinder IED emplacement along it.
- Improve mobility and enhance freedom of movement.

In addition, engineers can also provide support with their heavy equipment (e.g. if it is necessary to protect the surrounding area from the effects of an explosion by erecting walls).

Specially formed engineering units, commonly known as route clearance packages (RCPs), are typically utilized to undertake route clearance in contrast to a route search by all arms search teams.

An RCP is the combination of force protection assets, search and EOD capabilities, which are threat aligned and within available resources to clear a defined route to a determined standard.

A temporary composite RCP is an asset for a once-off operation to establish a cleared route assembling the required assets at the start of a mission or when an IED threat emerges and then standing it down when their assigned tasks are completed. This would typically involve the forming of a composite unit or RCP normally around combat engineering assets. This can be a very efficient use of resources and personnel. However, once stood down, it is possible that continual route maintenance will be required to keep the routes in a state that mitigates the threat of IEDs, and repair damages caused through the continued use of IEDs along them.

RCPs can be equipped with a mix of general and specialist vehicles, equipment and personnel integrated to conduct route clearance. Further details can be found in the *United Nations Improvised Explosive Device Threat Mitigation Handbook*.

4.5. Medical support

Injuries or even fatalities can be expected at any time in connection with EO. This does not only apply to EOD teams; it can also affect other troops involved, such as search teams, force protection elements or even civilians.

The EOD unit will require external support to sustain its internal medical supplies, and to stabilize, evacuate and treat illness, injuries and wounds that are beyond the capabilities of a first aid kit (e.g. more serious than small cuts, scrapes, abrasions and routine sickness). This is especially important when conducting missions that are outside the United Nations base or protected perimeters. Injuries caused by explosives are usually serious injuries or very serious injuries, and are often complicated by burns, traumatic brain injury, mild traumatic brain injury, shock, broken bones, wound contamination and amputations. Therefore, careful consideration should be given to ensuring EOD units are integrated and prioritized for both aerial and ground-based casualty evacuation (CASEVAC) to ensure that EOD casualties are treated in line with force headquarters SOPs.

In this respect, it is essential that the medical rescue chain is always organized accordingly before executing an EOD operation, and that the appropriate medical crews are available on call for CASEVAC to provide the required care within the required times. Depending on the distance to the next medical installation, this could vary from an air asset (helicopter), ground-based vehicle or individual medical personnel detached to the EOD team.

4.6. Deployed military field headquarters support

The deployable field headquarters, whether it is the mission headquarters (force headquarters) or the sector headquarters, can support the EOD unit with all its staff departments, in areas such as planning, logistical support services, communications and information technology, and general administration, including:

- Peacekeeping-intelligence products (threat assessment, road books, etc.)
- Geographic information products

- Provision of means of communication and frequencies
- Provision of ammunition storage, either for rendered safe ammunition for future destruction or for own explosives
- Equipment repair/maintenance/recovery, for repair support beyond the capabilities of the EOD unit technicians
- Transportation, for lift and heavy transport movement capability that is beyond the unit's internal assets, for example material handling equipment, heavy equipment transport, aerial, rail or maritime movement
- Support of required training
- Expertise and advice regarding legal issues, cultural particularities, etc.

Equipment for communications between the mission, force headquarters/sector headquarters and the EOD unit is provided as United Nations-owned equipment. This ensures that the EOD unit has secure, standardized military-grade communications within the force and mission's communications network.

The EOD unit's internal communications and information systems are a TCC responsibility and must include all line and radio communications from unit command down to all subordinate elements.

In addition, the headquarters is also responsible for frequency management and will provide the required frequencies for ECM devices, for example in addition to the corresponding communication frequencies.

During a deployment, an EOD unit will use and consume routine amounts of normal classes of supply that will need to be replenished based on unit usage rates, mission requirements and the operational environment. Operations planning will further determine the specific logistic requirements and the associated logistics command and control structures for each operation when an EOD unit is committed.

Following the initial period of self-sustainment and in addition to TCC obligations for continued support of the deployed contingent, additional EOD support and operational requirements are to be requested, provided by the mission's Director/Chief of Mission Support through the Office of the Chief Service Delivery. Details are specified in the Generic Guidelines for Troop Contributing Countries Deploying Military Units to the United Nations Peacekeeping Missions and the COE Manual, but generally this applies to:

- Food rations (storage, cooking and sometimes transportation is a contingent responsibility)
- Bulk raw water or access to bulk raw water (TCCs are responsible for transport, purification and storage)
- Bulk fuel and petroleum-based lubricants/petroleum, oils and lubricants (TCCs may be responsible for transport and storage)
- Strategic movement of COE and personnel from the home country to the mission area of operations
- Blood and blood products
- Normal waste collection, disposal and management, to include hazardous material/waste management and disposal[54]

54 See Manual on Policies and Procedures concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions (A/75/121).

The corresponding headquarters is also to be addressed for any request regarding support of units or elements to support directly or indirectly an EOD unit in conducting tasks, such as:

- Force protection elements
- Air support (transport, surveillance, etc.)
- CASEVAC
- Firefighters (in case it is expected that ERW might cause a fire, e.g. phosphor)
- Military police or United Nations police (e.g. to cordon off a certain area or escort collected evidence)
- ECM assets (e.g. CREW detachments)
- Explosive detection dogs, if they are not organic to an EOD unit, but may be part of a specialized search team or an independent unit
- WITs
- Recovery vehicles or assets (if vehicles are involved in an EO incident that can no longer be moved under their own power)
- Interpreter
- Public information officer, to exploit the success of an EOD operation for own strategic communication purposes

4.7. Support for mental health

Due to the particularly challenging situation of constant exposure to death or injury when dealing with EOs and IEDs, but also because, from the perspective of the perpetrator, successful EO or IED incidents often end with casualties and fatalities, EOD units must be given special attention regarding their mental health. This includes offering them appropriate opportunities to reduce stress during operational breaks, for example through sports facilities or other installation of moral and welfare services. This also includes the dedicated provision of appropriate psychological and, if desired, spiritual support to better process the experiences.

5. Training for explosive ordnance disposal units

The training of EOD units in the context of the United Nations is based on IMAS, which are internationally recognized standards that are regularly reviewed and, if necessary, revised.

