

United Nations
Military Engineer Unit
& CET Search and Detect
Manual

Second Edition
January 2020



DEPARTMENT OF PEACE OPERATIONS



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Preface

We are delighted to introduce the United Nations Military Engineer Unit and Counter Explosive Threat (CET) Search and Detect Manual, a guide for commanders and staff deployed in peace operations, and a reference for Member States and the staff at United Nations Headquarters.

UN peace operations are rarely limited to one type of activity. As they work to implement their mandates provided by the United Nations Security Council in order to create conditions for a return to stability, peacekeeping missions may require military units to perform challenging tasks involving the judicious use of force, particularly in situations where the Host Nation is unable to provide security and maintain public order. To meet these complex peacekeeping challenges, military components often play a pivotal role in providing and maintaining a secure environment.

As the UN continues its efforts to broaden the base of Troop Contributing Countries, and to ensure the effective interoperability of all UN Military Engineer Units, there is a need to formalize capability standards. Together with the seminal work of experts from numerous Member States, the Department of Peace Operations has produced this Manual to enhance the preparation, operational readiness and performance of United Nations Military Engineer Units. In recognition of the work already done, and in anticipation of future improvements, we would like to express our sincere gratitude to the Member States who chaired, volunteered and devoted their time and savoir-faire, and to OMA for the management of this project. The result is a document that captures and consolidates the relevant dimensions of UN Military Engineering into a single, convenient reference.

The Department of Peace Operations will continue to review and revise this manual at least every three years to ensure its relevance in an evolving operational environment while disseminating knowledge and collecting lessons learned. In the meantime, we have every expectation that this document, especially with the concerted efforts of its intended readers, will contribute significantly to improving and enhancing our collective performance in the pursuit of peace.



Jean-Pierre Lacroix
Under-Secretary-General
Department of Peace Operations

Introduction

For several decades, UN peace operations have evolved significantly in its complexity. The spectrum of multi-dimensional UN peace operations includes challenging tasks such as helping to restore state authority, protecting civilians and disarming, demobilizing and reintegrating ex-combatants. In today's context, peacekeeping Missions are deploying into environments where they can expect to confront asymmetric threats from armed groups over large swaths of territory. Consequently, the capabilities required for successful peacekeeping Missions demand ever-greater improvement.

The day-to-day work of military peacekeeping involves the processing, development and publishing of a great deal of correspondence, documents and policies, including Standard Operating Procedures, Guidelines and Manuals including the United Nations Military Unit Manuals (UNMUM). These guidance documents are produced with a view to bring standardization and effectiveness in the functioning of various kinds of military units deployed in peace operations. In addition, the deployment of UN Military Engineers contributes decisively towards successful achievement of the Mission's goals by providing the physical wherewithal for units to operate, sustain and fulfil their mandate.

We are pleased to introduce the revised, comprehensive and updated version of the United Nations (UN) Military Engineer Unit Manual with the necessary inclusion, for the very first time, of the Counter Explosive Threat (CET)- Search and Detect Unit. This manual is an essential guide for Engineer commanders and staff officers both in the field mission and at the United Nations Headquarters, and represents an important reference for Member States and Troop Contributing Countries (TCC).

A handwritten signature in blue ink, appearing to read 'Carlos Humberto Loitey', with a circular flourish at the end.

Carlos Humberto Loitey

Assistant Secretary-General for
Military Affairs, Military Adviser
Department of Peace Operations



Tokyo, December 2018, Member States representatives and DPO/OMA officers in the official opening

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Purpose and Scope

General Description

This Manual describes the United Nations (UN) Military Engineer Unit and Counter Explosive Threat (CET) - Search and Detect process, focusing on Military Engineer support to a UN Mission¹ and Force Headquarters (FHQ). The UN Military Engineer Unit's size and composition depend on the size, composition and requirements of the UN Mission it supports and the physical characteristics of the Mission area.

Benefit to Troop Contributing Countries

Troop Contributing Countries (TCCs) and their deploying contingents will benefit from this document (as well their national military staffs, schools and units) as they become better able to support the reorientation of their Military Engineer Units from national tasks to fully integrated UN operations. TCCs experienced in peace operations can use this Manual to supplement and complement their national manuals. TCCs that are new to UN peace operations or UN Military Engineer Units can use this Manual as a guide to build and field their own Engineer Units. Nonetheless, it is not the intent of this Manual to override the national military doctrine of individual Member States or TCCs, nor is it our intent to impose requirements on national training, operations or structures. Engineer Unit structures will be adapted, ultimately, in accordance with the Statement of Unit Requirements (SUR) and the Memorandum of Understanding (MOU) negotiated between the UN and Troop Contributing Country. Instead, this Manual serves as a complement to existing or emerging TCCs' military capability and preparation for the enhanced performance achieved through interoperability with other TCCs participating in the peace operation.

Benefit to Commanders

UN Military Engineer Unit Commanders and their subordinate leaders will find in this document the guidance they need for planning, preparing and executing their assigned tasks. Chapter 1 explains the concept of employing Engineer Units within the Mission and its military component. Chapters 2 and 3 provide greater detail on the capabilities, tasks and organization expected of the Engineer Unit. Engineer Unit Commanders and staff can plan and manage their unit support requirements based on the information provided in Chapter 4, while Chapters 5 and 6 provide the training and evaluation guidance by which the Engineer Unit can achieve and maintain top operational performance.

Benefit to UN Planners

In addition to being a guide for TCCs and their contingents, this Manual provides standardized guidance and information to UN Headquarters and field Mission planners on the employment of UN Military Engineer Unit capabilities and functions. This Manual is designed for use as a reference and initial starting point for UN planners developing the SUR that, together with the UN-TCC MOU, will form the basis for a UN Military Engineer Unit deployment. UN planners will find most helpful the descriptions of capabilities, tasks and organization of an Engineer Unit as they tailor the unit according to Mission requirements and the generic standards described in Chapters 2 and 3.

Benefit to All

This Manual is primarily written at the operational and tactical levels. It is based on UN guidance reflecting lessons learned, feedback from field Missions and input from practitioners experienced in Engineer Unit peace operations. Workshops conducted by interested Member

¹ Throughout this document, a capital M in the word "Mission," as in, "the UN Mission," is used to distinguish the word as a UN organization; as opposed to a small "m," as in, "a military mission" indicating a *task or operation*.



States and TCCs produced the draft that was finalized after extensive coordination within DPO and DOS. The result is a most comprehensive body of thought on UN Military Engineer Units designed to assist contingents in re-orienting their Military Engineer Units towards interoperability in UN peace operations. This Manual should be read in conjunction with relevant UN policies² and relevant manuals, especially the UN Infantry Battalion Manual (Jan 2020) (UNIBAM),³ in order to gain a more comprehensive understanding of UN standards, policies and procedures related to peace operations. Moreover, every detail of the Mission framework can be more thoroughly studied in the UN Capstone Doctrine which, along with other important UN policy documents, is available at the following UN links:

“Policy and Practice Database,” accessible only to UN staff on the UN network (including field Missions) at:

http://ppdb.un.org/Nav%20Pages/PolicyFramework_Default.aspx and,

"Resource Hub," recently developed for Member States to access UN documents including the UN Military Units Manuals (such as this one) at:

<http://research.un.org/en/peacekeeping-community>

² *Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019)*

³ *UN Infantry Battalion Manual Second Edition (Jan 2020)*



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Chapter 1

Employment Concept for the UN Military Engineer Unit

1.1 Role

1.1.1 The primary role of the UN Military Engineer Unit is to enable the deployment and operation of the UN Mission under conditions allowing the Mission to fulfil its mandate in an efficient and safe manner. Engineers enable Mission transition operations from peacekeeping to peace building,⁴ and from Mission support to capacity building of Host Nation. The Engineer Unit is part of the Mission’s overall integrated effort to improve the operating environment by building facilities and providing engineer services throughout the Mission area of operations.

1.1.2 UN member states describe their national military engineer units (and core capabilities) in terms of “Combat Engineers” and “Construction Engineers.” UN Military Engineer Units are similarly categorized as “Combat Engineers” and “Construction Engineers.” Mission requirements can result in an Engineer Unit that is exclusively one type or the other, or, an Engineer Unit that is a combination or “composite” of both. “Combat Engineers” refers to military engineers in direct support of military operations, as distinct from those engineers focused on construction projects. The term “Combat Engineers” is used throughout UN publications including Mission Start-up Field Guide for Mission Managers of United Nations Peace Operations (Sep 2010),⁵ and Policy on Authority, Command and Control in UN Peacekeeping Operations (Oct 2019)⁶ and SUR. The distinctions between the tasks performed by the Combat and Construction Engineers, and their organizations, are thoroughly described in Chapters 2 and 3.

1.2 Command and Control

UN Military Engineer Units are under the command and Operational Control (OPCON) of the Force Commander/Head of Military Component (FC/HoMC). In accordance with the DPO/DOS Policy on Authority, Command and Control, UN Operational Control includes the authority to assign separate tasks to subordinate units of a contingent as required by the Mission’s operational necessities, in consultation with the Contingent Commander, and as approved by the Under-Secretary-General, DPO. The FC/HoMC is authorized to assign military units under Tactical Control (TACCON) of a designated commander for specific purposes and periods. UN TACCON includes the detailed and local direction and control of movement or manoeuvres necessary to accomplish an assigned mission or specific tasks.

1.3 Tasking Authority

The following paragraphs describe the tasking authority related to the four general types of UN Military Engineer Units typically found in field Missions: Combat Engineer Units, Construction Engineer Units, Explosive Ordnance Disposal (EOD)⁷ Units and Composite Engineer Units.

1.3.1 Tasking Authority for UN Combat Engineer Units

⁴ Engineers play a major role in building peace after conflict, in establishing the conditions for recovery, and development activities under peace building tasks. *A New Partnership Agenda: Charting a New Horizon for UN Peacekeeping (Jul 2009)*

⁵ *Mission Start-up Field Guide for Mission Managers of United Nations Peace Operations (Sep 2010), Chapter 8.5*

⁶ *Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019)*

⁷ The collective term that includes the procedures of detection, access, diagnosis, render safe, recovery and final disposal used in the disposal of items of explosive ordnance or any hazardous material associated with an EOD incident.

UN Peacekeeping Missions Military EOD Unit Manual (Sep 2017) “Annex A EOD Capabilities Spectrum” and “Annex I Glossary of Terms”.

UN Combat Engineer Units are modular and scalable according to Force requirements but generally include obstacle (including gap and river) crossing capability, the establishment of field defences for Force and Sector Headquarters that are beyond other contingents' capability, Force Protection (FP) and limited road, airfield and landing zone repair. Under the UN authority Command and Control policy, Combat Engineer Units are specifically categorized as “combat support units” under the direct tasking authority of the FC/HoMC.⁸ UN Combat Engineer Unit daily tasking priorities are routinely determined by the Force Engineer/U-8 in case the FHQ has that cell. The Force Engineer is the focal point for preparing UN Combat Engineer Task Orders consistent with Force Commander (FC) priorities and Sector Commander requirements.

1.3.2 Tasking Authority for UN Military Construction Engineer Units

UN Military Construction Engineers provide the Mission a vertical and horizontal construction capability⁹ and rapid repairs to critical infrastructure that create or improve Mission self-sufficiency, Force and Mission mobility, protection of civilians and support to humanitarian efforts. Military enabling resources¹⁰ such as the Construction Engineers fall under the tasking authority of the Director/Chief of Mission Support (DMS/CMS) and/or his/her duly designated subordinates.¹¹ Construction Engineer daily tasking priorities are routinely determined by the Chief of Service Delivery under the delegated tasking authority of the DMS/CMS. The FC/HoMC is responsible to facilitate the military Construction Engineer tasking process through coordination between the FHQ and the Office of the DMS/CMS ensuring compliance with overall Mission engineer priorities. See Annex B for a detailed description of this tasking mechanism. This tasking mechanism allows the Mission to allocate its Engineer resources with maximum effectiveness and efficiency and should be strictly implemented.

1.3.3 Tasking Authority for UN Military Explosive Ordnance Disposal Units

Under UN Command and Control policy, EOD units are specifically categorized as “combat support units” under the direct tasking authority of the FC/HoMC.¹² EOD units employed in UN operations shall be tasked in accordance with Chapter 1 of UN Peacekeeping Missions Military EOD Unit Manual (Sep 2017).

1.3.4 Tasking Authority for UN Military Composite Engineer Units

The UN Military Composite Engineer Unit is modular and scalable according to Force and Mission requirements, and provides the capability advantages of Combat, Construction Engineers and EOD. In keeping with the UN's Command and Control policy, the Combat Engineer Platoon within the Composite Engineer Unit remains under the command and tasking authority of the FC. Military enabling resources, such as the Construction Engineer Platoon within the Composite Military Engineer Unit, remain under the tasking authority of the DMS/CMS and his/her duly designated subordinates.¹³

1.4 Employment during the Various Mission Phases

1.4.1 During the Mission start-up phase, UN Military Engineers have a variety of requirements involving planning, design, land development, base camp construction and the provision of

⁸ *Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019)*.

⁹ Vertical construction includes the construction and rehabilitation of permanent and transient camps and existing structures. Horizontal construction includes the construction and maintenance of roads, bridges, airfields and heliports.

¹⁰ The term, “military enabling resources,” is a Department of Operational Support-preferred term specifically referring to military enabling assets (personnel and equipment) such as construction engineers, signals, aviation, logistics, transportation, medical and explosive ordnance disposal units or smaller elements that may be deployed in Mission-controlled tasks.

¹¹ *Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019)*, paragraphs 60 to 64

¹² *Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019)*, paragraph 66

¹³ *Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019)*

basic infrastructure and facilities. These tasks may be performed under challenging security conditions including asymmetric threats and the presence of mines, improvised explosive devices (IEDs) and other Explosive Ordnance (EO)¹⁴ that require removal or destruction. Combat Engineers provide the Force a unique military capability to perform under these circumstances, complementing other Force and Mission requirements undertaken by the Engineer Unit's Construction Engineers. Together, both types of Engineers provide a vital means to achieve the Force and Mission's initial operating capability as quickly as possible.

1.4.2 During the mandate implementation phase, UN Military Engineers continue to provide the Force its Combat Engineer support in addition to general Construction Engineer support. Peace Operations experience indicates increasing expectations that UN Military Components will continue to be targeted by negative elements and asymmetric threats that require Combat Engineer capability, either stand-alone Combat Engineer Units, or robust element within Composite Engineer Units. See the SUR at Annex A.

1.4.3 Finally, during the Mission's transition/liquidation phase, UN Military Engineers (both Combat and Construction) facilitate peace building support goals through the continuance or completion of engineering projects through handover and withdrawal from the Mission area. The capabilities and tasks of UN Combat, Construction Engineer and EOD Units in support of Mission partners and capacity building are discussed at length in Chapter 2.

¹⁴ All munitions containing explosives, nuclear fission or fusion materials and 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 and improvised explosive devices; and all similar or related items or components explosive in nature. *UN Peacekeeping Missions Military EOD Unit Manual (Sep 2017) "Annex I Glossary of Terms"*.

1.5 Military Engineers in the UN Mission Structure

The UN Military Engineer Unit (regardless of type) is OPCON to and under the command of the FC. A typical UN Mission Headquarters is depicted below showing the UN Military Engineers (in the red oval) within the overall Mission structure. As described in the preceding paragraphs, the FC has OPCON over all members of the Military Component, and has direct tasking authority over the Combat Engineers; whereas Mission enabling assets, including the Construction Engineers, while still OPCON to the FC, are under the tasking authority of the DMS/CMS and his/her designated representatives.

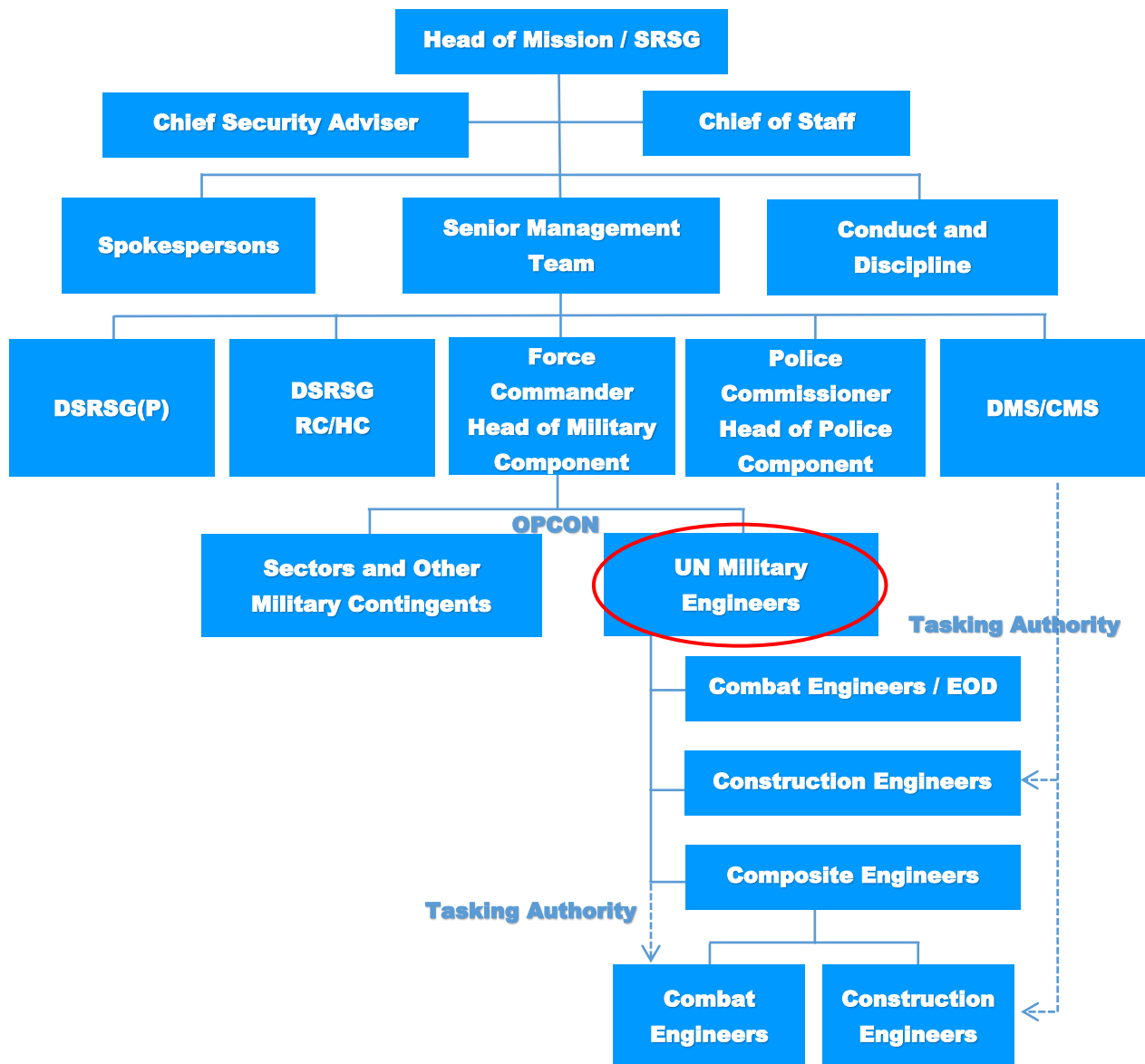


Figure 1-1 UN Military Engineers in a Generic UN Mission Structure

1.6 UN Military Engineers in the Force Headquarters Structure¹⁵

The fundamental role of the FHQ is the command and control of the Mission’s military operations in support of the Mission’s mandate implementation. Regardless of the nature of the Mission, every FHQ has common functions executed by functional groups, including UN Military Engineers. A typical organization for the FHQ is depicted below. The U-8 staff (shown in the red circle below) plan military engineer operations at Force and Sector level in coordination with overall Mission priorities.

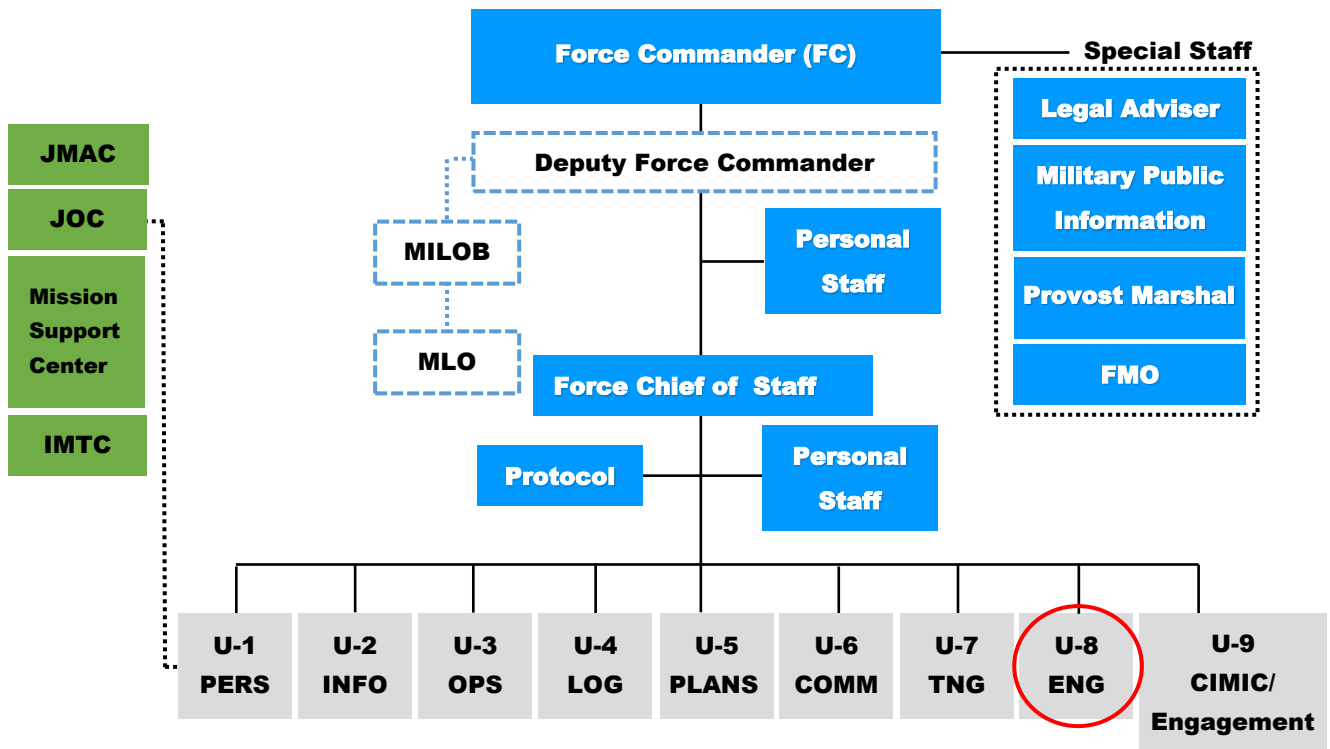


Figure 1-2 Typical Organization of a UN Force Headquarters

¹⁵ This brief description of the Force Headquarters is for illustrative purposes. It is presented here to provide perspective on how military engineer assets fit into the overall Force Headquarters structure. For more details on the Force Headquarters, *UN Force Headquarters Handbook (Nov 2014)*

1.7 UN Military Decision Making Process (UNMDMP)

Orders published by the FHQ will be developed using UNMDMP. Those orders include an engineer concept of operations that the UN Military Engineer Unit must use to inform their own planning process.



Figure 1-3 Flow of the UNMDMP

1.8 UN Military Engineers in the Sector Headquarters Structure

The FHQ can be configured with a number of subordinate Sector and Battalion Headquarters. A typical organization of the Sector Headquarters (SHQ) is shown below. Again, note the red circle around “Engineers” indicating the UN Military Engineer Unit (if assigned to the Sector) within the overall SHQ structure.

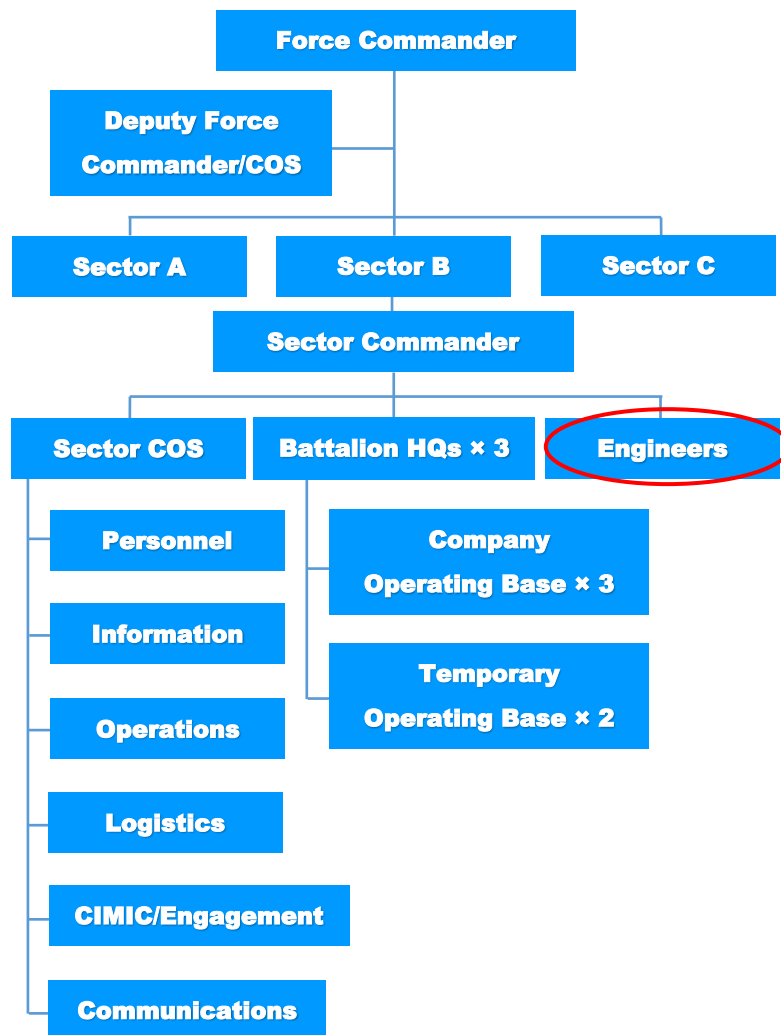


Figure 1-4 UN Military Engineers in a Generic UN Sector Headquarters Structure

Chapter 2

Capabilities and Tasks of the UN Military Engineer Unit

2.1 Capabilities

The core capabilities of the UN Military Engineer Unit include Combat Engineering, Construction Engineering, EOD and Support to Mission Partners. A list of tasks, conditions and standards is found at Annex F, Appendix 2.

2.2 Combat Engineering¹⁶ Capabilities

Combat Engineers (whether deployed as a separate Combat Engineer Unit or as an element within a composite Combat and Construction Military Engineer Unit) are in direct support of military operations and thus come under the direct tasking authority of the FC/HoMC. Combat Engineering requires the capability to deploy military engineer personnel and equipment on short notice into what may be hostile and dangerous environments. These units must be capable of providing their own FP, including the use of personal and crew-served weapons.

2.2.1 The unit is expected to provide obstacle crossing (including gap and river) and route clearance¹⁷ capability and provide limited capacity to repair roads, airfields and landing zones in direct support of military operations, potentially under hostile conditions. To effectively defeat or mitigate threats posed by EO, these units must be capable of conducting Counter Explosive Threat activities including but not limited to EOD and demining¹⁸ operations. These support other Combat Engineer tasks including establishment of field defences, enhancing installation security and access control, performing observation activities during hours of darkness while able to pinpoint EO locations. Depending on the level of explosive threat, the FC/HoMC may elect to concentrate all EOD teams under a unified authority to coordinate the employment of this specialized capability. The teams should also be capable of communicating via VHF and HF communications, and have their own logistic support element capable of supporting deployment.

2.2.2 The unit also has search capability with which to locate specific targets using intelligence assessments, systematic procedures and appropriate detection techniques. Specified targets may include people, vehicles, routes, areas, locations, buildings and material resources employed by an aggressor or to be used by friendly forces. Search involves the planning, management and application of systematic procedures and appropriate techniques to confirm the presence or absence of concealed threats such as conventional weapon systems, items of Explosive Remnants of War (ERW) and IEDs and components thereof. Search can be employed in support of the full spectrum of operations.

2.3 Construction Engineering¹⁹ Capabilities

Construction Engineers are Mission military enabling assets and, while under the OPCON of the FC/HoMC, are under the tasking authority of the DMS/CMS and his/her designated subordinates such as the Chief of Service Delivery. Tasking authority, under DPO/DOS policy, “includes the authority to deploy, redeploy and employ all or part of an enabling unit to achieve

¹⁶ Statement of Unit Requirement for the Combat Engineer Company at Annex A.

¹⁷ The removal of the immediate threat from mines, UXO and IEDs along a route. *UN Peacekeeping Missions Military EOD Unit Manual (Sep 2017) 4.3.1.2 “Force Protection (FP) Engineering Activities”*

¹⁸ In this manual, “EOD” and “Demining” are separate described intentionally. EOD and Demining tasks are based on Mission structure, requirements of FC/HoMC and UN-TCC MOU. Demining is not traditionally an EOD task but is a core Combat Engineer capability supported by EOD units where appropriate (example: discovery of mines altered to detonate in a manner other than originally designed).

¹⁹ Statement of Unit Requirement for the Construction Engineer Company at Annex A.

the Mission's mandate.”²⁰ The Force Engineer (U-8) is responsible for identifying and assigning military Construction Engineer units to respond to DMS/CMS tasking. Construction Engineering requires the enhanced capability (primarily in terms of heavy equipment operator expertise) to provide rehabilitation and maintenance of access roads, runways and existing infrastructure (to include buildings, water supply and wastewater disposal).²¹ Construction Engineers provide enhanced capabilities in the construction of physical protection measures for UN installations, and must have the capability to provide their own FP, including the use of personal and crew-served weapons. For the protection of the Force, Engineer Units comprised of Construction Engineers should be capable of demining and EOD. The Engineer Unit must also have a logistic support element capable of supporting the Construction Engineer platoon-size sub-elements simultaneously in different locations, and may be required to provide water treatment and purification capabilities in support of other Mission personnel/units including well drilling.

2.4 EOD Capabilities²²

The core capabilities of the UN military EOD unit include:

- Conventional munitions disposal (CMD)²³ activities;
- Improvised explosive device disposal (IEDD)²⁴ activities;
- Support to mission partners.

A comprehensive approach is often required in EO threat mitigation activities, including wider ERW clearance operations and IEDD. Other arms and capabilities are often deployed in conjunction with EOD assets on operations such as FP, search and Counter Radio-controlled Electronic Warfare (CREW)²⁵ assets. Deployment of search assets along with, in support of, and in support to EOD teams that is most common. Search assets work in close cooperation with EOD assets to assist in the detection and location of IEDs, and components including explosives and IED paraphernalia. In broad terms EOD and search assets can be combined in composite unit that has both capabilities or they can be task organized in different units and brought together for a given operation or task. It is common for both asset types to be deployed together. For more information on search assets and their capabilities and requirements, Annex C and the relevant manuals should be referenced. Included in these considerations of search and EOD unit interactions is the use of Explosive Detection Dogs (EDD) which is considered to be search assets.

²⁰ *Policy on Authority, Command and Control in UN Peacekeeping Operations (Oct 2019), paragraphs 30 to 33.*

²¹ Environmental engineering activities and tasking, e.g. waste management, water treatment and sanitation, in compliance with environmental protection should be performed.

²² *UN Peacekeeping Missions Military EOD Unit Manual (Sep 2017) “2.1 Core Capabilities”*

²³ Any EOD operation conducted on conventional munitions containing either biological or chemical agents or the recovery of other containers holding toxic substances. *UN Peacekeeping Missions Military EOD Unit Manual (Sep 2017) “Annex I Glossary of Terms”*.

²⁴ The location, identification, rendering safe and final disposal of IEDs. Final disposal refers to the final elimination of explosive ordnance hazards by explosive ordnance disposal personnel. This may include demolition, neutralization, burning, or other proper means. In some cases, the Render-safe procedure (RSP) is the final disposal. *UN Peacekeeping Missions Military EOD Unit Manual (Sep 2017) “Annex I Glossary of Terms”*.

²⁵ The term used to describe the use of Electronic Counter Measures (ECM) equipment, techniques and specialists to mitigate threat posed by RCIEDs. *UN Peacekeeping Missions Military EOD Unit Manual (Sep 2017) “Annex I Glossary of Terms”*

2.5 Engineer Tasks

<p>A. Combat Engineering Tasks:</p> <ol style="list-style-type: none">1. Obstacle Crossing.2. Establishment of Field Defences Such as Observation Posts, Perimeter Defences and Hardening of Key Points.3. Expedient Repairs to Roads, Airfields and Landing Zones.4. Search.
<p>B. Construction Engineering Tasks:</p> <ol style="list-style-type: none">1. Vertical Construction Tasks:<ol style="list-style-type: none">a. Construction of Rigid/Semi-Rigid or Prefabricated Structures.b. Rehabilitation and Repair of Existing Structures.c. Well Drilling.d. Surveying.2. Horizontal Construction Tasks:<ol style="list-style-type: none">a. Road Construction, Repair and Maintenance.b. Bridge Installation, Repair and Maintenance.c. Airfield and Heliport Construction, Maintenance and Repair.d. Paving Projects.e. Drainage Projects.f. Earthworks and Site Preparation.g. Construction and Maintenance of Boat Ramps.
<p>C. EOD Tasks:</p> <ol style="list-style-type: none">1. Carry out reconnaissance, identification, field evaluation of EO including IEDs.2. Respond to, identify, render safe and dispose of EO.3. Support the recording and collection of EO components.4. Provide immediate EOD reports to the EOD Coordination Cell (EODCC).5. Assist commanders with FP planning and execution.6. Provide technical advice and assistance.7. Support mortuary services activities.8. Conduct and/or support EO accident or incident investigations.9. Conduct and/or support Explosive Site Investigation (ESI) or post-blast analysis/investigation;10. Recover and record of EO components.11. Provide, exchange and evaluate information on threat posed by EO.12. Educate UN personnel on EO and IED.13. Conduct Explosive Hazard/Threat Education of the local population, if authorized.
<p>D. Support to Mission Partners Tasks:</p> <ol style="list-style-type: none">1. Construction Support.2. Capacity Building and Training.3. Protection of Civilians Support.4. Disaster Relief Support.

Figure 2-1 Engineer Task List

2.6 Combat Engineering Tasks

Combat Engineers of the UN Military Engineer Unit perform tasks required for the proper development of military operations in accordance with the Force Concept of Operations and applicable military operations orders. Mobility Support is a principal Combat Engineer task that includes route reconnaissance, route clearance, obstacle (including gap and river) crossing, search for explosive hazards/threat, road maintenance, support of beach landings, improvements to installation access and security, and the establishment of heliports. Another principal Combat Engineering task is Survivability Support, which includes preparation of installation terrain, and the establishment/improvement of FP obstacles, earthworks, shelters and chicanes.²⁶ Survivability Support includes the creation of observation posts and check points, as well as technical reconnaissance and surveys of existing and prospective installations to include gathering information on water, power, terrain and infrastructure. Combat Engineers are also tasked with support to relocation and re-deployment of Temporary Operating Bases (TOB), and joint operations with other UN military contingents, Formed Police Units and host country security forces.

2.6.1 Obstacle Crossing

A Combat Engineer Unit is tasked (within its capabilities) to ensure the Force and its subordinate elements, operate safely, unimpeded by obstacles (including gaps and rivers) along lines of communication in the Force area of operations. The UN military component's transportation, logistics, medical and first responders depend on the UN Combat Engineer Units to identify and overcome obstacles. Sub-tasks may include earthworks and bridging tasks.

2.6.2 Establishment of Field Defences Such as Observation Posts, Perimeter Defences and Hardening of Key Points

These tasks require pre-planning and coordination to obtain the appropriate resources and coordinate the layout and preparation of these defences into the overall Force plan. Sub-tasks may include surveying, site preparation, earthworks and the preparation of defensive FP positions for Force and SHQ that are beyond other contingent's capability, including barricades for ammunition storage in line with the UN Weapons and Ammunition Management Policy.

2.6.3 Expedient Repairs to Roads, Airfields and Landing Zones

A Combat Engineer Unit is tasked to make field expedient repairs in order to maintain military operational momentum. These repairs are made with the best materials on hand and as quickly as possible to maintain the military operational tempo. Sub-tasks may include earthworks, drainage, site preparation, paving and vertical signalling/route marking of roadways.

2.6.4 Search

See Annex B.

2.7 Construction Engineering Tasks

Construction Engineering is categorized into vertical and horizontal construction.

2.7.1 Vertical Construction

Vertical Construction capabilities include the building of rigid/semi-rigid and prefabricated structures, the rehabilitation and repair of existing structures, well drilling and surveying.

²⁶ Chicanes are a series of tight turns in opposite directions designed to slow vehicular traffic for safety and Force Protection.

2.7.1.1 Construction of Rigid/Semi-Rigid or Prefabricated Structures

Rigid/semi-rigid or prefabricated structures (such as purpose-built container-type modular units) ensure the Mission infrastructure has adequate shelter for operational, administrative, accommodation and protective purposes on a continuous and extended basis. Rigid/semi-rigid and prefabricated structures must have sufficient strength to provide protection from local weather conditions. Given the construction's enduring intent, sub-tasks may include site planning, building foundations, main frame construction work, water distribution systems and drainage internal finishing and utility work.

2.7.1.2 Rehabilitation and Repair of Existing Structures

Rehabilitating and repairing existing structures, if done early and using the right materials and tools, allows the structures to last longer and saves money, while prolonging the usable life of the structure. Rehabilitation and repair work priority is determined based on the structure's function within Mission requirements and degree of damage/deterioration. Associated sub-tasks include physical inspections, cleaning, maintenance and repair work. Repairs may include improvements to electrical networks²⁷, water supply and sanitation, such as the construction of ablutions and separate plumbing drains for "grey" (dirty) water and sewage.

2.7.1.3 Well Drilling²⁸

Portable water is often not readily available in many Mission areas. UN Military Engineers can make a dramatic and quick impact on the quality of life and sanitation for the Force, Mission and local communities by conducting generic water producing tasks including well drilling.

2.7.1.4 Surveying

Surveying is critical to the precise design and execution of all engineer construction projects. Surveying sub-tasks involve the precise measurement of distance, elevation and angles associated with terrain features and any existing structures on the construction site. One type of survey is done for planning purposes and focuses on the terrain and on-site features. Another type of survey focuses on the structure under construction, and determines the detailed position and dimensions of that structure. Effective surveys require meticulous measurement, quantitative data recording and conscientious application of appropriate engineering standards.

2.7.2 Horizontal Construction

Horizontal Construction capabilities involve road, bridge and airfield/heliport construction, repair and maintenance.

2.7.2.1 Road Construction, Repair and Maintenance

Roads are vital for command and control, facilitating communications, maintaining security and providing for logistical resupply. Well-built and maintained roads benefit everyone and provide essential socio-economic benefits to the local community. The continuous movement of people and heavy vehicles, plus the damage done by severe weather, means road maintenance must be done as soon as deterioration is detected. Early maintenance and repair are necessary to keep Mission operations flowing smoothly and without interruption. Sub-tasks include, but are not limited to, site surveys, earthworks, culvert and paving projects.

2.7.2.2 Bridge Installation, Repair and Maintenance

²⁷ Electrical Engineering capability is lacking in most missions. Unit specialization is required.

²⁸ Well Drilling is a highly specialized task that requires expertise in geology and geophysics, core drilling, mud assessment, coring, various environmental aspects, logging, laboratory testing, etc.

The installation, construction, repair and maintenance of bridges along lines of communication are critical to the Mission operations. The benefits and importance of proper bridges equal or exceed those of roads. Sub-tasks include but are not limited to topographic surveys, earthworks, site preparation, drainage, foundation work, main frame construction or installation of prefabricated bridges and paving projects.