The relevant standards for EOD CMD, as well as for EOD IEDD, are the most recent version of:

- Test and Evaluation Protocol 09.30/01/2022 (Conventional explosive ordnance disposal (EOD) competency standards)
- Test and Evaluation Protocol 09.31/01/2019 (Improvised explosive device disposal (IEDD) competency standards)[55]

The United Nations recognizes three qualification levels for EOD, which generally correspond to the IMAS levels. However, the United Nations uses different titles for these levels, as follows:

United Nations		IMAS
IEDD assistant	=	IEDD level 1 (searcher/deminer) + IEDD level 2 (team assistant)
IEDD operator	=	IEDD level 3 (IEDD operator)
Advanced IEDD operator	=	IEDD level 3+ (IEDD advanced)

Each TCC is responsible for educating and training its own personnel prior to deployment. All personnel nominated as EOD qualified (at whichever level or standard) need to have suitably documented proof of the training they have received, and the required standard achieved from their authorized EOD training establishment. All operators need to demonstrate the required skills as part of the unit's predeployment evaluation.

TCCs can establish their own standards, if these are based on IMAS. A deviation in the form of a lower level of knowledge or fewer skills may lead to a possible repatriation of the respective unit during an evaluation, as this not only poses a risk for the EOD unit directly, but also for the United Nations mission in and of itself, as the mandate can probably not be implemented in the specified manner and neither other peacekeepers nor the civilian population can be protected accordingly. In this respect, a very strict standard must be applied when establishing national standards.

Figure 5.1 illustrates the interconnectivity of EOD competencies from a United Nations perspective:

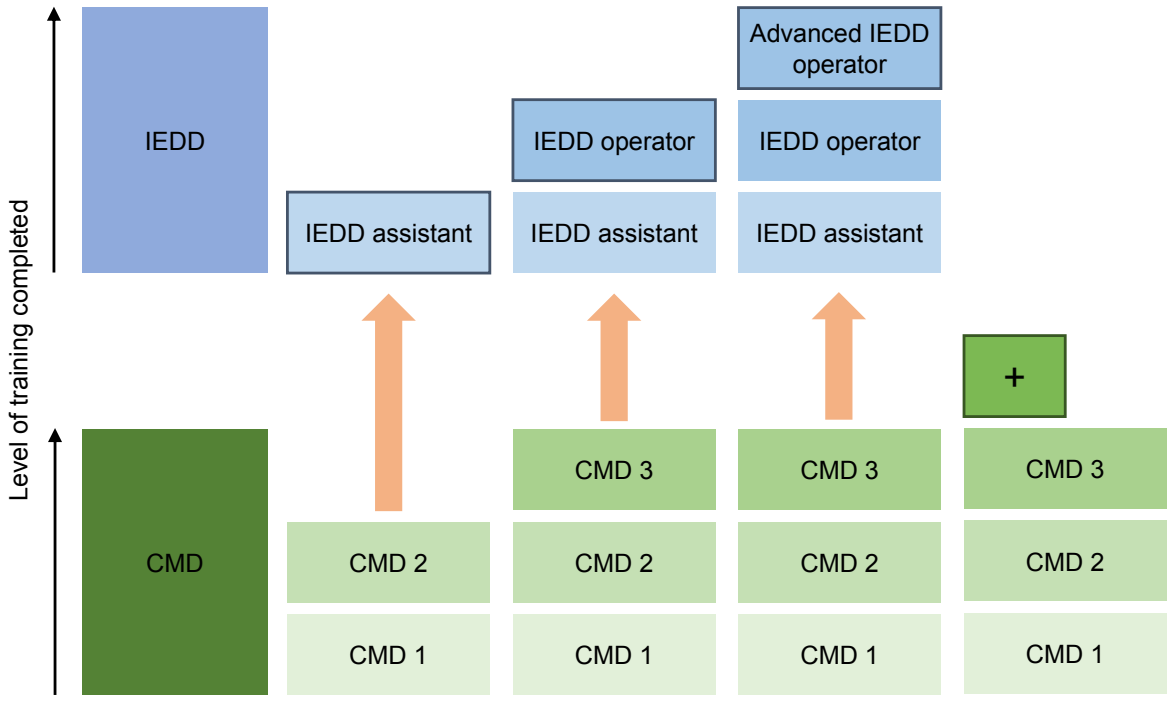
- CMD levels 1 to 2 qualifications are required to begin training as an IEDD assistant
- CMD level 3, plus training as an IEDD assistant is required to be trained as an IEDD operator

55 Available at www.mineactionstandards.org/standards/.

- CMD level 3 and IEDD operator training completed, plus certain years of experience are required to be recognized as an advanced IEDD operator
- A CMD level 3 qualification is required to be trained in any CMD 3+ qualification (CBRN), such as:
  - Mixed EO item logistic demolitions >50 kg net explosive quantity
  - Management of specialist demilitarization activities
  - Ability to plan demilitarization activities
  - Guided weapon system AXO where the missile is fitted in the launcher
  - Intact cluster munitions
  - Disposal depleted uranium EO and depleted uranium hazards and the clearance of armoured fighting vehicle
  - Guided missiles containing liquid propellant disposal
  - Maritime EO disposal

It is not necessary for an EOD CMD operator to be qualified in or specialized in CMD skills (3+) to become an advanced IEDD operator.[56] Conversely, an advanced IEDD operator is not qualified in any of the specialist CMD skills (3+), unless the person has been formally trained and certified in these areas.

Figure 5.1.
Prerequisites for training and qualification



56 Biological and chemical munitions disposal and IEDD are separate skill sets, and do not depend on each other, unless you are dealing with a CBRN device (i.e. an IED that has chemical, biological or radiological payload/enhancement). This is beyond the scope of this manual.

5.1. Predeployment training

According to General Assembly resolution 49/37, Member States have the responsibility for delivering predeployment training for uniformed personnel deploying to United Nations operations.

As a recommended reference, the United Nations military EOD unit specialized training materials (STM), developed in alignment with this manual, include learning activities and comprehensive scenario-based exercises to help participants to practise and test. The STM are available on the Peacekeeping Resource Hub.[57]

Some ERW fall within the guidelines for the above-mentioned qualification levels, but present a specific or additional hazard. Examples are items containing white phosphorous, fuel air explosive warheads, guided weapon systems, or the requirement for bulk demolitions or the logistic destruction of ammunition. Special consideration should be given for the need to state the requirement for additional training prior to deployment if CMD skills in relation to these hazards are deemed necessary. It is also a best practice to state if such skills are not required and thus can be excluded from the category of competence. Submunitions may be particularly hazardous to deal with and should only be handled by CMD 2 or above qualified personnel.

Where items of EO are frequently encountered in the area of operation, specific training in the disposal of these items may be given to enable CMD operators to deal with them rather than continually refer the problem to the next higher level of CMD expertise. When this approach is identified as appropriate in the force generation process for a United Nations mission, it should be communicated to TCCs to allow for and provide such additional training and qualification to be achieved prior to deployment.