2.7.2.3 Airfield and Heliport Construction, Maintenance and Repair

In Mission areas with weak or non-existent road and rail networks, the construction, maintenance and repair of airfields and heliports provide a critical means of projecting Mission influence and are a logistics and medical lifeline. Sub-tasks include topographic surveys, site plans, site preparation, paving and drainage projects.

2.7.2.4 Paving Projects²⁹

Road paving projects include asphalt and concrete paving. Paving strengthens the road surface, prevents road damage from traffic, and reduces or eliminates road surface dust by preventing the scattering of road surface material.

2.7.2.5 Drainage Projects

Drainage problems have numerous negative effects including deterioration or destruction of property, on-going projects and existing roadways and bridges. Poor drainage can halt transportation, threaten command and control, Mission operations, resupply and medical support. Persistent drainage problems can lead to diseases such as malaria and cholera. It is vitally important for engineers to design the correct size and type of drainage taking into account existing infrastructure and the typical amount of rainfall, river overflow and tides.

2.7.2.6 Earthworks and Site Preparation

Earthworks and site preparation are the reshaping of land by cutting, levelling, filling and compacting earth to the desired shape using earth moving equipment. Earthworks and site preparation are fundamental to other engineer projects as they provide the basis upon which roads and bridges are built or upgraded, foundations and drainage are created for new projects, and berms put into place for FP.

2.7.2.7 Construction and Maintenance of Boat Ramps

When Mission requirements stipulate the need for Maritime or Riverine assets, a UN Military Engineer Unit may need to construct or maintain boat ramps and port facilities in support of maritime and/or riverine operations.

2.8 EOD Tasks

Demining and EOD tasks are done under the authority of the FC in coordination with the other UN entities, if present in the theatre, and when civilian, UN, or other international organizations are directly impacted (as opposed to purely military Force Protection tasks). The purpose of this coordination is to ensure information sharing and unity of effort. Key tasks conducted by the UN Military Engineer Unit consist of demining and EOD, in addition to providing technical training and assistance to supported units by providing demining and EOD support before and during search operations. The unit must hold, maintain and operate EOD equipment and execute EOD activity as directed, by the appropriate tasking authority;

If demining is done in support of humanitarian mine action, the International Mine Action Standards (IMAS) apply. If demining is performed while in contact or under threat of contact

²⁹ Paving is a highly specialized professional work that requires laboratory testing for compliance with technical norms and specialized equipment.

with hostile forces, it is classified as a breaching operation and IMA Standards are not applicable. For more information, refer to the EOD Manual and Annex B.

EOD tasks include:

- Carry out reconnaissance, identification, field evaluation, rendering safe, neutralization, recovery and disposal of EO including IEDs;
- Respond to, identify, render safe and dispose of EO that threaten or impede FoM. This also includes destroying captured EO and assisting in the disposal of unserviceable EO. This is a highly hazardous type of operation and must be trained, planned and practiced carefully; as the generation of this capability is not one that can be done easily;
- Support the recording and collection of EO components;
- Provide immediate EOD reports to the EOD Coordination Cell (EODCC) after a completed operation or task, and prepare a complete report including pictures/sketches and location with accurate grid coordinates;
- Assist commanders with FP planning and execution; reviewing FP plans and EO threat/military search procedures, assist in facility site surveys; and develop/implement emergency response plans and FP plans;
- Provide technical advice and assistance for route clearance, military search, deliberate area clearance, and minefield activities involving a known/probable threat of Unexploded Explosive Ordnance (UXO) , Abandoned Explosive Ordnance (AXO) & mines;
- Support mortuary services activities in planning and conducting recovery and processing of remains contaminated by EO;
- Conduct and/or support EO accident or incident investigations;
- Conduct and/or support Explosive Site Investigation (ESI) or post-blast analysis/investigation;
- Recover and record of EO components in support of enhancing situational awareness (SA);
- Provide, exchange and evaluate information between agencies, in line with the mission mandate, involved in mitigating the threat posed by EO;
- Educate UN 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 Pre-Deployment Training (PDT) and in theatre awareness training;
- Conduct Explosive Hazard/Threat Education in support of the local population, if authorized by the mission and force leadership.

2.9 Support to Mission Partners Tasks

The purpose of this capability, under the Tasking Authority of the DMS/CMS, includes support to the UN Country Team, local government, international aid agencies and non-governmental organizations to facilitate these partner activities and contribute to Host Nation stabilization and security. The contribution of a UN Military Engineer Unit to this requirement is largely in the tasks of Construction Support, Capacity Building and Training, Protection of Civilians and Disaster Relief.

2.9.1 Construction Support

Construction Support involves horizontal and vertical construction, such as assistance in land development through earthworks, site preparation, structure and facility construction and repair, as well as road and lines of communication construction and repair. These Engineer Unit projects have immediate impact, improving local socio-economic activities and fostering goodwill towards the UN Mission.

2.9.2 Capacity Building and Training

Capacity building and training is done under the authority and direction of the Head of Mission/Special Representative of the Secretary-General. These tasks involve enhancing local skills and capabilities using a UN Military Engineer Unit's own expertise and equipment. When an Engineer Unit conducts capacity building and training activities for local residents, it is important to keep in mind that the construction skills taught should be appropriate to local needs, and eventually self-sustainable without the UN's presence. Respect for the local culture and a partnering attitude will be most successful. Capacity building works hand-in-hand with construction support. For example, local nationals can be trained in some skills necessary for them to participate, in a meaningful way, in construction projects sponsored by the Mission. Engineer Unit projects will benefit the Host Nation's nation-building efforts before and after the Mission ends. Typical sub-tasks include training the Host Nation's engineers on skills, equipment, plant and machinery. Capacity building and training preferably require Engineer Unit commanders and staff who are capable of conducting liaison, coordination and integration with the Mission's various civilian elements, Civil-Military Cooperation (CIMIC) Focal Point, UN funds, programs and agencies, international organizations, non-governmental organizations, the Host Nation's civilian security forces and local organizations.

2.9.3 Protection of Civilians Support

While all elements of the Mission have a mandated responsibility to protect civilians in the mission area, the UN Military Engineer Unit has special capabilities to provide physical security, prevent harmful action by hostile forces and prevent disease. These capabilities include earthworks, drainage and construction projects to prevent flooding and remove sewage; well drilling to provide clean water; and, in coordination with other stakeholders where available EOD tasks.

2.9.4 Disaster Relief Support

In circumstances where the UN already has a Military Engineer Unit present in a disaster-afflicted area, immediate disaster relief can take place, helping the UN's image as a positive force in the lives of the local population. Together with other enabling capabilities such as communications, medical, logistics, aviation and transportation, the Mission has the capability to use heavy engineer equipment to clear and re-establish roads and other lines of communication, conduct survivor search and rescue and provide emergency food, water and shelter. Given its established organization and command and control structure, the UN Mission, during the aftermath of a disaster, can become a focal point and organizing framework around which relief efforts can be built. A UN Military Engineer Unit can play an essential role in such efforts.

Chapter 3

Organization of the UN Military Engineer Unit

3.1 Organizing Principles

3.1.1 Companies and Battalions

A UN Military Engineer Unit is normally described in terms of a company-size organization. It is possible, however, to find Military Engineer battalions in UN Missions. In principle, the UN Military Engineer Unit includes specialized elements organized according to function and equipment. The size and functions of the Military Engineer Unit depend on Force and Mission requirements. Regardless of whether the Force or Mission requirement calls for a company or battalion-sized Military Engineer Unit, the organizing principles are the same.

3.1.2 Modular and Scalable

The nature of a UN Military Engineer Unit is modular and scalable. Modular means that different types of specialized engineer elements can be added to the overall Engineer Unit (during the force generation process at UN Headquarters) to meet the unique requirements of each Mission. Scalable means that the number of personnel and amount of equipment within a specialty can be increased or decreased according to need, such as when the geographic dispersal of supported units and headquarters requires a greater number of Military Engineers. Modular and scalable also means that, once deployed, the Engineer Unit can group and regroup its subordinate elements and equipment (such as earth moving and EOD equipment) for tailored operational agility and cohesive employment on specific tasks. For those Engineer Units capable of deploying with significant high-technology and state-of-the-art engineering equipment, force generation and military planners should adjust their unit configuration to incorporate this equipment. All Engineer Units, regardless of access to advanced technology, should make continual efforts to include new, more effective and efficient engineering methods.

3.1.3 Independent, Versatile and Interoperable

In addition to its modular and scalable design, an Engineer Unit is inherently capable of independent operations and logistical sustainment giving it great versatility. Versatility also gives an Engineer Unit greater interoperability. It is capable of undertaking its engineer missions independently, or in collaboration with civil and other nations' Military Engineer assets.³⁰

3.1.4 Option to Embed in Infantry Units

Depending on the mission specific circumstances of certain Missions, the SUR may require UN Military Engineers to be directly embedded into infantry units.

3.1.5 Functional Groupings

UN Military Engineer Units are broadly organized into functional groupings which include Combat, Construction Engineers Units and EOD Units (see Chapters 1 and 2). Within each type of Engineer Unit there can be further additional functional groupings such as EOD, FP, Establishment of Field Defences, Vertical Construction, Horizontal Construction, Road and Airfield, Technology/Geology/Topography Survey, Well Drilling, etc. Each of these groupings contains the various types of skills and equipment needed to complete the required tasks. Specialized skills and equipment are task organized for specific capabilities to make the most efficient use of the personnel and equipment available. Configuration of an Engineer Unit also

³⁰ *A New Partnership Agenda: Charting a New Horizon for UN Peacekeeping (Jul 2009)*

depends on the number of concurrent tasks to be executed, the prevailing security situation, the peace operations capabilities sought, specialized skills and capacities required, operational environment (terrain, weather, surface soil and materials) and geographical spread/separation of deployment (See Annex C and D).

3.2 Key Subordinate Elements Common to Combat, Construction, EOD and Composite Military Engineer Units

The following subordinate element descriptions focus on the key sections of UN Military Engineer Units whose functions have not been described in Chapters 1 and 2. The elements described are represented in organization charts either as stand-alone organizations or as part of higher Engineer Unit elements such as staff sections or platoons.

3.2.1 Headquarters: Command Group and Staff

The Commander is responsible for the unit's subordinate elements operating effectively and efficiently in an integrated manner with the unit's Combat and Construction Engineer Platoons, EOD teams and other Force components, or as part of a multi-agency operation. He or she is responsible for and communications arrangements and interoperable communication systems. The Commander is assisted by the second-in-command/Executive Officer (2IC/XO), Senior Non-Commissioned Officer (SNCO) or Junior Commissioned/Warrant Officer. The Military Engineer Unit Headquarters Staff functions under the 2IC/XO. The Engineer Unit HQ has unique responsibilities as a function of its command and control role:

- **Conduct 24/7 Command and Control of the Unit's Elements;**
 - **Establish an Operating Base (OB).** Establishing an OB with a company or platoon, including appropriate facilities for UN civilian and police personnel (as required) and separate facilities for female staff;
 - **Re-Deployment.** Relocate and re-deploy operating bases according to Force and Mission priorities;
 - **Reinforcement.** The Engineer Unit Headquarters should be capable of receiving coordinating and operationally employing additional elements attached from other contingents. This includes incorporating the additional elements into the unit's overall command, control and communications network and interoperability architecture.
- **Headquarters: Personnel/Human Resources Staff Section**

The Personnel Staff Section includes an administration and personnel officer and a military police officer. This section is responsible for personnel administration, welfare, morale, motivation, and maintaining conduct and discipline in the unit.
 - **Headquarters: Situational Awareness (SA) Staff Section**

The Engineer Units should be capable of pro-actively acquiring, processing, analysing (including the use of early warning indicators) and communicating tactical information at the unit level; and maintaining 24/7 SA with dedicated staff and multiple resources for planning and executing Engineer tasks and FP. The SA Staff Section includes one information officer and staff to coordinate tactical information acquisition, collation, corroboration and dissemination for effective SA throughout the unit. They may be augmented with dedicated personnel, surveillance equipment and communication systems.
 - **Headquarters: Operations Staff Section**

The Operations Officer coordinates the functions of all staff sections that are responsible for planning, organizing, staffing, directing, controlling and sustaining all operations and administrative responsibilities of the unit in accordance with unit and Force standard operating procedures. The Operations Staff Section includes an Operations Officer, operations staff, a planning officer, EOD staff and any interpreter(s). The section

coordinates all operational activities and movements within the area of responsibility, carries out liaison, maintains the Engineer Unit's 24/7 Operations Center (ideally with tracking and video tele-conferencing capability to the next higher headquarters for real time monitoring, control and coordination of operations). They coordinate employment of Quick Reaction Teams in accordance with the operational situation. It is their responsibility to ensure the overall safety and security of personnel, materiel and information in the unit. The section establishes and maintains liaison with neighbouring contingents and the immediate higher headquarters and/or engineer section/Chief, Service Delivery for coordination and control of activities.

- **Headquarters: Engagement Staff Section**

The Engineer Unit must be capable of conducting engagement with the local population, including women's groups and other civil society actors, through well-coordinated and resourced CIMIC, welfare activities, gender-sensitive Quick Impact Projects (QIP) and support to humanitarian operations (if requested by the Humanitarian Country Team through the Resident/Humanitarian Coordinator (RC/HC)). The Engagement Staff Section includes an engagement/public information officer and interpreters. It coordinates with the Force/Sector U-9 and other Mission components and undertakes appropriate engagement activities with the local population through confidence-building measures, community projects, civil-military cooperation/quick impact projects (CIMIC/QIP), welfare activities, public information, media management and key leader engagement. It employs its own interpreters in conjunction with local interpreters. It operates in close coordination with the Mission's civilian components, such as Civil Affairs and Human Rights, liaising with the humanitarian agencies and local stakeholders, including Host Nation security forces.

- **Headquarters: Quick Reaction Team**

The Engineer Unit headquarters maintains a Quick Reaction Team capable of executing special tasks, such as first responder in the event of emergency due to natural and manmade disasters or hostile action. The strength and equipment of the Quick Reaction Team will depend on Force-specified requirements and the SUR/MOU.

- **Headquarters: Logistics Staff Section**

The Logistics Staff Section includes a Logistics Officer, logistics staff and a contingent-owned equipment (COE)/finance officer. The section coordinates logistics support for the unit in accordance with MOU arrangements to plan, provision, stock and turnover inventory; replenish supplies and stores; and repair, replace and manage equipment. The section ensures timely maintenance, serviceability and inspection of both contingent-owned and UN equipment in the unit's care. It also manages the unit's financial and accounting transactions. The Logistics Officer is in charge of the Engineer Unit's movement control for in-Mission movement as well as unit rotations, and acts as the environmental focal point.

3.2.2 Headquarters Support Platoon

Engineer Unit Headquarters Support Platoon operates under the Logistics Staff Section. It includes a Catering Services Section, Signal Section, Facilities Management Team, Supply and Petroleum, Oil and Lubricant (POL) Section, Transportation Section, EOD Team, Level I Medical Facility and Camp Guard. It provides sustainment and maintenance coverage for the unit and its subordinate elements.

- **Level I Medical Facility.** If included in the SUR, an Engineer Unit Level I Medical Facility is based on specifications in the Manual on Policies and Procedures concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions (COE Manual) which can deploy two Forward Medical Teams if required. For Operating Bases that are deployed beyond the

supported distance of the Engineer Unit's Level I Medical Facility, an additional two paramedics/nurses may be included in accordance with the SUR and operational requirements to provide immediate life-saving medical support at the unit level ensures medical self-sufficiency and coordinates surface and air evacuation of casualties.

- **Camp Guard.** The Camp Guard is responsible to maintain the Unit's camp security and protect its facilities and property. The Camp Guard is also responsible for fire fighting and, if the Mission requires, providing hazardous materials (HAZMAT) response.

3.2.3 Engineer Support Platoon

The Engineer Support Platoon includes a headquarters element, a Maintenance and Workshop Section and a Technology/Geology/Topography Survey Section. When the Mission requires, a Well Drilling Section, it is attached to this platoon. In a Combat Engineer Unit, the Engineer Support Platoon also includes three Construction Sections to support the Combat Engineer Platoons in the execution of their Combat Engineer tasks.

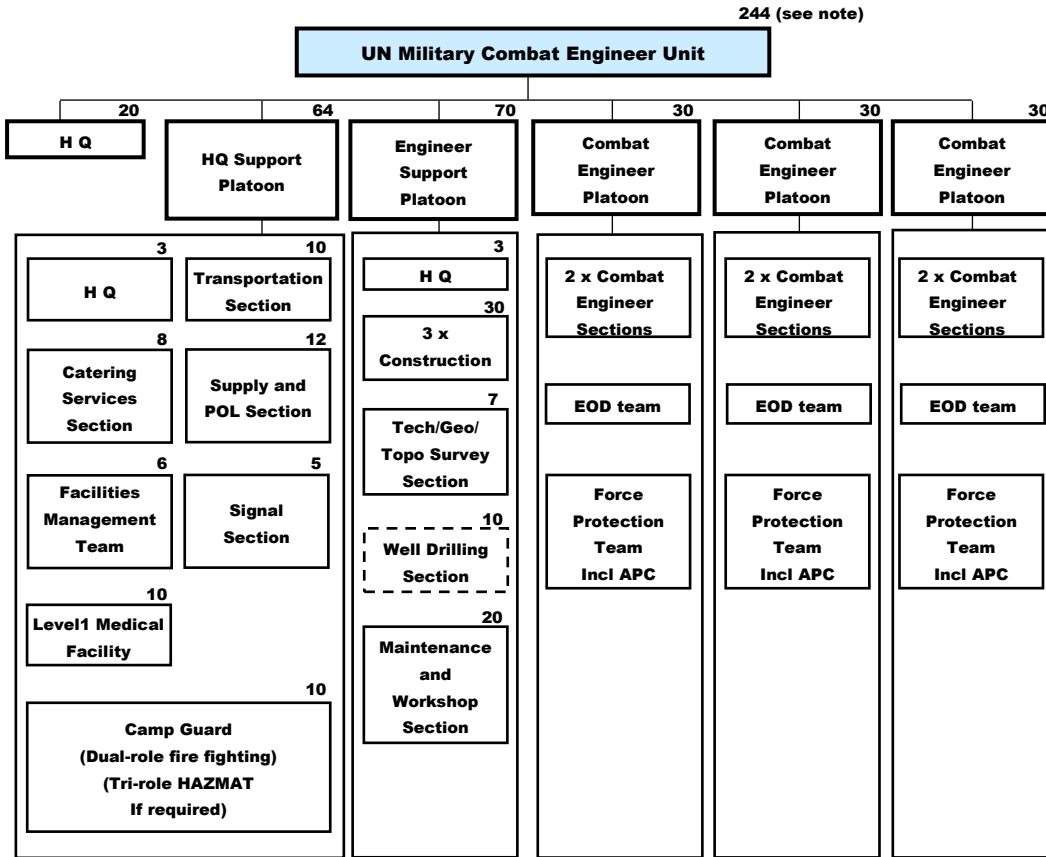
3.2.4 Combat Engineer Platoons

Each Combat Engineer Platoon may (depending on the SUR) include a headquarters element, two Combat Engineer Sections, an EOD Team and a FP Team. These Combat Engineer Platoons are the nucleus of all Combat Engineer activities/tasks supported by other elements of the Combat Engineer Unit. A Combat Engineer Unit may have an Explosive Ordnance Disposal Control Center (EODCC), if the Force requires it. The EODCC serves as the principal authority directing, controlling and coordinating tasks conducted by the Combat Engineer Unit's EOD elements, particularly in the absence of any other unit or organization controlling and coordinating EOD activities, in coordination with other offices, as required. The EOD Team Leader is also responsible for coordinating medical and FP support for the Combat Engineer Unit's EOD operations. Tasking may originate with the UN Force, the Mission's civilian component or local authorities who submit their requests for EOD assistance to the UN Mission. Requests for EOD assistance are typically approved when:

- There is a direct and imminent threat to life of UN personnel or to UN installations;
- There is a direct and imminent threat to civilians;
- The threat may hinder the accomplishment of any current or future UN task, or limit the Freedom of Movement (FoM) of UN personnel;
- As directed by higher command.
- For more information, the EOD Manual should be referenced.