Even though EOD units are already highly qualified regarding EO, the completion of the explosive hazards awareness training[58] is required for all CMD-only qualified teams, as well as EOD unit command element and support cell, to ensure that every peacekeeper is familiar with the threat if trends are changing, and a United Nations mission is confronted with IEDs. As part of STM for United Nations infantry battalions, the Peacekeeping Resource Hub provides material for the all arms search course.[59]

In addition, every peacekeeper is required to complete the basic first aid course, as well as part of the predeployment training.[60] The course is also available as a mobile application (“UN Buddy First Aid”) on android and iOS.

57 See https://peacekeepingresourcehub.un.org/en/training/stm/.

58 See https://peacekeepingresourcehub.un.org/en/training/stm/battalions, annex E.

59 Ibid.

60 See *Medical Support Manual for United Nations Field Missions*, fourth edition. See also the Peacekeeping Resource Hub, Core Pre-Deployment Training Materials, Module 3 (available at https://peacekeepingresourcehub.un.org/en/training/Pre-Deployment/cptm/module3).

5.2. In-mission training

Once deployed, EOD units are to participate in the mandatory induction training. Among other important sessions, the training contains mission-specific IED threat mitigation, which provides latest trends and assessments.

Although the units are trained and qualified prior to deployment to a peacekeeping mission, they need to familiarize themselves with the geography, established procedures, among other things. Induction training is a continuation of predeployment training. The information will allow for better planning and execution of EOD tasks.

EOD units may be tasked with conducting this training for other units.

To maintain the operational readiness of EOD unit personnel, special training must also be carried out on a regular basis, in order to be trained on procedures that are not used frequently or to integrate and perfect new TTPs. This special training should be practically oriented in nature. It is the unit commander's responsibility to schedule training accordingly and to coordinate with headquarters on the required stand-down phases to conduct the training.

6. Evaluation of explosive ordnance disposal units

The predeployment training should be oriented to ensure the successful achievement of the required standards to pass the required evaluations. There are three types of evaluation, conducted at different stages of preparation and deployment in a mission:

- Self-certification/evaluation
- Military skill validation during predeployment visit
- In-mission evaluation by force headquarters/sector headquarters

The evaluation aligns with the Policy on Operational Readiness Preparation and the Operational Readiness Preparation for Troop Contributing Countries in Peacekeeping Missions Guidelines, which outline a framework, including timelines for the evaluation and self-certification of United Nations military units provided by TCCs, in accordance with the SUR, the COE Manual and other United Nations military unit manuals.

The purpose of formal evaluation is to assist TCCs and military contingents in meeting national and United Nations standards of operational performance, since the existing level of training is compared with clearly measurable and quantifiable standards that are specific, achievable, realistic and time-bound in nature to help to identify deficiencies at an early stage (so that they can be remedied before the start of a mission). In addition, mission evaluations also serve to determine whether the initial training level could be maintained and what adjustments, if any, need to be made for future rotations.

Evaluations may be conducted in a graduated manner by level (from individual soldiers to commanders) and activity (teams, platoon, company or battalion/task force) in a task-oriented manner to systematically build expertise and integrate capabilities for collective application.

The operational readiness regarding EOD units is evaluated on the basis of risk assessment for threats of EO including IED, with the units taking appropriate force protection measures during the operational planning. During the operation, the unit is required to carry out appropriate procedures to manage EO/IED risks and emplacing mitigation measures to minimize vulnerability of United Nations forces, facilities, equipment, materiel, operations and activities from threats and hazards, to preserve freedom of action and operational effectiveness.

Evaluation should analyse task-oriented activities at each level within the military contingent to include individuals, groups and commanders.

For in-mission evaluation by force headquarters/sector headquarters, U7, in close cooperation with the EOD cell and the IED threat mitigation adviser, the search adviser and the IED threat mitigation working group, should develop a catalogue of criteria based on the respective IMAS. Units are required to demonstrate their knowledge and skills on IED/EOD before deployment and during in-mission training, which is geared to the specific local conditions and challenges.

In all types of evaluation (self-certification, military skills validation during predeployment visit, in-mission evaluation), the units are evaluated for their preparedness and readiness for explosive hazards assessment and awareness, individual and collective skills for EO including IED threat mitigation, if applicable appropriate conduct of all arms search capabilities, and providing appropriate first aid to EO/IED casualties.

Annex A. Explosive ordnance disposal cell – job description

	Specifications	Remarks
Title	Explosive ordnance disposal (EOD) chief (if the EOD cell is more than one person) EOD staff officer EOD staff assistant	
Rank **(minimum)**	EOD chief: Lieutenant colonel or equivalent EOD staff officer: Major EOD staff assistant: Lieutenant or Warrant officer (OR 7-9)	As per mission's requirements depending on the structure of the EOD cell
Minimum years of service required	Two years	Will depend on the rank
Minimum education required	EOD chief: Command/staff college EOD staff officer: Junior command and staff course	
Language requirement	English (proficient in writing and conversant with United Nations Radio and Voice Procedures) It is desirable that they are proficient in other official United Nations languages.	If there is any other specific language requirement for any mission, that can be mentioned.
Other requirements	• A citizen of the country he/she is representing. • Must be currently working on a full-time military duty with a minimum of five consecutive years of regular military service. For the EOD chief, a minimum of seven consecutive years is required. • Physically and mentally fit for strenuous operations and long hours of work in difficult living conditions is essential. • All personnel should be in possession of a valid chauffeur or commercial driver's licence. • The candidate must retain the present rank required for the post through the tour of duty and eventual extension. • Previous peacekeeping experience is desirable.	
Experience required	For all: • EOD course is mandatory. • Documented staff experience is mandatory.	