3.3 Structure of the UN Military Combat Engineer Unit

The following chart illustrates a generic, company-size Combat Engineer Unit of 244 personnel. It contains a full range of Combat Engineer capabilities including a headquarters element, a Headquarters Support Platoon, an Engineer Support Platoon and three Combat Engineer Platoons. As this structure is generic, it portrays a possible Combat Engineer Unit structure, not necessarily any particular structure currently in a UN Mission. Actual units deployed will depend on the SUR, Force requirements and TCC capabilities.

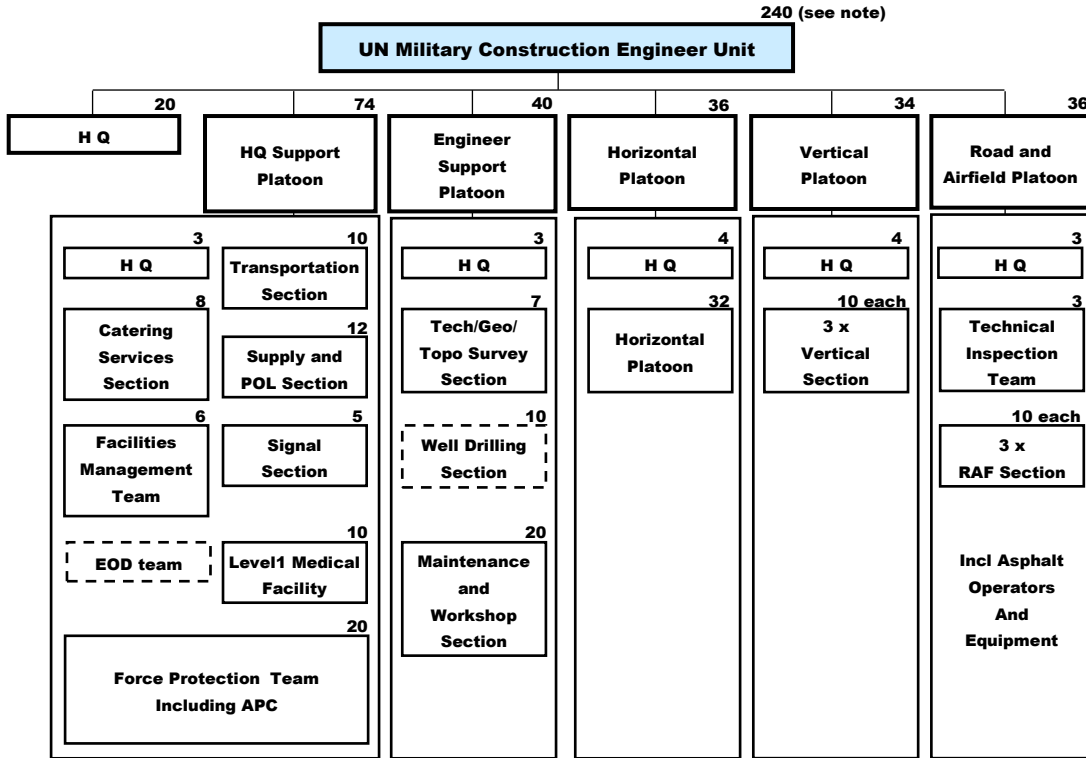


Note: This structure is provided for illustrative purposes only. The actual composition and size of this unit is modular and scalable, based on the SUR, Force and Mission requirements and TCC capabilities.

Figure 3-1 Generic UN Military Combat Engineer Unit (Company - Size) Structure

3.4 Structure of the UN Military Construction Engineer Unit

The following chart illustrates a generic, company-size Construction Engineer Unit of 240 personnel. It contains a full range of Construction Engineer capabilities including a Headquarters element, a Headquarters Support Platoon including an EOD team if required, an Engineer Support Platoon and one each Horizontal, Vertical, Road and Airfield Platoons that can be task organized to reinforce one another according to Mission requirements. See Chapters 1 and 2 for further descriptions of the Horizontal, Vertical, Road and Airfield Platoons. As this structure is generic, it portrays a possible Construction Engineer Unit, not necessarily any particular structure currently in a UN Mission. Actual units deployed will depend on the SUR, Mission requirements and TCC capabilities.



Note: This structure is provided for illustrative purposes only. The actual composition and size of this unit is modular and scalable, based on the SUR, Force and Mission requirements and TCC capabilities.

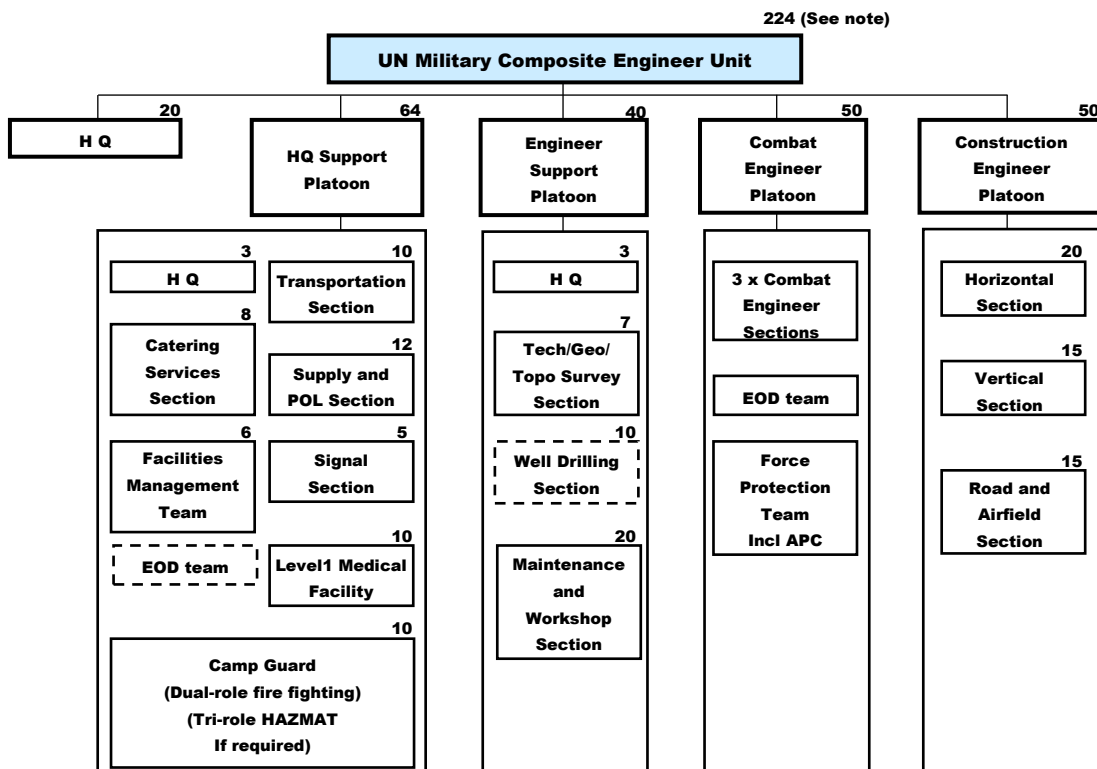
Figure 3-2 Generic UN Military Construction Engineer Unit (Company - Size) Structure

3.5 Structure of the UN Military EOD Unit

Refer to the EOD Manual

3.6 Structure of the UN Military Composite Engineer Unit

The following chart illustrates a generic, company-size Composite Engineer Unit of 224 personnel. As with the other variations of Engineer Unit structure, its composition and size are modular and scalable according to Force and Mission requirements and TCC capabilities. The Composite Engineer Unit contains a full range of UN Military Engineer capabilities including a Headquarters element, a Headquarters Support Platoon including a EOD team if required, an Engineer Support Platoon, a Combat Engineer Platoon and a Construction Engineer Platoon comprised of one each Horizontal, Vertical and Road and Airfield Sections that can be task organized to reinforce one another according to the SUR, Force and Mission requirements. See Chapters 1 and 2 for further descriptions of the Horizontal, Vertical, Road and Airfield units. As this structure is generic, it portrays a possible Composite Engineer Unit, not necessarily any particular structure currently in a UN Mission.



Note: This structure is provided for illustrative purposes only. The actual composition and size of this unit is modular and scalable, based on the SUR, Force and Mission requirements and TCC capabilities.

Figure 3-3 Generic UN Military Composite Engineer Unit (Company - Size) Structure

3.7 Personnel Requirements

UN Military Engineer Units described in this manual are a recommended baseline for planning and preparation purposes at UN, TCC and Mission Headquarters. Actual personnel requirements and unit configurations will vary widely based on the SUR, Mission requirements and UN-TCC MOU negotiations. When generating an Engineer Unit, a number of points should be considered:

- **Rank Structure.** TCCs have the flexibility to adjust the rank structure through the MOU according to their national organizational norms. Nevertheless, TCCs must ensure that their personnel have the requisite ability and qualifications;
- **Female Participation.** TCCs should make every effort to include uniformed female military personnel in the unit. Wherever possible, female personnel should be included amongst the command and staff, operations, logistics and interpreter personnel;
- **Special Skills.** Staff officers, technical and specialist personnel (such as engineers, search advisors, EOD personnel, surveyors, transportation specialists, interpreters and medical personnel) should be fully qualified in their respective areas of specialization. EOD personnel should be capable of operating in concert with UN agencies, Host Nation Security Forces and NGOs across the spectrum of EOD tasks and should comply with the EOD Manual and relevant EOD capability standards;
- **Cross-Training.** For the sake of organizational versatility, the Engineer Unit should cross-train its personnel in related skills to the maximum extent practicable;
- **Communications.** All Engineer Unit personnel must be able to operate the unit's communications equipment.

3.8 Equipment Requirements

The tables of equipment requirements for the Combat and Construction Engineer Units are attached at Annex C and D. They were developed and updated with reference to the COE Manual and the generic organizations described herein. The recommended types and quantity of equipment were established based on typical Mission requirements, best practices and extensive field experience. The recommended types and quantities of equipment are for initial planning purposes only and do not replace authorizations given in a SUR after carefully studying Mission-specific requirements, the terms of an MOU, or as otherwise negotiated between the UN and TCC.

Chapter 4

Support for the UN Military Engineer Unit

4.1 Support Expectations

The UN Military Engineer Unit is expected to meet the standards of self-sustainment according to the terms of the SUR, UN-TCC MOU and COE Manual. The deploying Engineer Unit is also required to have and maintain the necessary resources and personnel to support itself administratively and logistically for the duration of the Mission (apart from where supplemented by the UN). To avoid having troops arrive unprepared to sustain themselves or their operations, TCCs and their contingents must understand what support will be provided by the UN, and what support they must provide for themselves. The specifics of what to expect are provided in key documents such as the SUR and any UN-TCC MOU or Letter of Assist. Special attention must be given to the detailed requirements for rations, water, shelter, medical support and supplies. Combat Engineers are normally capable of their own force protection, however, adequate force protection for the security of non-combat engineering units must be factored into the planning process of the tasking authority.

4.2 The UN Military Engineer Unit Commander's Role

Before deploying to the UN Mission, the UN Military Engineer Unit commander must ensure that the unit can deploy, operate and sustain itself throughout the intended duration of deployment. The implications of casualties, consumption, materiel losses and resupply lead time; and then plan, allocate and balance resources accordingly. An Engineer Unit commander should also evaluate risks to, and security of, COE and personnel, adapting the plan to reduce the impact of unavoidable constraints on resources. The commander must consider UN and TCC guidelines when determining further sustainment requirements and selection of personnel.

4.3 Major Engineering Support

Before deployment, UN-TCC negotiations should include any UN Military Engineer Unit requirements for major Military Engineering such as antenna parks and physical barriers for FP. Early identification of major engineering requirements is essential to reach full operational capability as soon as possible, especially when Engineer Units are establishing their facilities in new locations. Major Military Engineering tasks are a Mission responsibility and shall be included in the Mission's Master Engineering Plan.

4.4 Self-Sustainment of the UN Military Engineer Unit

When the UN Military Engineer Unit arrives in the Mission area it is responsible for meeting all its own needs for rations, water, petrol, oil, etc. for up to 90 days, depending on the terms of the MOU and SUR. Typically, equipment is deployed for the duration of the Mission while troop rotations occur every 12 months. Subject to MOU negotiations, the Engineer Unit may be required to self-sustain in the following areas:

- Catering;
- Office;
- Electrical;
- Minor engineering;
- EOD;

- Communications³¹;
- Laundry and cleaning;
- Tentage;
- Accommodation;
- **Initial Accommodation:** The UN Mission will prepare green field sites under austere conditions at the deployment location. The contingent will need to deploy with sufficient accommodation to provide for storage, offices, ablutions and workshops, etc. Water sources will be arranged by the UN Mission; the contingent will deploy sufficient water purification units to produce and consume its own purified water. The Mission will provide Field Defence Stores (FDS) and additional FDS kits for use in mobile operations.
- **UN-Provided Accommodation:** For the initial deployment of a unit, the UN Mission will strive to provide rigid or semi-rigid accommodation after the initial six-month period in COE tentage; failing which the UN Mission will pay a penalty rate of reimbursement until suitable accommodation can be provided in accordance with the COE Manual.
- **Deployable Accommodation:** The contingent must deploy with a sufficient quantity of tentage necessary for short-term operational and tactical deployments.
- **Tentage Structure:** Tentage must include flooring and the ability to heat and cool as appropriate; and netting at doors, windows and the inner/outer fly of tents. Double-layered tents with metal pipe frames are recommended due to conditions in the field. It is also recommended to mount the tents on cement or wooden foundations to ensure their stability. Temporary Deployable accommodations noted in the paragraph above are excluded from this recommendation.
- Basic fire-fighting equipment;
- Fire detection and alarms;
- Medical observation and treatment identification;
- Defence against Chemical, Biological, Radiological and Nuclear Weapons³²;
- Field Defence Stores;
- Miscellaneous general stores;
- Internet access;
- Unique equipment;
- Welfare items.

³¹ All internal communications (including line and radio) within a contingent are a TCC responsibility. Contingents should come with suitable equipment for their internal communications establishing contact from their highest contingent headquarters to their respective countries and each of their subordinate Sections, Teams, Detachments, Companies and Battalions. TCCs are also responsible for providing email and Internet access for personal or welfare purposes. The UN provides only strategic communications support between the Mission, Force and Sector Headquarters; and subordinate units of the Sector that are not organic to that Sector Headquarters, such as Battalions provided by another TCC and independently deployed units.

³² To date, UN peacekeepers have not been subjected to a nuclear or biological warfare environment. However, they have had to work in a chemical warfare or diverse environment. It is therefore important that some elements of the CBRN threat be covered in training to include the characteristics, symptoms, precautions and use of protective clothing and detection monitoring equipment for all types of CBRN threats. If time is constrained, military units should concentrate on detection of and protection from chemical weapons. *UN Peacekeeping Training Manual, Training Guidelines for National or Regional Training Programs, undated, page 28, published by DPKO*

4.5 Sustainment Support for the UN Military Engineer Unit

4.5.1 Sustainment support for Engineer Units is coordinated through the Sector³³ and/or FHQ. The Engineer Unit must therefore liaise with both the Sector and FHQ logistics structure (DCOS Operations Support, U-4 LOG, U-1 PER), the Office of the Chief, Service Delivery and the Mission Support Center (formerly the Joint Logistics Operations Centre (JLOC)). Operations planning will determine the specific logistics requirements and the associated logistics command and control structures for each operation when the Engineer Unit is committed. Following the initial period of self-sufficiency and in addition to TCC support obligations to their deployed contingent, all other Engineer Unit life support and operational requirements are filled by the Mission's DMS/CMS through the Office of the Chief, Service Delivery.

4.5.2 The UN provides the following items and services:

- Food rations (storage, cooking and sometimes transportation are a contingent responsibility);
- Bulk raw water (or access to bulk raw water). (TCCs are responsible for transport, purification and storage.);
- Bulk fuel (TCCs may be responsible for transport and storage.);
- Strategic movement of Contingent-Owned Equipment and personnel from the home country to the Mission area of operations;
- Main supply route, road/other infrastructure upkeep. Minor engineering and routine upkeep is a TCC responsibility. (consult the COE Manual and applicable MOU for further guidance.);
- Blood and blood products;
- Interpreters. Based on operational need, military units use military and/or civilian interpreters provided by their TCCs, or locally-employed interpreters who are normally contracted and provided by the Mission's DMS/CMS³⁴;
- Casualty Evacuation/Medical Evacuation (CASEVAC/MEDEVAC)³⁵ transportation and support for movement of sick and wounded personnel to appropriate medical facilities.³⁶

4.6 Medical and CASEVAC/MEDEVAC Support

4.6.1 Medical Capability

UN Military Engineer Units typically deploy with their own integral Level 1 Medical Facility. Higher levels of medical support are a Mission responsibility provided through CASEVAC/MEDEVAC. Each Engineer Unit (company equivalent) may deploy elements within the Mission area with an attached medical element subject to availability, if required. The ability to evacuate Engineer Unit casualties to appropriate medical facilities must be pre-arranged and verified before each Engineer Unit mission.

³³ When deployed in support of the Sector.

³⁴ *UN Infantry Battalion Manual Second Edition (Jan 2020) page 17*

³⁵ Casualty Evacuation (CASEVAC) entails the evacuation (by air or land) of a casualty from the site of injury to the closest medical facility. This category of patient transfer shall be conducted within 1 hour of injury. Medical Evacuation (MEDEVAC) entails the evacuation of a casualty between two medical facilities; either within the Mission area (in-theatre) or out of Mission area. MEDEVAC should be conducted depending on the medical urgency. *Medical Support Manual for United Nations Field Missions (Dec 2015), Chapter 10.*

³⁶ For comprehensive guidance on medical operational, logistical and administrative guidelines for Member States, UN Headquarters and field Missions, consult the *Medical Support Manual for United Nations Field Missions (Dec 2015)*

4.6.2 CASEVAC/MEDEVAC Planning and Training

During the planning phase of each operation, special attention must be given to available CASEVAC or MEDEVAC capabilities, procedures³⁷ and timing with the appropriate staff officers at Sector or Force/Mission Headquarters. UN Force/Mission CASEVAC/MEDEVAC assets and Mission Medical Facilities will provide additional transportation/medical support and should train with the Mission's Military Engineer Unit. Each unit is responsible for the provision of a "10 minute" initial response/ "buddy first aid" to their personnel. Training is to be conducted as part of pre-deployment preparations in the home country. CASEVAC training is aimed at interoperability with enablers, including medical, aviation, transportation and other Force elements such as the Quick Reaction Team. When aerial CASEVAC assets are not available or appropriate, alternate CASEVAC may be arranged using Force or Mission assets and procedures. UN Military Engineer Unit CASEVAC or MEDEVAC typically involves UN Military Engineer Units making use of all available Sector, Force and Mission capabilities.

4.7 UN Headquarters Staff Support to the UN Military Engineer Unit

4.7.1 DOS at UN Headquarters provides dedicated support to field Missions for financial reimbursement, logistical support services, communications and information technology, human resources and general administration to field Missions. Support is delivered to field Missions and TCC contingents by DOS to the respective Mission through Mission DMS/CMS and their subordinate staff.

4.7.2 Equipment for communications between the Mission, Force or SHQ and the Engineer Unit is provided to the Engineer Unit by the UN as UN-Owned Equipment (UNOE). This ensures that the Engineer Unit has secure, standardized military-grade communications within the Force and Mission's communications network. The Engineer Unit's internal communications is a TCC responsibility. A contingent's internal communications and information systems include all line and radio communications from a contingent's highest headquarters down to its lowest subordinate element.

4.7.3 The determination of financial reimbursement to UN Member States for COE is established through the COE Working Group and UN legislative bodies. The details of this reimbursement at the contingent level are included in the MOU, which is the primary financial reference for contingent logistics support (including support for the Engineer Unit) for each Mission. Major equipment (if not in the COE Manual) may be treated as a "special case" if the situation requires. Maintenance of this special case equipment is a TCC responsibility if the equipment is under wet lease. See paragraph 4.8 below for an explanation of wet and dry leases. In accordance with the COE Manual, any special minor equipment or consumables not covered by the standard self-sustainment rates may be categorized as "unique equipment." These items will be reimbursed according to bilateral special case arrangements between the troop/police contributor and the UN.