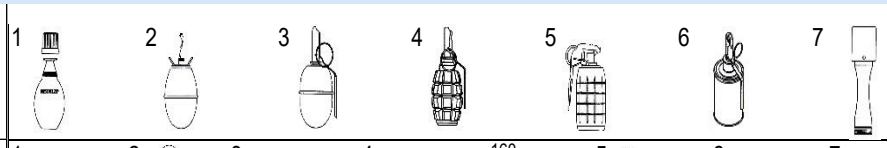
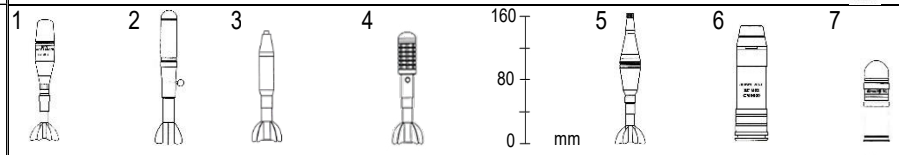
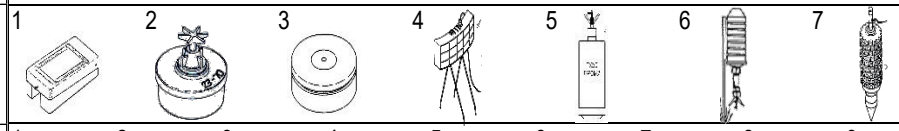
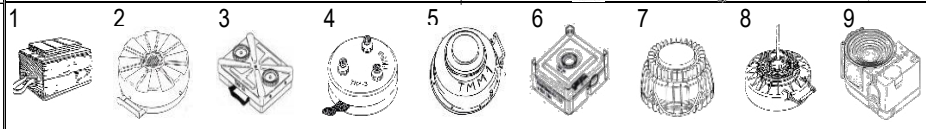
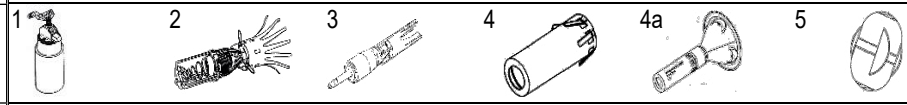
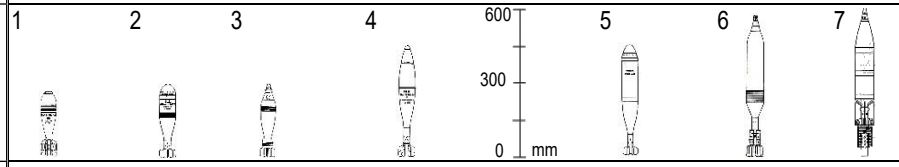
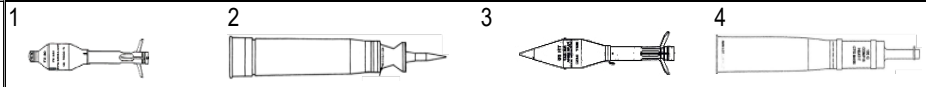
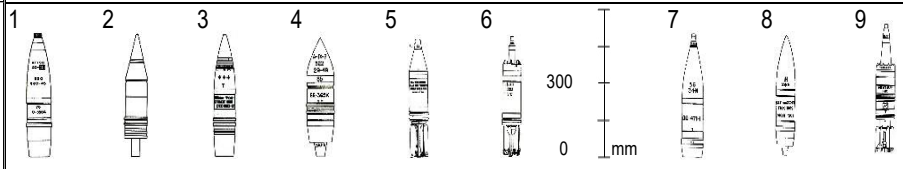
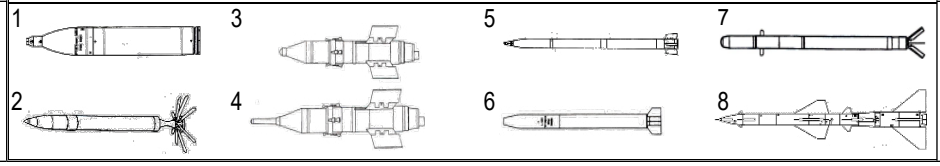
	Specifications	Remarks
Experience required (*cont'd*)	• The staff officer/staff assistant must be familiar with the employed capability (e.g. conventional munitions disposal; improvised explosive device (IED) disposal; chemical, biological, radiological and nuclear EOD; underwater EOD). • Previous EOD field experience. In addition, for EOD chiefs: • Command experience is mandatory.	
Competencies required	Key competencies of professionalism, planning and organizing, and teamwork.	Fixed
Duties and responsibilities	For EOD chief/staff officer, the main tasks include, but are not limited to: • Leading the force headquarters/sector headquarters EOD cell (for chiefs) • Developing and updating mission counter-improvised explosive device (C-IED)/EOD policies and standard operating procedures in accordance with United Nations standards. • Establishing and developing prevention and mitigation procedures for managing the IED threat to United Nations personnel and property. • Identifying the threat of mine, IED and unexploded explosive ordnance (UXO) in the mission area. • Advising mission headquarters on EOD/C-IED matters. • Participating in drafting orders and planning operations. • Establishing and updating a detailed C-IED database. • Taking responsibility for liaison between the Mine Action Service of the United Nations and the units on the ground to facilitate coordination of activities and exchange of information. • Identifying C-IED capabilities required for operations. • Coordinating information-sharing between contingent EOD teams. • Coordinating and reporting on any incidents that require weapons intelligence teams or post-blast analysis. • Coordinating with J2 IED threat mitigation working group/ EOD cell. • Conducting/coordinating C-IED training for all civilian and military staff. • Conducting/coordinating C-IED train-the-trainer sessions for mission military units.	

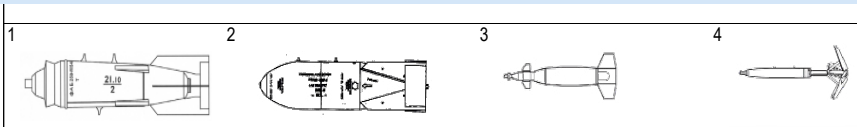
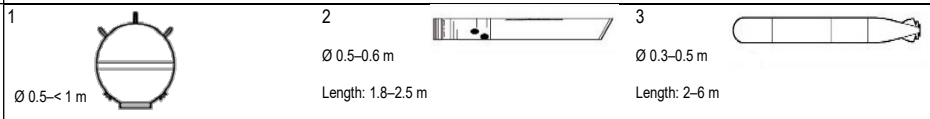
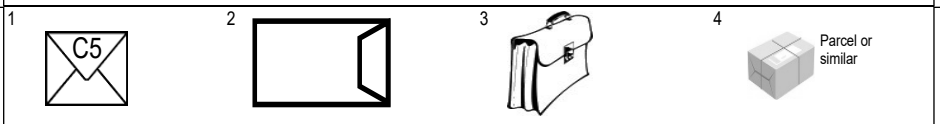
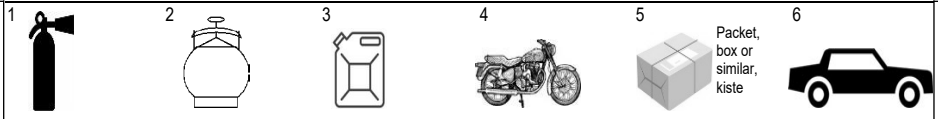
Annex B. Reporting

Appendix 1 to annex B:
Explosive ordnance/improvised explosive device incident report (10-liner)