4.7.4 The DOS logistics plan is the basis for identifying resources that may be re-deployed from other locations (e.g. the UN Global Service Center or another field Mission) to support Mission deployment. Additionally, the DOS logistics plan may provide a basis for negotiations with potential

³⁷ All planned aviation-related activities, such as transportation by air (including medical and casualty evacuation), reconnaissance, selection of temporary helicopter landing sites, etc. must be coordinated with the Mission Aviation and Movement Control elements in order to meet specific requirements stipulated in the respective Aviation, Movement Control and Aviation Safety policies, manuals and SOPs. See also *the Aviation Manual (Oct 2018)* for specific requirements to transport weapons on board UN-chartered aircraft.

TCCs for provision of COE that each individual troop contributor is required to bring to the Mission along with associated, applicable self-sustainment services.

4.7.5 Force Generation and Logistics Planning

Coordination of the force generation process with logistics planning is done when the TCC is selected. At this point, any problems, the TCC may face in equipping or supporting their contingents are identified and staffed for resolution at UN Headquarters. Problems are assessed based on a combination of the data given by the TCC and assessments carried out by DPO and DOS personnel. The UN DOS recognizes that many TCCs do not possess all of the equipment needed for a particular UN Mission and may therefore put in place mitigating logistical arrangements including the purchase of UNOE and/or “wet and dry leases” as necessary.

4.8 Wet and Dry Lease

In order to ensure that units being offered by TCCs come with the required capability, there are a number of options for the provision of major equipment and its support. These options come under the headings of “wet and dry lease” and the option chosen is directly linked to the rate of reimbursement. Full details are available in the COE Manual.

4.8.1 Wet Lease

Under wet lease arrangements, a contingent deploys with its COE and is responsible for its maintenance and support. This arrangement can be achieved in one of two ways:

- The TCC provides the vehicles and equipment, related minor equipment, workshop support, spares, and maintenance personnel. The TCC is reimbursed at set rates;
- A TCC provides the major equipment and a second party, under a bilateral arrangement, provides the support. In this case, the TCC that deployed to the Mission area and is operating the equipment may be reimbursed by the UN. The second party is reimbursed, if at all, through a bilateral arrangement without any UN involvement or responsibility.

4.8.2 Dry Lease

Under dry lease arrangements, a contingent deploys with its COE but the UN arranges for its support. This arrangement can be achieved in a number of ways:

- Under the first, the TCC provides the equipment and the UN takes responsibility for the support, provision of spare parts and maintenance. The TCC receives reimbursement at the dry lease rate;
- The TCC provides the equipment and the UN arranges for another Member State to provide the support. The former receives reimbursement at the dry lease rate and the latter is reimbursed for maintenance and support;
- The TCC provides the equipment receives reimbursement at the dry lease rate and the UN provides the support via commercial contractor;
- The UN provides the equipment and along with the support, provision of spare parts and maintenance.

4.9 Letter of Assist

Primary logistics support for a contingent comes from national military logistics sources under TCC control. Civilian contractors, arranged by the TCC, may also provide support. Major items of equipment may accompany deploying units, or the UN may provide them in the Mission area as mentioned above. The UN may also satisfy specific support requirements not already included under an MOU or available through commercial contract. These support requirements may be met by a

contracting method known as a Letter of Assist (LOA), by which the UN acquires special supplies or services from a TCC. LOAs are used when:

- A TCC deploys, rotates or repatriates its personnel and equipment using its own capacities;
- A special need arises for essential equipment or services that are not available through normal sources of supply;
- The items or services required by the Mission are not covered by an MOU;
- TCC contributes aircraft or vessels to a Mission.

4.10 Status of Forces Agreement

4.10.1 The Status of Forces Agreement (SOFA) may include the terms of logistics support provided by the Host Nation to the UN Mission, as well as the legal rights of the UN Mission's personnel and operations. DPO in coordination with DOS is responsible for negotiating SOFAs with the Host Nation.

4.10.2 The SOFA also codifies relations between the UN Mission and the Host Nation describing “the rights, privileges and immunities of the Mission and its personnel and the Mission's obligations to the host government.”³⁸ SOFAs govern the legal status of troops and civilian personnel deployed to the Mission in the Host Nation, and specify the legal immunity for UN personnel with regard to the settlement of claims, the modalities for the exercise of civil and criminal jurisdiction over military and civilian Mission members, as well as provisions relating to FoM, taxes, customs, immigration controls, radio frequencies, flight clearances and permission to wear uniforms and carry weapons. Under typical terms of a SOFA, “military personnel are immune from criminal prosecution by the Host Nation for crimes committed in its territory, but may still be subject to the laws of their national authorities.”³⁹

4.11 National Support Elements (NSE)

4.11.1 With prior UN approval, TCCs providing military and/or police personnel to UN Missions may augment those personnel with an NSE. TCCs may choose to organize NSE to perform their deployed contingents administrative and logistical services with national standards of support that may differ from UN requirements. An NSE includes personnel and equipment in addition to those agreed to by the UN and TCC under the terms of the applicable MOU and/or as described in the SUR for the specific field Mission. Further details on this are provided in the NSE Policy 2015.

4.11.2 If this augmentation exceeds UN requirements, the UN offers no reimbursement or financial liability for NSE costs, rotation or self-sustainment. Nonetheless, for purposes of legal status, NSE personnel are considered part of the TCC's military or police unit contingent. The total personnel strength of the NSE will be specified in the applicable MOU between the UN and TCC, and shall be reasonably proportionate to the strength of the contingent.

³⁸ *Handbook on United Nations Multidimensional Peacekeeping Operations, published by DPKO Peacekeeping Best Practices Unit (Dec 2003)*

³⁹ *Office for the Coordination of Humanitarian Affairs (OCHA) Glossary of Humanitarian Terms in relation to the Protection of Civilians in Armed Conflict (2004)*

Chapter 5

Training for the UN Military Engineer Unit

5.1 Intent

This Chapter is intended to assist UN Military Engineer Unit commanders and leaders in their professional obligation to achieve the training and operational readiness of the personnel under their supervision. The following paragraphs contain brief explanations of UN training responsibilities and expectations, training requirements and professional military training recommended. The UN fully recognizes TCC sovereignty and prerogatives when it comes to the military training of their personnel and units. TCC military training is the foundation upon which Engineer Units can then add and adapt to the UN peacekeeping context. The training requirements mentioned in this Chapter are task-oriented and focus on what is needed for UN peacekeeping. The intent is to provide contingent commanders and subordinate leaders a consolidated list of important topics as they prepare their units for UN deployment and post-deployment. Commanders and subordinate leaders should develop these training topics in greater detail to suit the needs of their units. To meet the need for greater detail in UN Mission-specific training, specialized training materials (STMs) are developed by the DPO to provide peace operations training goals for TCCs participating in UN operations.

All EOD personnel completing training should be able to perform at the required competencies described in this manual. Each TCC is responsible to educate and train its own personnel prior to deployment. All personnel nominated as EOD qualified (at whatever 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 pre-deployment evaluation. For more information on EOD Team structure and elements EOD Manual should be referenced.

5.2 Training Responsibilities and Expectations

Training is a command responsibility at every organizational level. Military commanders and supervisors have an obligation to ensure their personnel and units are properly trained to accomplish their missions. UN Military Engineer Units are normally composed of personnel from a single TCC, but may occasionally include elements from other TCCs. National military training is ideally within the parameters set by the UN as articulated in this manual, EOD Manual (Sep 2017), UN IED Threat Mitigation Military and Police Handbook (Dec 2017) (IED-TM Handbook), UN Improvised Explosive Device Disposal Standards (May 2018) and International Mine Action Standards (IMAS) to promote effectiveness and interoperability, and therefore may only require a deploying unit to undergo some additional training to gain greater familiarity with UN peace operations and the specific requirements of a particular Mission. The Integrated Training Service (ITS), part of the Policy, Evaluation and Training Division of DPO at UN Headquarters, provides UN Mission orientation training material. ITS has developed Mission-specific training modules that help UN military units to understand the tasks and challenges of peace operations. ITS is responsible for providing peace operations training standards for all phases of training, based on departmental priorities and policies, lessons learned and best practices. ITS disseminates required standards to all peace operations training partners, including Member States and field Missions. Planners should take into consideration training requirements as they develop timelines for deployment and troop rotation so that units can receive the necessary training before they deploy. Upon arrival in the Mission area, the FHQ is responsible for producing training-of-trainers courses for induction

training conducted under contingent arrangements. Individual and collective UN Military Engineer Unit training should also focus on interaction with different Mission elements, partners and other actors present in the area of operations.

5.3 Training Requirements

5.3.1 UN Military Engineer Unit training should be based on Mission requirements contained in the SUR. These requirements should include intensive system and technology-specific training on UN-provided equipment. The Information, Communications and Technology Division of the DOS sets the framework for this part of the required training and unit preparation.

5.3.2 The UNIBAM discusses UN infantry unit training at length and should be studied by all supporting units deploying for Peace Operations Missions. TCC training emphasis should include military planning, the ability to integrate and orchestrate diverse sources of specialist personnel and equipment, communications skills (both oral and written), the development of a versatile and flexible mind-set, cultural awareness and sensitivity, language skills, and knowledge of the UN communications and information technology system. Descriptions of generic UN peace operations training, including the various training phases such as Pre-Deployment Training, Induction Training, On-going or In-Mission Training (a command responsibility vital to ensuring the maintenance of operational effectiveness) and on-the-job training are covered in the UNIBAM. The overarching principles of UN peace operations described therein are applicable to all military units.

5.3.3 While military training may vary according to national goals and resources, there are fundamental training requirements that should be observed when preparing to deploy to a Peace Operations Mission. Training requirements of particular note for UN Military Engineer Units include:

- Mission Rules of Engagement; UN Peacekeeping Principles
- Protection of Civilians; International Human Rights Law (IHRL)
- Human Rights and Due Diligence Policy; International Humanitarian Law (IHL)
- Mission-specific geographic and environmental conditions whose unique physical and operational characteristics present certain challenges for effective operating;
- Mission-specific guidance obtained from documents issued by DPO, Office of Military Affairs, such as the SUR and Guidelines to TCCs; the ITS's Pre-Deployment Information Packages; and Field Mission documents such as the FC's Training Directive;
- Observations resulting from reconnaissance by the incoming Engineer Unit commander and staff to the Mission area;
- Lessons learned from the outgoing UN Military Engineer Unit;
- Explosive Hazard/Threat Education and asymmetric threats present in theatre.

5.4 Recommended Professional Military Training

There are a number of professional military training subjects TCCs are recommended to include as they prepare their personnel and units for UN Peace Operations. Knowledge of the UN command and control and logistics systems (particularly as explained in this manual's Chapters 1 and 4) is essential for contingents to operate effectively within the integrated UN field Mission. TCCs are encouraged to develop leaders who are capable of working within a civilian-managed Mission support structure while remaining responsive to supported military units and the Mission's military chain of command. Beyond mastering specific technical subjects, UN Military Engineer Unit leaders should be capable of orchestrating all military unit functions to achieve a coordinated application of unit assets. The ability to work with other nationalities is a fundamental requirement in UN



operations. Language training and Mission-specific cultural familiarization could be incorporated into the TCC's long-term professional military curriculum, not just its pre-deployment training. Since English and French are the two languages most frequently required in UN Missions, it is highly desirable for Engineer Unit personnel to be proficient in English and/or French languages (written and oral) depending on mission requirements. Preparing key contingent members to communicate in the English and/or French languages allows them to integrate their unit into the overall Mission. Moreover, it can be invaluable to assign at least two bi-lingual Engineer Unit persons to radio rooms. TCCs are encouraged to work with DPO's ITS to develop classroom instruction and command post exercises that provide UN Peace Operations orientation that can then be added to TCC military professional training.

Chapter 6

Evaluation of the UN Military Engineer Unit

6.1 Responsibilities

TCCs are encouraged to modify and formalize the evaluation methodology, criteria and procedures presented herein to suit their needs in conducting their evaluations. For TCC contingents deploying to UN Missions, the development and use of detailed standards and checklists, focusing on Peace Operations and UN Military Engineer preparedness, will yield great benefits in terms of operational readiness and early identification of unit capabilities that need improvement. TCC should use the evaluation check lists contained in Annex E as a means of assessing the state of unit(s) readiness and preparedness. Early identification allows performance or equipment shortfalls to be addressed before they cause problems. TCCs that lack the financial or technical ability to support their deploying units with the resources needed to meet national or UN standards should immediately seek to discuss their needs with UN DPO/DOS.

6.2 Evaluation Criteria

6.2.1 Evaluations are extremely useful to TCCs, their contingent commanders, UN and Mission leadership to organize, train, equip, deploy and employ military personnel. TCCs conduct their evaluations (reinforced by Force or Sector HQ evaluations) to assess and monitor the state of individual and collective training, and to check the maintenance and performance of equipment. Above all, the purpose of formal evaluations is to assist TCCs and military contingents in meeting national and UN standards of performance and interoperability.

6.2.2 A military contingent's operational readiness is evaluated based on distinct criteria such as Mission requirements, organizational structure, operational standards, the capability to perform mission essential tasks (MET), standards achieved in training, as well as administrative and logistics standards. This evaluation will analyze task-oriented activities at each level within the military contingent to include individuals, task-oriented groups and commanders. The evaluation checklists at Annex E include broad Peace Operations evaluation criteria, as well as those that are UN Military Engineer Unit specific.

6.2.3 Consideration of the most appropriate evaluation criteria for the various EOD capability levels needs to be examined and done so in accordance with:

- UN Policy on “Operational Readiness Assurance and Performance Improvement” (Dec 2015);
- UN SOP on “Force Commander’s Evaluation of Subordinate Military Entities in Peacekeeping Operations” (Jan 2016);
- UN SOP on “Evaluation of FHQ in Peacekeeping Operations” (Jan 2016);
- EOD Manual;
- IED-TM Handbook.

6.3 Independent Evaluation Support

TCCs can authoritatively determine how well their personnel, units and equipment are prepared for peace operations duties by conducting independent evaluations using special evaluation experts from national training centres and personnel with previous peace operations experience. Adequate resources in terms of training areas, ammunition for live firing, classrooms and equipment oriented

to the Mission environment will all significantly improve preparation and evaluation exercises. Any gaps in capability can be corrected by TCC-appropriate action to make the necessary improvements. Additionally, the UN Force and Sector Commander conduct their own assessment of deployed Force units, in line with MOU and SUR. A unit may undergo multiple evaluations while deployed.

6.4 Conducting Evaluations

Formal evaluations during mission rehearsals and exercises are highly encouraged. Evaluation criteria should be based on measurable and quantifiable standards that are specific, achievable, realistic and time-bound in nature. Evaluations may be conducted in a graduated manner by level (from individual soldiers to commanders); activity (Crew, Section, Platoon, Company or Battalion); and in a task-oriented manner to systematically build expertise and integrate capabilities for collective application. In addition to national training standards, further guidance on conducting evaluations is available in the sample evaluation checklists at Annex E, and the links and references provided throughout this manual regarding UN policies, directives, SOPs and guidelines.

6.5 Pre-Deployment Evaluations

6.5.1 A military contingent is expected to be well trained and qualified in basic military skills and conventional military tactics, techniques and procedures according to specific national military standards prior to concentration for peace operations training. DPO-organized PDV is an independent evaluation prior to a contingent's initial deployment to the Mission area. Pre-deployment evaluations by the TCC and DPO/DOS may include validation of the contingent's ability to:

- Ensure timely assembly, grouping, and equipping of the Engineer Unit in accordance with the SUR and MOU;
- Conduct Mission-specific, task-oriented, individual and collective tasks/capabilities;
- Identify shortcomings and take corrective measures for capability enhancement.

6.5.2 Prior to a UN DPO PDV, a well-prepared Engineer Unit may undertake the following activities:

- Raising and establishing an Engineer Unit in accordance with the Mission-specific UN SUR;
- Training in accordance with standard Engineer Unit tasks and operational demands. See Chapter 2 and appendix of Annex E for a detailed discussion of Engineer Unit tasks;
- Developing Mission-specific, task-oriented, individual and collective expertise and capabilities;
- Identifying shortcomings and taking remedial action to improve capabilities;
- Making timely adjustments and mid-course corrections;
- Utilizing experienced trainers from other Engineer Units to train the new Engineer Unit awaiting deployment;
- Final pre-deployment inspection and rehearsal of the Engineer Unit by national Peace Operations experts under TCC arrangements.

6.6 In-Mission Evaluations

In-Mission evaluations may include:

- Conducting the first in-Mission evaluation in the second month of deployment to validate and match the standards achieved prior to deployment. This can be followed by quarterly/half yearly evaluations in accordance with Mission norms;
- Continuously and simultaneously monitoring and reviewing performance in-Mission by the military contingent command element and Mission leadership;

- Identifying potential weak areas and instituting periodic selective evaluations to administer corrective actions;
- Reassessing capabilities and skills when the Mission's operational situation changes, or when there is a gap between requirements and performance;
- Taking note of clearly visible performance capability gaps of excellence during critical times and adverse situations, and addressing/recognizing them expeditiously;
- Validating key appointments in command and staff channels to verify ability and responsibility, and providing guidance and support where required;
- Hosting visiting TCC teams of military officials and Peace Operations experts who monitor and validate unit performance.

6.7 UN Assistance

DPO/DOS and the Mission leadership play a key role in guiding and facilitating TCC achievement of evaluation and operational readiness. In addition to this manual, numerous references offer guidelines and standards by which UN Military Engineer Units can evaluate their operational readiness. See Annex E. The nature of UN assistance is described below.

6.7.1 DPO/DOS Assistance

DPO/DOS promote evaluation, operational readiness and commitment to UN standards with a flexible and accommodative approach by:

- Guiding, assisting, facilitating or supplementing TCC efforts in evaluation;
- Providing training assistance through the ITS;
- Providing the Mission and TCC strategic guidance and oversight by:
 - Conducting a PDV to verify that provisions of the SUR/MOU are met and the contingent is ready for deployment.
 - Guiding and assisting emerging TCCs (and other TCCs on request), focusing on basic military training, output requirements and technology-related issues.
- Providing an Operational Advisory Team from DPO/DOS to guide and assist emerging TCCs (assistance on request for other TCCs).

6.7.2 Mission Leadership Assistance

The Mission leadership supports evaluation by coordinating and providing the following assistance:

- Informs TCCs of mission-specific performance goals for the Engineer Unit, pre-deployment preparation requirements and Mission-oriented task requirements;
- Coordinates pre-deployment reconnaissance, organizes in-Mission induction training through Integrated Mission Training Centers (IMTCs), provides the training-of-trainers courses (a FHQ responsibility), provides Mission Military Engineer support and defines unambiguous operational tasks, roles and responsibilities for the Engineer Unit that provide a basis for evaluation;
- Carries out in-Mission operational performance and capability evaluation of the contingent as and when required. Provides and coordinates the required resources and staff to conduct evaluations and centralized, technical on-the-job training to strengthen evaluated shortfalls;
- Guides and supports TCCs and Engineer Units to improve shortfalls, adopt midcourse corrections and take action with the Mission command and staff on evaluation findings. Develops a Mission-specific Engineer training plan and oversees the required training to improve the evaluated operational readiness;
- Performance evaluation for commanders.

Annex A

Tasking Coordination Mechanism for a UN Military Construction Engineer Unit

Military Involvement in Construction Engineer Tasking

While Military Construction Engineer assets are under the tasking authority of the Director/Chief of Mission Support exercised through the Chief of Service Delivery, the FC retains command and is responsible for the execution of Military Engineer tasks. In doing so, the FC and his subordinate leaders and staff still play a significant role in developing and executing military construction engineer tasks. Military Construction Engineer tasking priorities are based on Mission-level priorities determined by the Senior Management Team, of which the FC and DMS/CMS are members. Furthermore, in keeping with DPO/DOS guidance to exercise tasking authority in a “collaborative and cooperative spirit,”⁴⁰ UN Missions use a consultative coordination mechanism that includes all component input to the overall prioritization of Mission engineer projects.