Line	Item	Sub-item		Example
1	**Date-Time-Group (DTG)**	A	DTG DD, hh mm, Time Group, MMM, YY	*(e.g. 281310BDEC23)*
2	**Reporting unit**	A	Unit/unit identifier	
		B	Name	
		C	Rank	
3	**Location**	A	Link-up location	*MGRS grid reference (8-digit), UTM or WGS84 coordinate*
		B	Additional location information	*(landmarks, reference points, or street addresses)*
		C	Avenue of safe approach	
4	**Communication**	A	Link-up communication method and contact	
5	**Type and description of explosive ordnance (EO)**	A	EO/improvised explosive device (IED) type	*e.g. IED/Explosion/ CACHE or FIND/HOAX/ FALSE/TURN-IN/Other (UXO/ERW/AXO etc.)*
		B	How many items were found	
		C	Position	*e.g. surface, subsurface, elevated, underwater*
		D	Colour	
		E	Markings	*e.g. cyrillic, latin, colours, etc.*
		F	Size estimate	
		G	Nuclear, radiological, biological and chemical, or toxic industrial materials	*Yes/No and description*
		H	Pictures taken	*Yes/No*
6	**Location of EO/IED**	A		*MGRS grid reference (8-digit), UTM or WGS84 coordinate*

Line	Item	Sub-item		Example
7	**Tactical situation**	A	Hostile activity	*Yes/No and description*
		B	Fire hazard	*Yes/No and description*
		C	Unstable infrastructure	*Yes/No and description*
		D	Dangerous terrain	*Yes/No and description*
		E	Other hazards	*Yes/No and description*
8	**Damage**	A	Collateral damager	
		B	What asset/resource is threatened?	
		C	Impact on mission	*- Totally disrupted* *- Major* *- Minor* *- Nil*
Routine				
9	**Protective measures taken**	A	Markers placed	
		B	Evacuation distance	
		C	Other protective actions taken	
10	**Recommended priority**	A	Immediate	*- Threat to life/critical infrastructure*
			Urgent	*- Threat to mission/ protection of civilians*
			Routine	*- Threat with only minor impact to mission*
			No threat	*- To mission or civilians*

Type	Examples for explosive ordnance (not to scale)	Initial safety distance*
A Hand grenades		100 m
B Grenades/ rifle grenades		100 m
C Anti-personnel mine		100 m
D Anti-tank mine		100 m
E Submunition		100 m
F Mortars		200 m
G Anti-tank weapons		200 m
H Shells		200 m
I Missiles/ rockets		200 m

Type	Examples for explosive ordnance (not to scale)	Initial safety distance*
J Bombs		400 m
K Underwater munitions		400 m
L (Small)		200 m
M (Medium)		400 m
N (Big)		800 m

* Initial safety distance = radius of an area, which must be cordoned off in order to ensure a minimum protection level, depending on the type and size of EO.

Appendix 2 to annex B:
Explosive ordnance disposal "Quick Look"

Map of the EO Incident, indicating:

- place of EO incident
- position of own forces
- other relevant locations

Using MGRS Grid reference (8-digit), UTM or WGS84 coordinate

Photograph or Sketch from EO

EOD QUICK LOOK:

GRID: MGRS Grid reference (8-digit), UTM

WHO:

WHAT:

TIME OF INCIDENT: Date-Time-Group (DTG)

Geo location:

Priority: RED/AMBER/GREEN

 # KIA / # WIA
Differentiated by own forces, civilians and adversaries

TIMELINE

e.g.
xx0900 Explosion occurs at …
xx1030 EOD arrives at site.
xx1220 EOD starts exploitation.
xx1330 EOD finishes exploitation at site.
xx1345 EOD returns to CAMP.

SNAPSHOT OF CIRCUMSTANCES, HOW INCIDENT OCCURED (FACTS)

Provide an initial account on the tactical and technical characterization of the incident. Examples include:

- *Personnel involved.*
- *Who reported the incident?*
- *circumstances and conditions before during and after the incident*
- *directions of travel*
- *terrain*
- *ground surfaces*
- *vehicle or foot traffic*
- *where was the item located?*
- *VP / VA*
- *who is the possible target?*
- *where was the IED emplacement and how was the IED constructed?*
- *how item was emplaced, weather, fragmentation patterns, etc.*

ITEMS RECOVERED

-
-
-

Appendix 3 to annex B:
Explosive ordnance disposal report

Line	Item	Sub-item		Example
1	General task information	A	Incident serial number	
2	Reporting unit contact information	A	Unit/unit identifier	
		B	Name	
		C	Rank	
		D	Position/role	
3	Tasking	A	Departure	*DTG*
		B	Arrival	
		C	Incident control point location	*MGRS grid reference (8-digit), UTM or WGS84 coordinate*
		D	Force protection location	
		E	Casualty evacuation (CASEVAC) location	
4	EO/IED description (If more than one with #)	A	Location	*MGRS grid reference (8-digit), UTM or WGS84 coordinate*
		B	EO/IED type	*Time/Command/Victim Operated/ Mortar/Other (UXO/ERW/AXO/etc.)*
		C	Quantity	
		D	EO description	*IED/Explosion/CACHE or FIND/HOAX/FALSE/TURN-IN/ Other (UXO/ERW/AXO etc.)*
		E	Additional information	
If more, continue with numbering 4-1, 4-2, etc.				
5	EO/IED detail	A	Main charge	
		B	Switch	
		C	Power source	
		D	Initiator	
		E	Container	
		F	Enhancements	
		G	Anti-handling device	
		H	More information	
If more, continue with numbering 5-1, 5-2, etc.				
6	Explosive ordnance disposal (EOD) ammunition	A	EOD ammunition used	
If more, continue with numbering 6-1, 6-2, etc.				