Consultative Coordination Mechanism

UN Missions generally establish standard operating procedures for such consultative coordination mechanisms governing the use of enabling units, such as Military Construction Engineers, to “ensure the achievement of Mission operational priorities in support of the mission plan.”⁴¹ For example, some of the largest UN Missions hold regular coordination meetings between the FC and DMS/CMS to discuss and establish engineer priorities consistent with the Head of Mission’s guidance for mandate implementation. The FC and DMS/CMS are assisted in these coordination meetings by their respective principal staff officers including, but not limited to, the U-4 (Logistics), U-5 (Plans), U-8/Force Engineer, Chief of Service Delivery, Mission Chief Engineer, Chief of Mission Support Center, and, as appropriate, interested UN civilian and humanitarian agencies such as the UN Office for the Coordination of Humanitarian Affairs, Civil Affairs, UN Development Program, UN High Commissioner for Refugees, etc.

Joint Budget Preparation

As an example of this mechanism, civilian and military engineer staff confer on budget preparation, developing budgets for scheduled and anticipated projects including possible emergency engineer requirements. In such cases, the Mission Chief Engineer⁴² (responsible for engineering operations),

will work with the Force Engineer (U-8)⁴³ and Force Plans (U-5) to identify the requirements and plan the necessary funding of their recommended projects.

⁴⁰ *Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019), paragraphs 30 to 33*

⁴¹ *Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019), paragraph 58.*

⁴² The civilian Chief Engineer has delegated tasking authority for all overall engineering operations encompassing all of the Mission’s civilian, commercial and military enablers for operations related to and including construction (horizontal and vertical) and maintenance of buildings and physical infrastructure, operation of utility services, minor engineering, etc. See *Chapter 8.5 of the Mission Start-up Field Guide for Mission Managers of United Nations Peace Operations (Sep 2010)*

⁴³ At Mission Headquarters, clear terms of reference are developed for the Mission’s civilian Chief Engineer and military Force Engineer/U-8. The Mission Senior Management Team determines the chain of command and line of reporting for both officers. The terms of reference, chain of command and reporting for the Mission’s civilian Chief Engineer and military Force Engineer vary from Mission to Mission depending on decisions made by the Mission’s senior management team. See *Chapter 8.5 of the*

Tasking Coordination Mechanism

The Military Construction Engineer Unit tasking coordination mechanism is similarly consultative and collaborative. While prioritization and tasking authority rests with the DMS/CMS (typically delegated to the Chief of Service Delivery), military engineers at all levels may raise military engineer concerns and requests, as part of the overall Mission prioritization of Engineer projects. As the tasking coordination mechanism illustrates, close coordination⁴⁴ between the military and civilian engineer components is required, particularly with respect to Task Order development, material provisioning⁴⁵ and task execution. Moreover, Military Construction Engineer projects are monitored throughout their life cycles by means of daily and weekly reports submitted by both military and civilian chains of command. With some minor variation from mission to mission, Military Construction Engineer Unit tasking generally proceeds according to the following process. UN Missions are strongly encouraged to adopt similar coordination mechanisms seeking input from Military and Civilian Components to plan, budget and utilize these valuable enabling resources.

Mission Start-up Field Guide for Mission Managers of United Nations Peace Operations (Sep 2010). See also *Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019)*, paragraphs 56 to 59.

⁴⁴ Frequent visits, discussions and meetings among Engineer units and Engineer Section helps in proper planning of availability of man and materials on ground. Timely supervision and inspection of the working site by Engineer Section further assist in assessment and identifying further projects. A joint reconnaissance/site visit from both the team and other counterparts helps in deliberate planning of task given from higher authority. Engineer Section either at FHQ or SHQ level, a representative together with Engineer Section in their office are to facilitate liaison and coordination.

⁴⁵ One of the basic challenges being faced by Military Engineer unit is timely availability of construction material which is most of the times lags behind the deployment of troops and machinery. To avoid such a situation the key is foresight and flexibility in planning. The coordination between Force Engineer and Engineer Section is essential for preparing Task Orders which caters for the availability of requisite material beforehand. However, there will still be circumstances when the material supply will either be uncertain/delayed or not forthcoming; re-allocation of resources and shifting the focus to other tasks based on overall mission priority will therefore be essential at senior level.

Appendix 1 to Annex A
(Tasking Coordination
Mechanism for a UN
Military Construction
Engineer Unit)

Tasking Coordination Mechanism for Mission- and Force-Level
Military Construction Engineer Projects

(see also the below diagram)

Step 1. Mission Construction Engineer priorities are established by the Mission's senior management, through submission by the FC and DMS/CMS, consistent with the Head of Mission's guidance on mandate implementation.

Step 2. Based on these Mission-level priorities, construction engineer tasks are developed for specific engineer units by the Chief Engineer/Chief of Service Delivery.

Step 3. Construction engineer tasks developed for military engineer units are coordinated through the Force Engineer.

Step 4. The Force Engineer is the focal point for preparing UN Military Construction Engineer Unit Task Orders. Preliminary Task Orders are prepared consistent with Mission priorities, developed as described above, and include the details of the engineer work to be done, material requirements, administrative aspects and initial designs and drawings of the projects.

Step 5. The Preliminary Task Orders are coordinated with the Mission's Chief Engineer for review and finalization of designs and drawings.

Step 6. The Preliminary Task Orders are returned to the Force Engineer by the Mission's Chief Engineer for UN Military Engineer Unit comment. The UN Military Engineer Unit's comments and concerns are then taken into account in the finalization of the Task Orders.

Step 7. The finalized Task Orders are signed by both the Force Engineer and Mission Chief Engineer, and are then submitted to the Deputy Chief and Chief of Service Delivery for final approval.

Step 8. Once approved, the Chief of Service Delivery sends the Task Order to the UN Military Construction Engineer Unit for action through the Force Engineer (U-8). The force engineer will coordinate unit tasks with the Force and Sector HQ to insure that operations and security are synchronized.

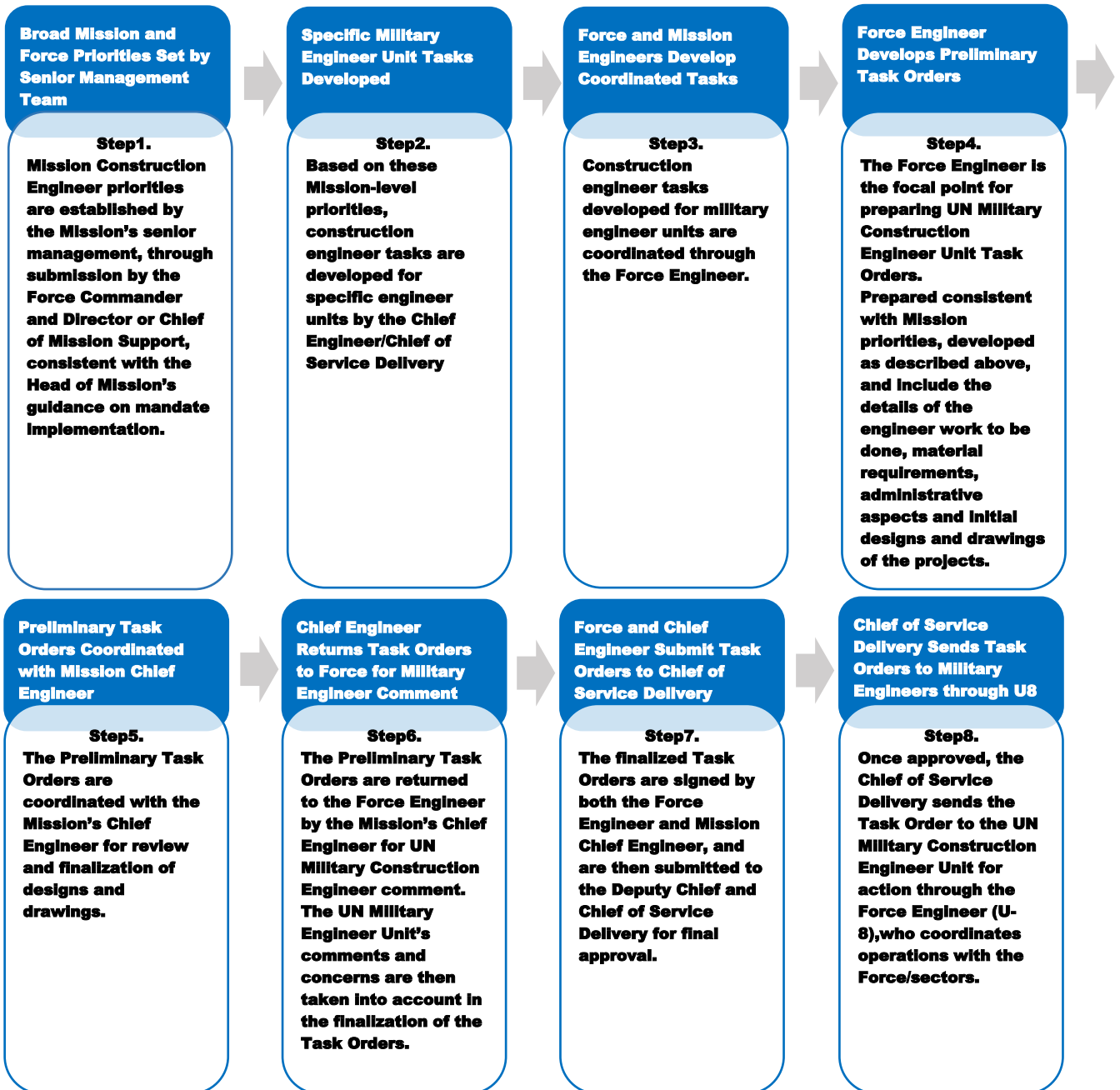
Additional Note:

In the case of urgent, Mission-directed tasks to offset shortfalls in civilian contracting and hasten Mission establishment (such as developing helicopter bases, Level II medical facilities, certain accommodation, logistics bases, etc.) tasking may come to the UN Military Engineer Unit directly

from the Mission Chief Engineer. However, prior to the tasking, the Chief Engineer will have closely coordinated with the Force Engineer, who will coordinate with the Force.

Generic UN Military Construction Engineer Tasking Process:

Mission and Force-level Projects



Additional Note:

In the case of urgent, Mission-directed tasks to offset the deficiency of civilian contractors and hasten Mission establishment (such as developing helicopter bases, Level II Medical Facilities, certain accommodation, logistics bases, etc.) tasking may come to the UN Military Engineer Unit directly from the Mission Chief Engineer. However, prior to the tasking, the Chief Engineer will have closely coordinated with the Force Engineer.

Counter Explosive Threat – Search and Detect (CET Search and Detect)

1. Background

1.1 Introduction

Search is a key operational capability residing within UN Peace Support Operations and a core Combat Engineer unit capability which is interrelated heavily with EOD as well as FP; however, search has utility across the full spectrum of UN operations and can facilitate delivery of strategic Mission effects. TCCs deploying Combat Engineer Units to UN Operations should maintain a search capability which may be utilized in a wide variety of situations. A basic understanding of such search⁴⁶ capabilities should be held by all TCC within all UN units. This Annex will focus on search in the land domain but will reference search in the maritime and riverine operating environments.

1.2 Search Capability

Search capabilities have been developed through experience in a wide variety of operational theaters. Many nations have adopted the core principles and procedures of search, through their military search units and personnel. Each nation's responsibilities and organization of their respective search capabilities varies. Military search capabilities have been developed in theaters that required the location and detection of concealed threats⁴⁷. The lessons learned and best practices have been distilled into core principles and procedures, which focus on the threats. Although this Annex was developed based on military search activities, it is intended that this material is equally applicable to search activities undertaken by military, police or civilians that are working for or in support of UN objectives. This Annex refers to search rather than 'military' search or 'engineer' search, unless in regards to advanced search capabilities.

1.3 Target Audience

This document aims to provide a common understanding and framework for search activities that a UN Mission may be required to plan and undertake, including principles and capabilities. It contains information for personnel deploying or supporting search operations to form a common understanding to build upon this doctrine and tailor search operations to achieve UN mission objectives. It should be used by search advisors or searchers involved in UN Missions provided they are trained and equipped to deliver the required search effects as described in Chapters 2 and 6 of this manual.

1.4 Applicability

This Annex is intended for use in support of search activities in the land domain and does not refer to riverine or maritime search activities⁴⁸.

1.5 Tactics, Techniques and Procedures (TTP)

⁴⁶ The management and application of systematic procedures and appropriate detection equipment to locate specified targets. Specified targets may include people, information and material resources employed by an aggressor.

⁴⁷ Conventional weapon systems, items of ERW and improvised explosive threats and components thereof and in particular IEDs.

⁴⁸ This Annex does include vessel search as a capability under advanced search but refers to the search of vessels which are moored and not under way.

Since the TTP of search teams are often sensitive security or classified, details of such TTP are not provided in this Annex. Such information can be utilized by those who employ IEDs to counter these techniques and procedures and exploit this knowledge to design IEDs to target search personnel. TCCs should not be required to alter/amend their own national search TTP for UN missions unless warranted by changes in adversary TTP, or based on information gained through theater specific training and with concurrence of TCC Exact search TTP to be used are at the discretion of TCC providing search capabilities to UN missions with the understanding that they must be:

- Effective, efficient and safe leading to the detection and location of threats;
- In line with the mission mandate;
- In line with search principles.

While search TTP are a national responsibility, TCC providing search capabilities within a UN mission are encouraged to share search TTP best practices and related lessons learned to the benefit of all mission search personnel.

2. Search Support to UN Operations

2.1 Search is a capability that can be utilized across all operational environments. Search capabilities can be directed based upon the decision-making process, both in general planning and a wider search planning, and fitted to the specific needs of the operation. Search is not only limited to direct support to UN operations, but may also support:

- Protection of civilians in humanitarian assistance operations (including disaster relief);
- Force Protection (including patrol and convoy operations);
- Threat Reduction;
- Host Nation security force support.

2.2 Search support to UN operations takes two forms:

- **Advisers.** Specialist staff at all levels of command, who provide advice and assist in planning. The Search Advisor must be current on all policy and doctrine to ensure that the correct advice can be provided to the FC or unit commander they report to and their respective staffs on all search related matters, at all staff levels. Where possible Search Advisor role should be dedicated in a UN Mission. This consideration is required during the force generation phase of a mission, or if there is a change in the Mission threat assessment requiring a reconfiguration to included dedicated Search Advisor roles. Alternatively, a Search Advisor may be a role that a suitable qualified person is given. A Search Advisor is also responsible for:
 - Advice to Force Engineer or unit commander, depending on the level they are operating at;
 - Prioritizing and coordinating search matters with supporting Host Nation and non-governmental organizations (NGOs), where appropriate;
 - Synchronizing and aligning available capabilities across the AO;
 - In large, complex search operations, the Search Advisor may be responsible for the coordination of multiple search teams;
 - Supporting the intelligence and exploitation cycle;
 - Determining which assets are most appropriate for a task;
 - Conducting an estimate and planning for search, based on threats, aggressor intent and capability, before preparing orders for a search commanders and/or search teams;
 - Providing support and advice to the search team commander conducting search activities.
- **Searchers.** Individuals and teams operating in support of UN Operations. Each member of a search team must be suitably trained and equipped for the role and search capability they are to provide during the search activities for that mission. As a minimum, a search team should be composed of the following members:
 - **Search Team Commander.** The Search Team Commander runs the team, co-ordinates with other agencies, and works in close coordination with the Search Advisor. He/She commands

the team in order to achieve the task given by the Search Advisor;

- **Search Team Scribe.** The second in command of the Search Team. Responsible for providing assistance to the Search Team commander and for completing the necessary documentation this includes notes on what the Search Team is looking for, any items or evidence found and for ensuring all legal documents are in the possession of the team, or are completed for judicial evidence in the future;
- **Search Pairs.** Searchers shall be deployed in pairs with a minimum of two Search Pairs for safe, effective and efficient operation. Search Pairs work under the direction of the Search Team Commander. They must have received the intent, threat and desired effect in the Search Advisor's orders.

3. Search Objectives

Search is a key enabler in support of UN Operations. It provides a means to shape and control the environment in which UN capabilities are active or where there are security interests across an operational theater. Search can be broken down into two distinct types; Pre-emptive Search and Protective Search.

3.1 Pre-emptive Search

The objectives of pre-emptive search are to gather information and material for exploitation, to deprive an aggressor of resources and to secure material for possible future evidential value. The detailed applications are following.

- **Gain Intelligence.** Information and material gathered during search operations is often a rich source of intelligence. Alongside Intelligence, Surveillance, and Reconnaissance (ISR) assets, this information allows for the creation of a full intelligence picture and informs of threats in theater, especially when it comes to the technical exploitation of explosive threats or hazards.
- **Deny Resources and Opportunity.** UN Commanders can gain or maintain the initiative in an operational environment through the reduction of an aggressor's capability to deliver explosive threats. Through the discovery and interdiction of weapons and explosives, it retains freedom of action for friendly forces, while reducing the extent to which an aggressor can impose their will through attacks with conventional or IEDs.
- **Secure Material for Exploitation.** In order to identify aggressor networks and their key capabilities and vulnerabilities, UN Forces must be able to collect, exploit and disseminate findings concerning adversarial technology and tactics. UN Forces engaged in operations must act and be seen to act in accordance with international and national legal frameworks in the collection of forensic evidence⁴⁹. Documentation, material handling and forensic awareness must adhere (where tactically viable) to identified best practices in order to assist any subsequent exploitation and possible prosecution. The following exploitation philosophy should be applied after assessment by those involved as best suits the situation. The exploitation philosophy involves three parts:
 - Safety;
 - Forensic integrity;
 - Continuity of evidence.

The application this philosophy requires balancing these against each other in order to select the most suitable course of action with safety considerations inevitably carrying more weight than others. The prioritization of the three parts of the exploitation philosophy depends on the key

⁴⁹ The use of the word "evidence" in this publication refers to an intent to potentially utilize recovered materiel and information to prepare forces for subsequent operations or legal purposes. The term evidence is used in a general sense, no attempt is made to define what would constitute evidence in a particular theatre for a nation.

operational actions defined by the commander. In every case, safety is always the priority in all exploitation activities.

3.2 Protective Search

The objective of protective search is to protect potential search targets as well as to protect UN/Unit assets. This is achieved through the following:

3.2.1 Force Protection

Protective measures taken to mitigate hostile actions against friendly personnel, resources, facilities, and critical information. Search should be considered a key element of UN FP. Protective search provides means of reducing risk to UN Personnel and enables freedom of action/movement.

3.2.2 Protection of Pre-Planned Events

Protective search provide advanced security to protect potential targets during pre-planned events, according to the level of threat and the estimated consequence of failure. By executing a pre-emptive search, UN Forces can mitigate explosive threats in the target area, route or building.

3.2.3 Protection of Critical Infrastructure

Search can be utilised to protect critical military, governmental, industrial and civil infrastructure within the theater of operation, providing vital protection to the economy and well-being of the host nation.