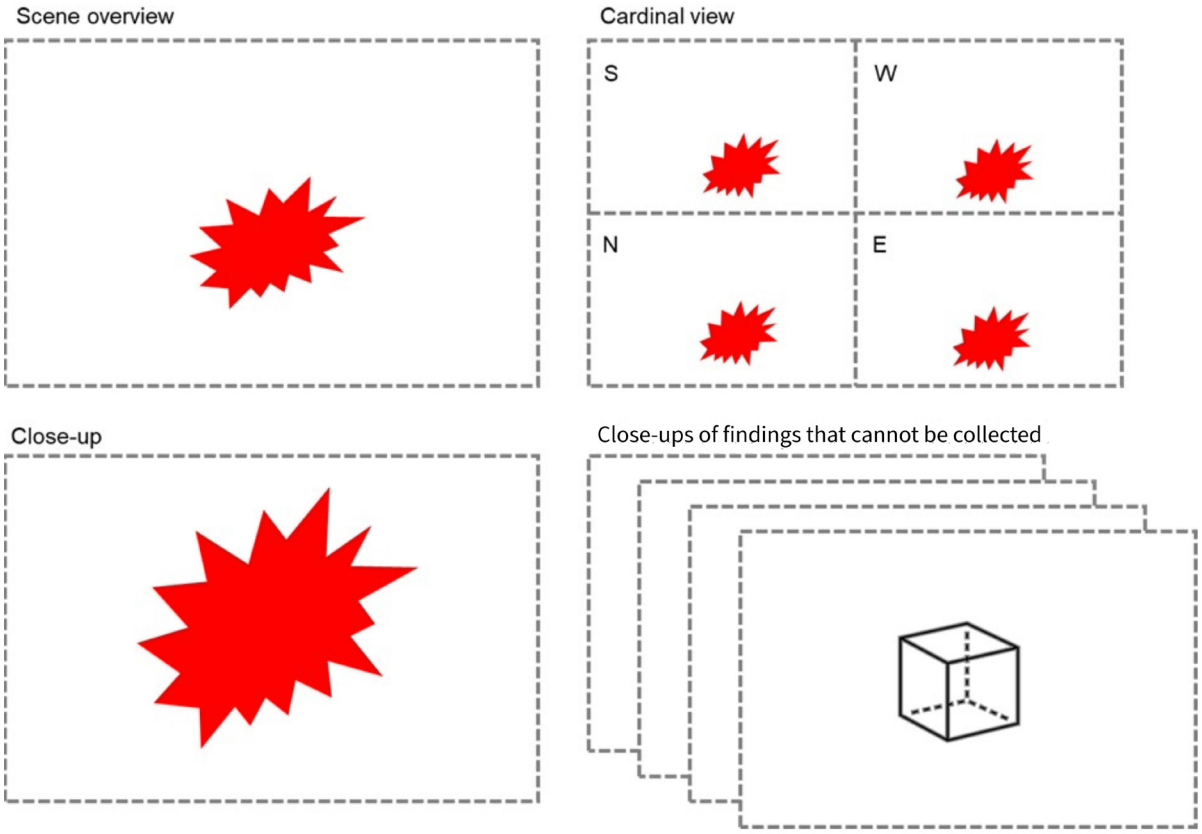
Line	Item	Sub-item		Example
7	Narrative	A		*Provide a detailed account of the tactical and technical characterization of the incident. Examples include:* *- Personnel involved.* *- Who reported the incident?* *- Circumstances and conditions before, during and after the incident.* *- Directions of travel.* *- Terrain.* *- Ground surfaces.* *- Vehicle or foot traffic.* *- Where was the item located?* *- Vulnerable point/vulnerable area.* *- Who is the possible target?* *- Where was the IED emplacement and how was the IED constructed?* *- How the item was emplaced, weather, fragmentation patterns, etc.*
8	Mapping supplement	A	Incident location Main supply routes, line of sight Impact points IED/location Key terrain	*Map overlay (screen capture or picture) of the incident site indicating key information, such as incident location, main supply routes, line of sight, impact points, IED/location, key terrain, etc.*
9	Scene sketch	A	Yes/No	*Scene overview sketch*
		B	Yes/No	*Detailed sketch - show how the components were placed*

Line	Item	Sub-item		Example
10	Pictures	A	Pictures attached that show the overview of the situation and if applicable an overview picture of the recovered items. Incident details: - Detailed picture of the seat of explosion or IED location - Insert photo looking out from seat of blast or out to possible firing point(s) - Ensure you give directions (north, east, south, west) - Ensure you mark and label the IED main charge. Make sure you include direction of travel arrow.	*Incident pictures taken*
		B	Cardinal directions of the scene: Pictures from the contact point, centred at the bottom of the picture, looking out in four directions (north, east, south, west)	*Scene overview*
		C	Pictures showing the location of the incident with details of the travel direction of the target, IED placement on the foreground with components, direction of travel, aiming markers, possible firing point, and escape route(s) of the triggerperson.	*Area overview*

Line	Item	Sub-item	Example
11	Recovered items	A Recovered items	*List the type and quantity of items recovered from the incident (fragmentation, components, wires, tape, etc.)*
		B Recovered samples	*List any samples that were taken from the scene (soil, liquids, residue, etc.)*
		C Evidence pictures taken	*Yes/No* *IED technical characteristics:* *- Include picture of whole device assembled as it was placed.* *- Include a small insert of the device with rulers etc. once removed.* *Ensure picture is labelled with component of the IED*
		D X-ray	*Yes/No*
		E Chain of custody report	*Yes/No*
12	Action list	A	
		B	
		C	
		If required to be continued: D, E, F, etc.	
13	Injuries (as a result of EO/IED actions)	A Number of persons	
		B Severity of injuries	
		C Number of animals	
		If required to be continued: D, E, F, etc.	
14	Damage (as a result of EO/IED actions)	A	
		B	
		C	
		If required to be continued: D, E, F, etc.	
15	Assessment	A Assessment of EOD team	
16	Report completed by	A Unit/unit identifier	
		B Name	
		C Rank	
		D Position/role	
		E Time	*DTG*

Appendix 4 to annex B: Pictorial guidance

The following diagram shows the minimum of pictures that must be taken at the scene of the event and what should be depicted. The explosion shape in the diagram symbolizes the point of interest.



- Scene overview depicts as much of the area where the event took place as possible, with the point of interest centred in the picture.
- Cardinal view depicts the surrounding area around the event site in the main compass points. The point of interest should be in the foreground in the picture.
- Close-up focuses on the point of interest, showing as much of it as possible in the picture.
- Close-ups of findings taken at the scene are used to describe items that might not be possible to be collected, to facilitate examination in a later phase.

Annex C. Improvised explosive device disposal teams

Improvised explosive device disposal (IEDD) teams are very specialized units that can be sourced as part of an explosive ordnance disposal (EOD) platoon or EOD company. IEDD teams are typically required in missions that have an improvised explosive device (IED) threat or potential to develop an IED threat.

There are two types of IEDD teams:

- Standard IEDD teams
- Advanced IEDD teams

For most missions and threats, a standard IEDD team will the best option, as it will have the capacity to respond to most IEDD incidents. Special and unique threats, usually involving chemical, biological, radiological and nuclear (CBRN) materials, confined spaces (deep tunnels), or some other unique and rare threat involving specialized advanced skills, training and equipment may require an advanced IEDD team. Before requesting an advanced IEDD team, missions and planners should carefully consider whether it is truly necessary, since they are difficult to source and standard IEDD teams may be sufficient.

Standard IEDD teams

Standard IEDD teams are composed of a minimum of two personnel: an IEDD assistant and an IEDD operator. The IEDD operator is the team leader in charge of the IEDD team and is responsible for decisions made during an IED response. The IEDD assistant understands how to operate all EOD equipment and supports the IEDD operator during all incidents. A standard IEDD team can respond to all IED incidents except for IED incidents that require advanced training and equipment in relation to CBRN and confined spaces (deep tunnels).