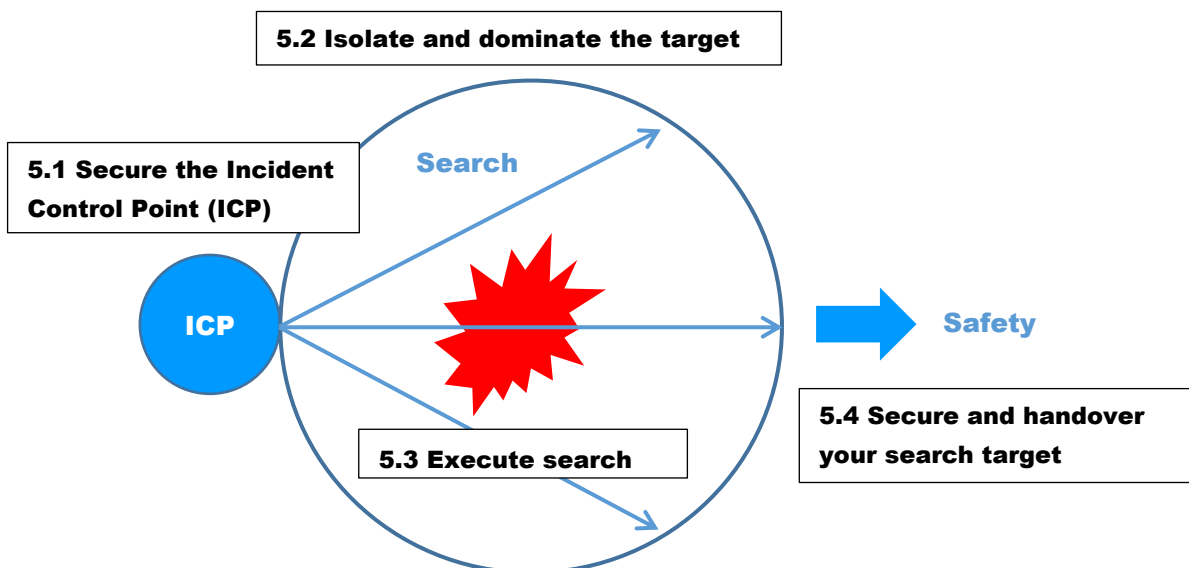
4. Search Effects

Search can support and deliver effects to reinforce a UN Commander’s intent in protective and pre-emptive operations from the tactical to the strategic level. This is supported through the following effects:

- **Shape** the conditions for future operations;
- **Deter** adversaries;
- **Deny** resources and freedom of action for the aggressors;
- **Protect** UN or supported forces and secure freedom of action and movement; and
- **Exploit** technical and tactical intelligence gained through search operations.

5. Framework for Search Operations

All search operations can be planned and executed using a four-stage framework.



5.1 Secure the Incident Control Point (ICP)

Any search operation must have an ICP that has been previously secured and searched. It is where the ICP is established, and the resources and means for the search mission are centralized and controlled.

5.2 Isolate and Dominate the Target

Before the target is searched, it must be isolated from outside influences by dominating the surrounding terrain. Persons and vehicles should be directed to a segregated area, to be searched away from others and from outside interference. Routes and buildings must be searched under the protection of a security cordon, so that nobody gets in or out when the search takes place. Isolating the target means also isolating the effects of an explosion. For example, surrounding a person or vehicle search area with protective works.

5.3 Execute the Search

Search procedures are being applied and all findings documented.

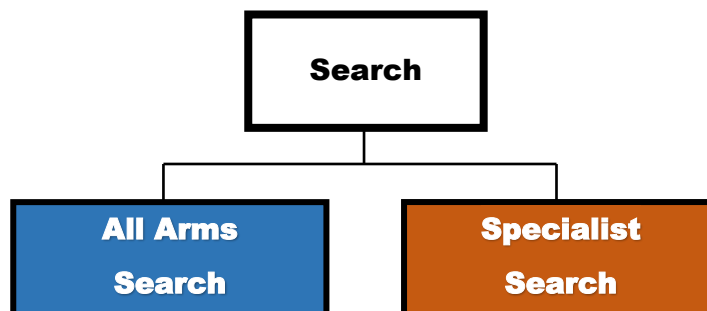
5.4 Secure and Handover your Search Target

If the mission requires it, a searched target can be handed over to appropriate authorities for further activities. As such, a searched person is allowed to enter a controlled area and must remain supervised to be considered "searched". A searched building must have its access points controlled to be deemed "searched and secure". A searched route must be under continuous surveillance to be deemed "searched and secure". If a target has been searched, and after that is no longer under control it must be considered "unsearched and unsecured".

6. Defining Search Capabilities

6.1 Search is the capability to locate specific targets by the use of intelligence assessments, systematic procedures and appropriate detection techniques. Specified targets may include people, vehicles, routes, areas, locations, buildings and material resources employed by an aggressor or to be used by friendly forces. Search involves the planning, management and application of systematic procedures and appropriate techniques to confirm the presence or absence of concealed threats such as conventional weapon systems, items of ERW and IEDs and components thereof. Search can be employed in support of the full spectrum of operations.

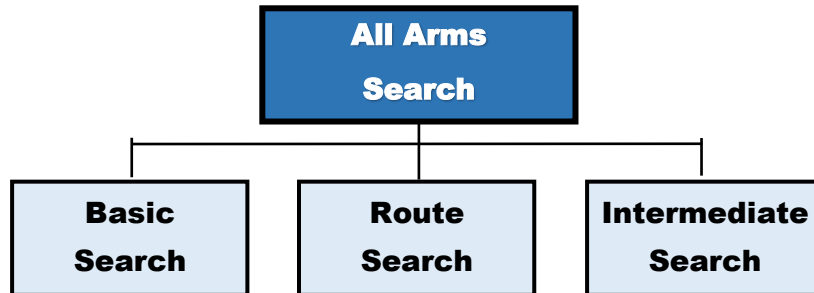
6.2 For the purpose of this manual the search capabilities are outlined in the following organograms to provide an overview of the full spectrum of search capabilities that the UN may employ;



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

- **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 or EOD personnel trained, equipped and qualified to do so.

6.2.2 Within all arms search there are three levels of search capability, namely:



- **Basic Search.** The lowest level of search capability. It provides all personnel with a fundamental understanding of the prevalent threat and those measures they, as individuals can adopt in order to optimize FP. Basic search training normally covers search awareness but may also include other procedures. Basic search teams are normally ad hoc. Basic search capabilities may or may not involve the use of search equipment and covers the following capabilities:
 - **Search awareness.** Search awareness is the most basic skill level and is utilized for FP. A Search aware person is normally trained to conduct searches of a person or vehicle, or conduct a basic threat assessment (subject to a periodic threat update), 5m and 25m checks and work place checks.
 - **Vehicle⁵⁰ search.** The search of a vehicle to detect vehicle-borne improvised explosive devices (VBIEDs), IED components, weapons, ammunition or any other object that an aggressor has attempted to conceal. A vehicle search involves an initial check of persons and their vehicle, from which an assessment can be made as to whether any further search is required. Vehicle search within basic search involves initial checks and can involve primary searches;
 - **Person search.** Search of a person to detect components, weapons, ammunition, or any other exploitable intelligence that a person may attempt to conceal;
 - **Property search.** A physical and visual search of areas and property where the concealment of prohibited items is possible. This can include but is not limited to, the search of baggage, buildings and urban areas/street furniture without the use of specialist equipment in a low threat environment⁵¹.
- **Route Search⁵².** A unit level search capability used in the search of assessed Vulnerable Point and Vulnerable Area along a route for the presence of IEDs. It involves the knowledge and skills to be able to assess a VP or VA and determine how best it should be searched in order to locate and isolate IEDs so they can be rendered safe by IEDD or other suitably qualified personnel or alternatively confirm the absence of IEDs at a given VP or VA. Route search can be used on roads, tracks, railway lines, and along any mounted or dismounted direction of travel. Route search of railway lines⁵³ can be a route search team task, but may require an advanced search team depending on the threat assessment.
- **Intermediate Search.** The capability to conduct search operations in a situation where there is a low or no specific threat from EO identified, a lower level of assurance is acceptable, or there

⁵⁰ Vehicles are defined as any private or commercial passenger or load-carrying vehicle ranging through all makes and sizes of saloon cars, vans, trucks and including agricultural tractors and trailers.

⁵¹ Activities undertaken where the assessed risk posed by specified threats is assessed as improbable.

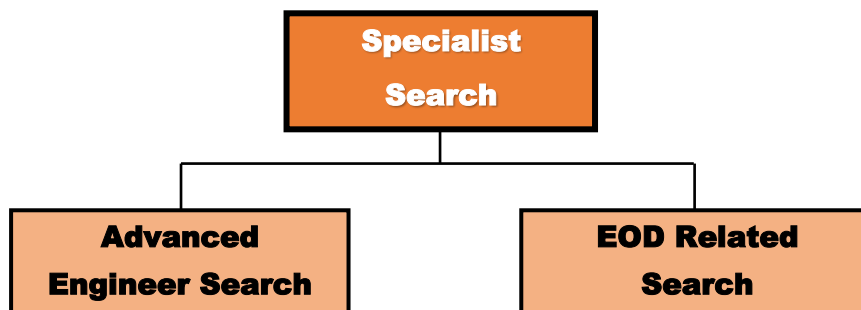
⁵² Sometimes referred to as patrol search.

⁵³ Search of along a railway track and its banks for the presence of threats.

is no threat from a hazardous environment. Intermediate search teams are qualified to undertake all basic and route search tasks also. An increased level of training and specialist equipment is required at this level of capability compared to route search and basic search. Key capabilities of intermediate search are area search⁵⁴ and building search. Area search involves the systematic search of a target area with the aim of locating items that have been, lost, misplaced, discarded or hidden. Area search can occur in rural environments or open areas in an urban environment. An area search can either locate illegal resources or, equally importantly provide considerable assurance that the area contains no specified targets. A building search refers to the systematic search of a structure or facility to locate threat items therein. Area searches and building searches are typically undertaken as part of planned operations in conjunction with a security element that first secures a cordon around a give target area or location prior to a search element systematically searching for explosive threats and or weapons and/or components thereof.

NOTE: Area search or building searches may be an intermediate or advanced search capability. Typically, part of an intelligence led operation the distinction between such operations being an intermediate or advanced search requirement is determined by an assessment which is elaborated on further on in this Annex.

6.2.3 Specialist search is broken down into engineering search and EOD search capabilities.



- **Advanced Engineer Search.** All intermediate search capabilities plus advanced search capabilities. Advanced search is the capability to conduct search operations in an area where; the operating environment is assessed to be non-permissive, there is a high threat⁵⁵, only the highest level of assurance is acceptable, or a hazardous environment exists. It invariably requires support, FP and additional specialized equipment. Advanced Search capabilities include:
 - **Protective Building Search.** A type of search operation conducted in buildings which are assessed as requiring detailed search operations prior to a major event or VIP visit. It is intended to provide a safe environment from an assessed threat. Pre-emptive building searches are complex, resource intensive operations that require careful planning and control by a search advisor;
 - **Aircraft Search.** The search of an aircraft for the presence of threats;
 - **Vessel Search.** The search of moored riverine and maritime platforms not underway for the presence of threats;
 - **Hazardous Environment Search.** Any search activity with an environment that involves Working in Confined Spaces⁵⁶ (WICS) and or a toxic environment requiring specialist

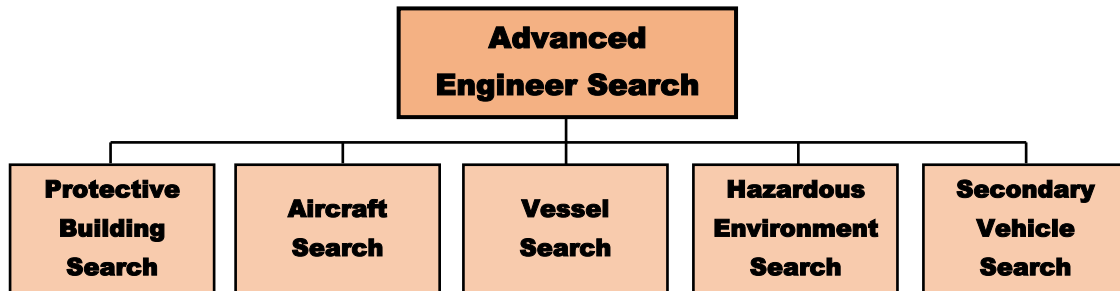
⁵⁴ Also referred to in *the UN Peacekeeping Missions Military EOD Unit Manual (Sep 2017)* as “Tactical Cordon and Search”

⁵⁵ 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.

⁵⁶ A confined space is any place, including any chamber, tank, vat, silo, trench, and pipe or similar, where there arises a reasonably foreseeable risk. It may include structures and the holds of ships where there are risks from lack of oxygen, poisonous gas, fumes or vapours, movement of liquids or solids, fire or explosion, dust or heat. Confined spaces may be surface or subsurface/subterranean.

access or breathing equipment and or Working at Heights (WAH) or working within or alongside unstable structures⁵⁷;

- **Secondary Vehicle Search.** A detailed systematic advanced search of a vehicle involving the search of voids and interiors of compartments within a vehicle using specialist techniques and equipment and can be conducted with assistance from target vehicle experts.

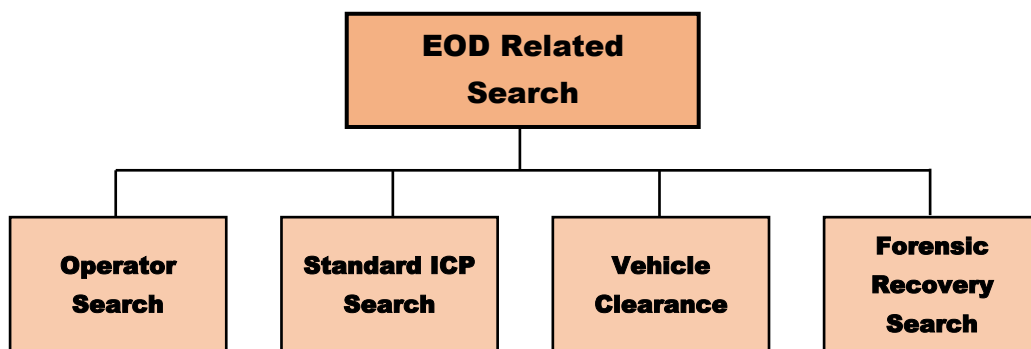


- **EOD Related Search**

EOD related search involves any search activity that members of an EOD team are qualified to undertake and include:

- **Operator Search.** Systematic search procedure used by EOD operators to clear a limited area of land leading up to a named area of interest which may have a high likelihood of containing Victim Operated IEDs (VOIEDs). Operator search is undertaken when remote access is not an option or when the deliberate initiation of IEDs by Remotely Operated Vehicle (ROV) is deemed unacceptable;
- **Standard Incident Command Post (ICP) Search.** The search other than those required as part of a planned operation in a non-permissive environment which will usually require engineer search capabilities;
- **Vehicle clearance.** The deliberate system manual searching of a vehicle and the area surrounding it by an EOD Operator after an assessment that a threat within the vehicle or in its surrounding area is probable;
- **Forensic Recovery Search.** The search to recover forensic evidence.

NOTE: Other areas may be cleared at the operator's discretion based on their own threat assessment.



⁵⁷ Unstable structures include damaged, poorly maintained or poorly designed structures and buildings that may be encountered in an operational theatre; they may be buildings or equipment. Unstable structures may include poorly stacked materials or equipment such as ISO storage containers or structures that are sited on inadequate foundations. The risks are from collapse or movement of the structure causing crushing or entrapment and from the risk of falling materials or objects.

6.3 Determining All Arms and Specialist Search Tasks

Certain types of search such as route, area and building searches can be either an all arms task or a specialized task. In each case defined training and possibly equipment support is required for these capabilities to be employed by all arms. The criteria that are used to determine if these search activities are all arms task or a specialized task is determined by an assessment of the following factors. A search task is automatically an advanced search capability requirement if one or more of the following “HEAT factors” are present:

- Hazardous nature of the operating environment;
- Equipment requirements are specialized;
- Assurance level required is high;
- Threat level is high.

The following table summarizes the various search tasks as being all arms or specialized. The color codes used are;

	Permitted
	Possibly all arms or specialised determined by HEAT factors
	Not Permitted

Search capability	All Arms	Specialist
Search Awareness		
Vehicle Search		
Person Search		
Property Search		
Route Search		
Area Search		
Building Search		
Protective Building Search		
Aircraft Search		
Vessel Search		
Hazardous Environment Search		
Secondary Vehicle Search		

6.4 Search and IEDD

Search is a capability that is an enabler to EOD/IEDD. Route, intermediate and advanced search teams will often work in concert with an EOD/IEDD team. The ability to locate and detect IEDs is crucial within any counter explosive threat capability. In order to defeat the device (DtD), a proactive rather than reactive approach is required to put pressure on the IED network. A key enabler in these

efforts is locating and detecting IEDs and their components before they can achieve their desired effects.

6.5 Search Equipment

The use of particular equipment will vary depending on the search capability employed. UN units requiring a list of equipment scales for various search capabilities need to refer to the relevant COE Manual extract, SUR, and MOU as agreed in the mission planning and preparation phase.

6.6 Support to Route Clearance

Route clearance refers to the removal of the explosive threats along a route. A Route Clearance Package (RCP) is the combination of FP assets, search and EOD capabilities which are threat aligned and within available resources in order to clear a defined route to a determined standard. Search capabilities (intermediate and advanced) can contribute to route clearance operations by means of Area and Route Search procedures. Further Information on RCP is provided in Appendix 2 to this Annex.

7. Search Principles

Success of search as a capability is largely due to the procedures founded on four basic principles that can be adapted to suit the operational tempo and tactical situation. The procedures and techniques involved in all search activities should be principle based, regardless of the exact details of the actions to be taken. The level of assurance provided varies on the level of training and equipment available. The search principles are:

- **Systematic.** All search activities regardless of the level they are conducted at are systematic in their nature which is achieved by the approach being careful, deliberate, detailed and methodical. The systematic search principle applies equally to the planning, co-ordination, and execution of all search operations;
- **Flexible.** TTP as well as equipment must be adapted to an evolving operational/tactical environment where the aggressor constantly changes his methods of operation in an attempt to either trap, deceive, mislead or misdirect search capabilities. All procedures should be flexible but consistent in their application without compromising safety;
- **Focused.** All planned search operations should be targeted and have clearly defined objectives that contribute to the mission. The political, cultural, social and economic impact of any intended search operation should be addressed when considering the objectives;
- **Safe.** Search activities are conducted within the margin of acceptable level of risk for the operation and the assessment associated with it as determined by the commander.

8. Search Planning Considerations

Search is planned and coordinated in support of the Commander's priorities. Search planning is the process by which the available intelligence is analyzed and the appropriate search response identified. Advice from the relevant Search Advisor should be sought to ensure that appropriate levels of search capabilities are utilized consistent with the perceived threat. Consideration must be given to the collection, custody and movement of recovered items and the subsequent exploitation process.

8.1 The level of search capability required is dependent on the known or perceived threat in the theater of operations and should be tailored to the environmental challenges. TCC should seek to deploy with an appropriate Search capability to counter assessed threats, in order to support the commander's intent.

8.2 The following factors must be considered when planning search operations:

- **Minimize Disruption and Damage.** The disruption and damage caused by search operations should be proportional to the level of search conducted. Search operations should aim to minimize the disruption to the local population and damage of property. This principle is important to maintaining the good will of the local population or at least minimizing the ill-will generated. Commanders at all levels have a responsibility to balance the physical and psychological damage caused by search operations with the benefit gained. Compensation of individuals or communities for damage occurring during search operations may be considered by mission/leadership;
- **Rule of Law.** Search must be authorized and carried out within the legal framework governing the operation. This framework may include, be drawn from, or refer to, information from: MOUs, Military Technical Agreements (MTAs), ROE, Standing Operating Procedures (SOPs), Operating Orders (OPORDs), international and HN law, directives and orders, and environmental regulations. National contingents planning Search operations must be aware that teams from other TCC including HN may have laws, directives and ROE that are different from their own. Furthermore, the handling of evidence and recovered material must be in accordance with this framework;
- **Time.** Search operations may be time sensitive and should be planned and conducted in a timely manner relevant to operational imperatives and FP requirements. Safety and speed must be carefully balanced during planning and execution phases. Operational execution should be timed for optimum effect;
- **Equipment.** Tools and equipment must be appropriate for the level of task being undertaken. As capability deficiencies are identified through changes in the threat and emerging trends, equipment and training must be adapted;
- **Tactics, Techniques and Procedures (TTP).** Search TTP must evolve to meet the threat and emerging technologies;
- **Security.** Consideration must always be given to:
 - **Operational Security (OPSEC).** The requirement to retain any operational advantage over an aggressor demands the implementation of the 'Need to Know' principle. OPSEC is key so that the possibility of surprise can be preserved;
 - **Tactical Security.** Search operations must be conducted with FP measures appropriate to the perceived threat environment. FP measures, including cordons and reaction forces should be prepared to prevent the escape of target(s);
 - **Information Management**
 - **Documentation.** Search reports may form part of necessary evidentiary or intelligence processes and should be completed during every search operation. These reports may also serve to refute or support any compensation claim or grievance that is submitted. Reports should be adapted to meet local, national or international laws and where required, be translated into the local language. The authority to conduct a search should be documented on all search reports (SR).
 - **Analysis and Feedback.** All available evidence, information and recovered material should be analyzed in a timely manner and preserved for future reference where possible. All information collected should be fed into the intelligence chain, to assist in the development of current and future threat analysis, targeting cycles and TTP.