A standard IEDD team will be proficient in the following:

- Know and understand the philosophy and theory of how and why IEDs are used.
- Know and understand how threat actors and perpetrators will use IEDs.
- Know and understand the mandatory actions to be observed when an IED is encountered.
- Know and understand the duties and responsibilities of the IEDD team.
- Know and understand the concept of safe waiting periods (soak times).
- Know and understand how IEDs will be used in rural environments.
- Know and understand how IEDs will be used in urban environments.
- Know and understand the principles of electronic countermeasures (ECMs).
- Know and understand the chemical hazards associated with home-made explosives.
- Know and understand how unmanned aerial vehicles will be used with IEDs.
- Know and understand IED risk assessment/task appreciation.

- Know and understand explosive blast effects and safety considerations.
- Able to identify military ordnance – projected.
- Able to identify military ordnance – landmines.
- Able to identify military ordnance – grenades.
- Able to identify military ordnance – aircraft bombs.
- Able to identify military ordnance – submunitions.
- Able to identify IED components.
- Able to identify dual-use IED components.
- Able to identify electronic circuits.
- Able to identify home-made explosive precursors.
- Able to identify IED categories.
- Able to identify IED indicators.
- Able to identify IED method of employment – command wire IEDs.
- Able to identify IED method of employment – radio-controlled IEDs.
- Able to identify IED method of employment – victim-operated IEDs.
- Able to identify IED method of employment – timed or timer IEDs.
- Able to identify IED method of employment – projected IEDs.
- Able to identify IED method of employment – suicide IEDs.
- Able to identify IED method of employment – vehicle-borne IEDs.
- Able to identify IED method of employment – unmanned aerial vehicle IEDs.
- Conduct IED risk assessment/task appreciation.
- Conduct dismounted IED operations.
- Conduct mounted IED operations.
- Conduct infrastructure clearance operations.
- Conduct vehicle clearance operations.
- Conduct IED render safe disruption.
- Conduct IED disposal by detonation.
- Conduct IED post-blast forensic component search and recovery.
- Conduct the safe transport of home-made explosives for disposal.
- Conduct the safe transport of military ordnance for disposal.
- Prepare equipment and conduct electric disruption.
- Prepare equipment and conduct non-electric disruption.
- Prepare equipment and conduct electric demolition operations.
- Prepare equipment and conduct non-electric demolition operations.
- Prepare, use and maintain individual IED protective clothing and equipment.
- Prepare, use and maintain IED disruptors.
- Prepare, use and maintain X-rays.
- Prepare, use and maintain ECMs.
- Prepare, use and maintain IED search equipment.
- Prepare, use and maintain IED diagnostic equipment.

- Prepare, use and maintain IED photographic/video equipment.
- Prepare, use and maintain IED robots.
- Prepare, use and maintain access and manipulation equipment (hook and line, etc.).
- Prepare EOD/IED incident reports.
- Prepare technical peacekeeping – intelligence reports.

Advanced IEDD teams

Advanced IEDD teams are composed of a minimum of three personnel: an advanced IEDD operator, an IEDD operator and an IEDD assistant. The advanced IEDD operator is the team leader in charge of the advanced IEDD team and is responsible for decisions made during an IED response. The IEDD assistant understands how to operate all EOD equipment and supports the advanced IEDD operator during all incidents. An advanced IEDD team is a highly specialized team that is only required when the IED threat in a mission exceeds the ability of standard IEDD teams.

An advanced IEDD team will be proficient in the following (this is not a comprehensive list, and other emerging threats could exist depending on the mission):

- Respond to IEDs with chemical or biological agents.
- Respond to IEDs with radiological or nuclear material.
- Identify toxic industrial chemicals.
- Respond to IEDs in a confined space.

Composition of IEDD teams

IEDD teams can be composed of three different types of individual personnel: IEDD assistant, IEDD operator and advanced IEDD operator. As mentioned, a standard IEDD team consists of an IEDD assistant and an IEDD operator at a minimum. An advanced IEDD team consists of an IEDD assistant and an advanced IEDD operator at a minimum.

Training and proficiency standards for individual credentials can be based on IMAS or national equivalent. IMAS is a recommended way to measure individual proficiency, but is not required. National standards for IEDD proficiency can be substituted if they are equivalent.

IEDD assistant: an IEDD assistant should possess the skills and competency outlined in IMAS IEDD levels 1 and 2. The national equivalent of these standards is also sufficient.

IEDD operator: an IEDD operator should possess the skills and competency outlined in IMAS IEDD levels 1, 2, 3 and 3+ (without CBRN tasks). The national equivalent of these standards is also sufficient.

Advanced IEDD operator: an advanced IEDD operator should possess the skills and competency necessary for advanced IED threats based on mission and threat requirements. CBRN skills could be equivalent to IMAS IEDD level 3+, but should be tailored to fit the requirement. The national equivalent of these standards is also sufficient.

Annex D. Explosive ordnance disposal unit – critical equipment requirements

This annex provides a breakdown of the minimum equipment deemed to be essential for an explosive ordnance disposal (EOD) capability to be effective, efficient and safe. These EOD unit critical equipment requirements are broken down into the following sections, based on the generic structure of an EOD unit.

- Conventional munitions disposal (CMD) team – appendix 1
- Improvised explosive device disposal (IEDD) team – appendix 2
- Support cell – appendix 5

The equipment listed is deemed the minimum equipment needed to safely, efficiently and effectively undertake the tasks that the stated team or cell is expected to be able to complete.

A troop-contributing country (TCC) can provide equipment in addition to or to a higher capability than those listed in this annex, in line with the contingent-owned equipment (COE) agreement between the TCC and the United Nations.

Only specialist EOD equipment is mentioned in the attached appendices, with the generic administrative and communications and information technology support equipment required by the EOD unit command element not listed.

All IEDD teams are expected to have all the equipment listed in appendix 1, in addition to the equipment listed in appendix 2.

Appendix 1 to annex D:
Conventional munitions disposal team – critical equipment requirements

- Consumables:
  - Tape pressure-sensitive adhesive (TPSA)/duct tape
  - Batteries for all equipment requiring them, including spares and chargers if needed
  - Petroleum, oils and lubricants, as required by the generator
- CMD render safe and disposal procedure guide/database
- Explosive ordnance recognition handbook for the mission area
- Team first aid kit
- Torches/flashlights
- Electricity generator
- Handheld detector for metal detection
- Handheld detector, dual-purpose for densities with ground penetrating radar
- Personal protective equipment in line with IMAS and the security requirements for the mission area:
  - Helmet, gloves, glasses, body armour, Buddy First Aid Kit, ear protection
- Explosive storage/detonator box
- Explosives for render safe, EOD tools and disposal
- Non-electric initiation equipment:
  - Ruler
  - Crimpers
  - Non-metallic knife
  - Burning fuse
  - Igniters
  - Non-electric initiators[1]
  - Main charges
- Electrical initiation equipment:[2]
  - Exploder with batteries including spares and chargers as required
  - Firing cable
  - Electric detonators
  - Main charges
- Protective works equipment:
  - Sandbags
  - Shovels
  - Picks

1 An initiator whose functioning is initiated by non-electric means and includes, inter alia, igniferous or flash detonators/initiators.

2 Electrical initiation equipment accepted in lieu of non-electrical equipment.

    - Blast mitigation material (e.g. bomb blanket)/equipment for movement of items of explosive ordnance
- Digital camera
- Global positioning system (GPS)
- Binoculars
- Laser range finder
- Compass
- Marking kit
- EOD hook and line kit
- Non-metallic prodder
- CMD fuze neutralization equipment (EOD de-armer, rocket wrench)
- Radios (to communicate with external units, e.g. security, headquarters)
- Radios (to communicate internally with own EOD team)
- EOD tools:
    - Toolkit
    - Bolt cutters
- Armoured vehicle

Appendix 2 to annex D:
Improvised explosive device disposal team – critical equipment requirements

All standard IEDD teams are expected to have all the equipment listed in appendix 1, in addition to the equipment listed in appendix 2. The equipment list is not comprehensive and additional items could be required on a case-by-case basis according to the mission threat.

- Forensics recovery kits (e.g. evidence bags)
- Explosives field identification kit
- IED disruptor tool
- EOD remotely operated vehicle:
    - Disruptor deployable
    - Suitable to the terrain in the mission area
    - Remote optical capability
    - Wireless and hardwire deployable
- Portable digital X-ray
- EOD suit, heavy; must conform to National Institute of Justice standards and have 1,800 m/s as per the COE Manual
- Counter radio-controlled IED electronic warfare (CREW) assets (person-portable and vehicle jammer)[3]

3 Only required when the threat assessment indicates the threat of radio-controlled IEDs in the mission area and the type of assets is to be stated, which will determine the support that these assets required.

Appendix 3 to annex D:
Explosive ordnance disposal chemical, biological, radiological and nuclear – critical equipment requirements

- Personal protective equipment (A*, B, C or D level) (*self-contained breathing apparatuses)
- Chemical, biological, radiological and nuclear (CBRN) detectors (according to the threat)
- Stand-off detectors
- Sampling collection kit
    - Pipette (short or long), alternatively syringe with/without Teflon hose
    - Test tube 13 ml
    - Sample tube with spoon
    - Jar 100 ml
    - Spoon
    - Wiping template
    - Copan-sampler (with swab)
    - Transport tube to Copan-sampler
    - Sodium chloride solution (0.9 per cent NaCl in water), 2 ml
    - Sampling wipes (sterile)
    - Test tube 50 ml
    - Tweezers
    - Scissors
    - Transport over pack, tube 50 ml
    - B-protective plastic
    - Plastic bags (gas impermeable)
    - Zip ties
    - Seals, numbered
    - Labels
    - Absorbent bag
    - Parafilm
    - Permanent marker pen
    - Documentation equipment
    - Disposable gloves
    - Decontamination wipes (bleach)
    - Cleaning wipes (alcohol)
- Personal dosimeters
- CBRN transport packaging (lead castle)
- Lead castle (shield people from gamma radiation)
- Area markers

Appendix 4 to annex D:
Underwater explosive ordnance disposal – critical equipment requirements

General

- Individual diving equipment (e.g. masks, fins, underwater lamp, knife, compass)
- Diving gear (e.g. scuba, surface supplied, low magnetic/acoustic rebreathers)
- Small boats (e.g. zodiacs, rigid-hull inflatable boats)
- Trailers
- Recompression chamber (depending on national regulations)
- Buoys
- Lines
- Weights
- Compressors
- Oxygen tank
- Diving emergency kit
- Compatible radios/high frequency/ultra-high frequency/very high frequency
- Handheld GPS
- Underwater photo and video equipment

Localization/identification

- Remotely operated underwater vehicle
- Unmanned underwater vehicle
- Handheld sonar
- Towed sonar
- Underwater metal detector
- Jackstay lines

Disposal

- Lifting equipment
- Underwater special charges and firing systems

Appendix 5 to annex D:
Explosive ordnance disposal support cell – critical equipment requirements

An EOD support cell is intended to provide all technical support required to sustain the EOD capabilities that the unit is supposed to provide to the mission, sector or unit. It is broadly broken down into two branches:

- Technical maintenance section
- CREW detachment

Technical maintenance section

The technical maintenance section will be required to have the necessary technicians, equipment support and materiel to maintain, sustain, repair and upgrade, if necessary, all CMD and IEDD equipment that the TCC deploys. Broadly, in the case of a TCC deploying IEDD teams, this can be broken down into two broad areas:

- General CMD and IEDD equipment support.
- EOD remotely operated vehicles support the electronics, hydraulics, mechatronics, weapons, optical systems and software, along with all other technical aspects of the remotely operated vehicles in service.

CREW detachment

- Hardware spares.
- Test equipment.
- Workshop and tools.
- IT support of hardware, firmware and software to load, repair, maintain and upgrade the equipment and threat fills.

Annex E. Abbreviations

AXO	abandoned explosive ordnance
C2	Command and Control
CASEVAC	casualty evacuation
CBRN	chemical, biological, radiological and nuclear
C-IED	counter-improvised explosive device
CMD	conventional munitions disposal
COE	contingent-owned equipment
CREW	counter radio-controlled IED electronic warfare
DOS	Department of Operational Support
DPO	Department of Peace Operations
ECM	electronic countermeasure
EO	explosive ordnance
EOD	explosive ordnance disposal
ERW	explosive remnants of war
GPS	global positioning system
IED	improvised explosive device
IEDD	improvised explosive device disposal
IMAS	International Mine Action Standards
LOO	line of operation
RCP	route clearance package
RSP	render-safe procedure
SOP	standard operating procedure
STM	specialized training materials
TCC	troop-contributing country
TTPs	tactics, techniques and procedures
U1	Personnel Branch
U2	Intelligence Branch
U3	Operations Branch
U4	Logistics Branch
U5	Planning Branch
U6	Communication and Information Systems Branch
U7	Training and Education Branch
U8	Engineering Branch

U9	Civil-Military Cooperation Branch
UXO	unexploded explosive ordnance
WIT	weapons intelligence team

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