9. Supporting Elements to Search Teams

The conduct of search operations may require the utilization/tasking of other supporting elements. The following are examples of supporting elements and how they may support search activities:

- **EOD.** Where explosive threats, including EO components or related material are assessed or anticipated to be present, EOD should be incorporated into the search operation. Search teams should have primacy on task until a suspected explosive hazard is discovered. Where possible

EOD and Search teams should train together, in order to refine understanding of procedures, task handover and minimize risk to life as far as possible.

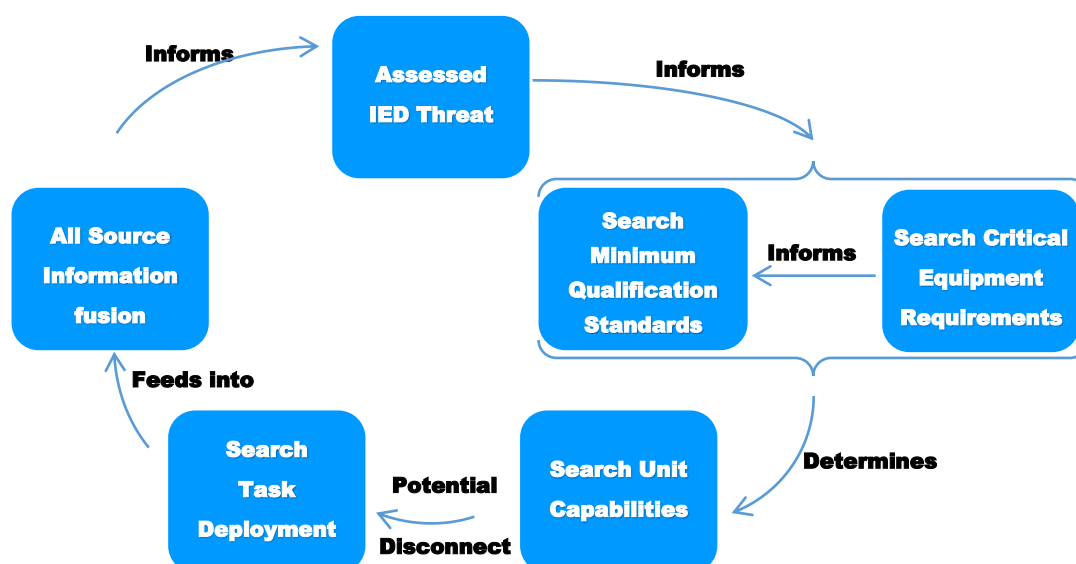
- **Military Working Dogs (MWD).** When requesting assistance from MWD, consideration must be given as to whether the type of dog available will contribute to the search being conducted. Search units should liaise with the MWD handler to understand the capabilities and limitations of the MWD assigned to the task prior to conducting operations, as not all dogs may be suited for the type of search being undertaken.
- **Counter Radio-controlled Electronic Warfare (CREW).** When available, CREW should be utilized in all circumstances to guard against the possibility of a RCIED threat. Further details on this are provided in the EOD Manual.
- **Intelligence, Surveillance and Reconnaissance (ISR).** Where available, ISR assets are a valuable information source for planning purposes. Aerial imagery and other sources can provide information beneficial to the planning of search operations at all command levels. Further details on this are provided in the ISR manual.
- **Geospatial Support.** Where geospatial (GEO) support is available it can provide products beneficial to search operations. Up to date maps and aerial photography can be produced in a larger scale with a variety of overlays. Demographics, obstacles, dead ground studies, blue prints, historical and recent IED attacks and all manner of geographical features pertinent to the search area can be highlighted. Search Advisors and Search Team Leaders must forge links with those working with GEO data to ensure that required search products are regularly updated as new data becomes available.
- **Intelligence.** The input from U2 at all levels is crucial. The success of a search operation is closely linked to the quality of intelligence provided. The inclusion of intelligence staff at an early stage in the planning process saves time, effort and provides a focused plan from the outset.
- **Law Enforcement Agencies (LEA).** HN LEA, UNPOL or theatre SOPs may dictate a requirement for the presence of indigenous police forces in support of the search operation. They may also be called upon to provide close liaison on other operations. It is essential that they are accordingly briefed, but not at the expense of OPSEC.
- **Military Police (MP).** MPs can support search operations through the use of specialized training, equipment and techniques to enable mobility, security, detention and evidentiary chain of custody. MPs may also liaise and take statements from those involved with the search. MPs may provide assistance in forensic and evidence recovery and/or training and are a key enabler in coordinating with HN Police, if they are to be incorporated in search operations.
- **Interpreters.** Interpreters should always be considered when planning search operations where the native language differs from the language of those conducting the search. In addition to bridging language barriers, they may also gather information from individuals present during the search for reporting purposes. Interpreters may also serve to de-escalate situations by explaining reasons for the conduct of a search. OPSEC is paramount when using local interpreters, information gained must be carefully evaluated.
- **Force Protection.** FP assets are likely to have a key role in securing the search target/area through domination of the ground and reacting to threats as they arise. Close coordination between the Search Advisor and the FP commander during search operations is paramount.
- **Weapons Technical Intelligence (WTI).** WTI supports exploitation through on-scene forensic collection and analysis processes as required. Further details on this are provided in the EOD Manual.
- **Chemical, Biological, Radiological, and Nuclear (CBRN) teams.** CBRN teams support Hazardous Environment Search (HES) by providing decontamination, reconnaissance and detection.
- **Transport.** If bulk or multiple finds are expected, transport requirements must be coordinated if additional personnel to load, move and secure the material are deemed necessary. Where circumstances warrant, heavy equipment support may be required.

Appendix 1 to Annex B
Counter Explosive Threat-
Search and Detect (CET
Search and Detect)

Search Capability Factors in Support of IEDD

1. In relation to IED threat mitigation, search is conducted to locate and isolate emplaced IEDs or to find IEDs prior to emplacement or components thereof prior to assembly. If this is not possible it is necessary to find the device prior to initiation. These efforts to mitigate the threat require search activities.

2. An understanding of the IED threat is essential to identifying the required search capabilities for EOD efforts. Once the assessed IED threat for a mission has been identified, the required search minimum standards and critical equipment requirements can be determined. This is illustrated below.



Search Capability Factors in Support of IEDD

3. A technical understanding of the type and complexity of the IED threat is necessary to identifying the search equipment required. As an illustrative example, the length of command wire in use will influence the type of buried wire detector that is required and similarly the metallic signature of IED components in use will determine the effectiveness of metal detectors or other buried detectors that a team should deploy with. Some or all of an IED's components may be non-metallic. Aggressors utilizing IEDs will adapt technically and tactically to circumvent search efforts introduced to mitigate IEDs, such evolution in the IED threat will often require an on-going evaluation of the search assets required to mitigate such threats (e.g. an evolution in the metallic signature of buried IEDs). The minimum requirements will be determined by the tasks that the search capability is required to be able to undertake. This leads to several search levels which vary according to factors:



- **Hazardous** nature of the operating environment for example confined spaces, contaminated environments or environments requiring Self Contained Breathing Apparatus (SCBA);
 - **Equipment** requirements are specialized (e.g. nonlinear junction detectors and probe camera systems);
 - **Assurance** level required (e.g. venue search prior to a VIP visit);
 - **Threat** level assessment (classified as being high or low).
4. A mission should clearly identify the skillsets and capabilities required of each search capability.

Appendix 2 to Annex B

Counter Explosive Threat- Search and Detect (CET Search and Detect)

Search in Support of Route Clearance Packages (RCP)

1. Route clearance refers to the removal of immediate explosive threats along a route. Often the first thing that needs to occur prior to the decision to deploy or generate route clearance capabilities, is terrain and route analysis of routes along which IEDs have been or may be deployed to identify VPs and VAs along them. Commanders then have options in the use of engineering assets to mitigate the threat that IEDs have in restricting FoM along such routes. Two options are: Search assets used to search VP and VA; Use of heavy engineering assets.

2. Search Assets Used to Search VP and VA

When search assets are used to search VP and VA along a route they undertake what is referred to as route searches. The task of route search teams who undertake these types of VP and VA searches is to locate and isolate any EO hazard such as ERW and IED that may be at such points and areas that pose a hindrance to their FoM. Once an EO item has been located and isolated a CMD or IEDD team can then dispose of the item. Commanders must remain aware that search is a risk reduction activity but does not entirely remove the risk of the presence of EO. There are typically three types of route search teams which vary in regard to the level of assessed threat that is faced or the level of assuredness required from the search:

- Patrol search teams or route search teams;
 - Intermediate route search using unit search teams;
 - Advanced route search teams where a high threat requiring intimate support of other assets.
- Specially formed engineering units commonly known as RCP are typically utilized to undertake route clearance along which IED have or assessed as being emplaced. RCP are specially equipped teams with the equipment designed to aid in identifying IEDs and explosives hazards along routes of travel within a mission area. Such route clearance operations are often key enablers in FP against the IED threat and support to the maintenance of FoM.

3. Use of Heavy Engineering Assets

It may be necessary at times to mitigate the threat posed by IEDs on routes being travelled using heavy engineering assets to undertake route reconnaissance, maintenance, improvement and obstacle clearance. Examples of the use of such assets may be to:

- Clear the vegetation and scrub around junctions which are assessed VP;
- Improve and secure culverts to prevent their use as IED emplacement locations;
- Use of such assets to improve the road surface to hinder IED emplacement along it;
- Improve mobility and enhance FoM.

4. Where there is an assessed IED threat at such locations and areas that heavy engineering, tasks are to take place, route search teams of the required capability in line with the threat and assurance required can be deployed along with IEDD assets embedded with them. Commanders and planners have two options when considering the requirement for such route clearance capabilities.

5. Temporary Composite RCP

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 task(s) is 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.

6. Dedicated Mission RCP Unit

The task organization within the mission of dedicated route clearance assets and associated teams to assist with route management in an explosive threat environment. Such dedicated units within an all-arms grouping can if large enough be a standalone mission asset or alternatively can be a platoon or larger element within an UN engineer unit. RCP can be equipped with a mix of general and specialist vehicles, equipment and personnel integrated to conduct route clearance. Their purpose is to eliminate concealment for IEDs, munitions and caches as well as providing systematic detection and deterrence sweeps along cleared routes. A RCP can be used in general support to maintain main supply routes and in close support providing support to UN units on tactical road movements.

Equipment Requirements
of a Generic Combat Engineer Type of UN Military Engineer Unit
(Company-Size)

Major Equipment

Equipment	Quantity	Remarks
Personnel		
Combat Vehicles		
APC Wheeled Infantry carrier-unarmed (Class II)	4	
Container		
Other containers	18	
Workshop Container	1	
Support Vehicles (Commercial)		
Automobile/ Station Wagon	-	
Buses(greater than 24 Pax)	-	
Truck Water (10,000 liters and over)	2	
Support Vehicles (Military Pattern)		
Ambulance	3	
Jeep 4 x 4 with military radio	11	
Truck utility/cargo (1.5 to 2.4 tons)	2	
Truck utility/cargo (2.5 to 5 tons)	10	
Truck utility/cargo (over 10 Tons)	-	
Truck recovery (greater than 5 Tons)	1	
Engineering Vehicles		
Bulldozer medium (D6 & D7)	3	
Truck, crane heavy lift (up to 25 Tons)	1	
Truck, tractor	3	
Excavator up to 1 cubic meter	1	
Excavator above 1 cubic meter	-	
Fire Fighting truck	1	
Front end loader medium (1-2 cubic meters)	3	
Front end loader medium (2-4 cubic meters)	-	
Grader general purpose	1	
Roller, self-propelled	1	
Truck, dump, large (up to 10 cubic meters)	-	
Truck, dump, large (over 10 cubic meters)	3	
Workshops, truck, heavy engineer equipment	-	
Material handling Equipment		
Forklift medium(up to 5 tons)	2	
Forklift container	1	
Forklift rough terrain(over 5 tons)	-	
Trailers		



Compressor Trailer	2	
Fuel Trailer(2,000 to 7,000 liters)	-	
Light cargo single axle	-	
Lowbed 20-40 Tons	6	
Water Trailer (up to 2,000) liters	3	
Medium cargo single axle	-	
Trailer, floodlight set with generators	3	
Armaments		
Crew-served machine guns	3	
Engineering Equipment		
Concrete Cutter (Special Case)	-	
Concrete mixer machine, below 1.5 cubic meters	1	
Engineering Tool Set (Special Case)	-	
Dewatering pumps, up to 5 HP	1	
Dewatering pumps –submersible, up to 5 HP (special case)	1	
Floodlight set with generators	2	
Fuel Pump	-	
Immersion vibrating Layer	-	
Soil laboratory equipment	-	
Survey equipment ,including total station	1	
Vibrator concrete	-	
Water Pumps	-	
Water treatment plant up to 2,000 lph, storage up to 5,000	1	
Electrical Generators- Stationary and Mobile	-	
Generator 51KVA to 100 KVA	8	
Generator 201KVA to 500 KVA	1	
Logistics Equipment		
Water Storage (5,000-7,000 liters)	5	
Demining, explosive ordnance and improvised explosive device disposal Equipment		
Man-portable high-power electronic countermeasure (cell/GPS/jammer)		
Mine detector (capable of measuring shape or explosive content, as well as metal content)	14	
Mobile electronic countermeasure (jammer) against remotely activated improvised explosive devices		
Remote-control bomb disposal equipment	1	
Portable X-ray system for disposal of explosive ordnance		
Bomb locator	3	
Explosive ordnance disposal suit, heavy (minimum V50 rating of 1,600 for the chest and groin)	6	
Metal detectors		
Protective apron/trousers	25	
Protective helmet and visor	25	
Protective shoes	25	
Protective vest/jacket		
Reinforced gloves (pair)	25	
Demining disposal of explosive ordnance/improvised explosive devices (set)		



Explosive ordnance disposal disrupter		
Explosive ordnance disposal operator toolkit		
Explosive storage/detonator box		
Firing cables (300 meters)		
Firing system to initiate disruptors/charges		
Hook and line toolkit for explosive ordnance disposal		
Improvised explosive device/post-blast investigation kit		
Vehicle-borne improvised explosive device telescopic search mirror, with light (9 feet)		
Mine-clearance system, vehicle-mounted		
Remote-control mine clearance tracked vehicle		
Armored cabin explosive ordnance disposal/improvised explosive device disposal team truck vehicle		
Mine-resistant ambush protected vehicle		
Remotely operated vehicle with observation and/or disruption capacity		

Note:

1. This is just a format and the planner of each unit should refer updated COE Manual and decide the concrete figures of equipment in accordance with the MOU/SUR and operational requirements.
2. EOD requirements are in accordance with Annex C and Appendix 1, 2, 3 of EOD Manual.
3. Major equipment (if not in the COE Manual) may be treated as a “special case” if the situation requires.

Equipment Requirements
of a Generic Construction Engineer Type of UN Military Engineer Unit
(Company-Size)

Major Equipment

Equipment	Vertical Platoon	Horizontal Platoon	HQ Support Platoon	Engineer Support Platoon	Remarks
	Quantity				
Engineering Vehicles					
APC engineer--- tracked			2		
Bulldozer, light (D4 and 5)		1			
Bulldozer, medium (D6 and 7)		1			
Bulldozer, medium(D8A)		1			
Crane, mobile medium (11-24 tons)	1				
Crane, mobile heavy(25-30 tons)	1				
Front end loader/backhoe, medium (1-2 cubic meters)		2			
Front end loader, heavy (2-4 cubic meters)		3			
Front end loader, tracked					
Grader, general purpose		3			
Roller, self-propelled		3			
Industrial tractor light/farm tractor with disc implement		2			
Truck, dump, up to 10 cubic meters (civilian pattern)					
Truck, dump, up to 10 cubic meters (military pattern)	3				
Truck, dump, large (over 10 cubic meters)		10			
Truck, drill rig				1	
Drill rig, self-propelled					
Truck, sewer cleaning					
Excavator (up to 1 cubic meter) Small size	1		1		
Excavator (above 1 cubic meter)		2			
Workshops, truck, heavy engineering equipment	1			1	
Crusher Plant				1	
Air Compressor with pneumatic implement	1				
Material Handling Equipment					
Forklift, medium (over 1.5 tons and up to 5 tons)	1				
Forklift, heavy (over 5 tons)					



Forklift, container			1		
Forklift, rough terrain (over 5 tons)	1				
Trailers					
Light cargo single axle			4		
Medium cargo single axle					
Medium cargo multi-axle					
Heavy cargo (20 tons)			6		
Water trailer (up to 2,000 liters)					
Water trailer (2,000-7,000 liters)			4		
Fuel trailer (up to 2,000 liters)					
Fuel trailer (2,000- 7,000 liters)			3		
Compressor trailer				2	
Flatbed up to 20 tons			4		
Flatbed over 20 tons			4		
Lowbed up 20 tons				2	
Lowbed 20-40 tons			5		
Heavy equipment/tank transporter					
Trailer, floodlight set with generators (4 lights, 9 m pole, 7 kw generator)			4		
Engineering Equipment					
Concrete mixer machine, below 1.5 cubic meters	6			1	
Concrete mixer machine, above 1.5 cubic meters	6				
Concrete vibrator	2				
Dewatering pumps, up to 5 HP		3		2	
Sewage treatment plant and equipment					
Survey equipment, including total station	1	1		1	
Survey equipment, Theodolite type	1	1		1	
Well drilling rig				1	
Water pump (sb)				2	
Water treatment plant (reverse osmosis water Purification unit (ROWPU) or equivalent): equipment, tanks and bladders, up to 2,000 liters per hour, storage up to 5,000 liters					
Water treatment plant (ROWPU or equivalent): equipment, tanks and bladders, over 2,000 liters per hour, storage up to 20,000 liters			2		
Asphalt Works Equipment					
Asphalt Plant		1			
Asphalt Distributor		2			
Bitumen Distributor		2			
Pneumatic Roller		2			
Smooth Roller, tandem, small		1			
Smooth Roller, tandem, medium		2			
Road Sweeper Implement		2			
Water storage equipment					
Water storage, 5,000-7,000 liters				2	
Water storage, 7,001-10,000 liters					



Water storage, 10,001-12,000 liters			1		
Water storage, 12,001-20,000 liters			2		
Logistics equipment					
Fuel storage, 501-5,000 liters					
Fuel storage, 5,001-10,000 liters					
Electrical					
Generators --- stationary and mobile					
20-30 k VA				2	
31-40 k VA					
41-50 k VA					
51-75 k VA				1	
76-100 k VA					
101-150 k VA			4		
151-200 k VA					
201-500 k VA			4		
Communications equipment					
VHF/UHF-FM transceivers					
Air-ground base station transceivers					
Microwave links					
Mobile stations for trunking systems					
Paging equipment					
Portable MTSX for trunking					
Repeaters					
VHF alarm units					
VHF multiplex channels					
HF equipment			14		
Antennas					
Log periodic --- directional high power			1		
Base receiver, HF high power					
Base station transmitter, HF high power					
Telephone equipment (Satellite system)			3		
Telephone exchange large, 1 -1, 100 lines					
Telephone exchange PABX 1 -100 lines			1		
Crypto fax					
Antenna towers					
UPS 10 k VA and up					
Demining, explosive ordnance and improvised explosive device disposal Equipment					
Man-portable high-power electronic countermeasure (cell/GPS/jammer)					If required
Mine detector (capable of measuring shape or explosive content, as well as metal content)			3		
Mobile electronic countermeasure (jammer) against remotely activated improvised explosive devices					If required
Remote-control bomb disposal equipment			1		
Portable X-ray system for disposal of explosive ordnance					If required
Bomb locator			2		
Explosive ordnance disposal suit, heavy (minimum V50 rating of 1,600 for the chest and			4		



groin)					
Metal detectors			2		
Protective apron/trousers			4		
Protective helmet and visor			4		
Protective shoes			4		
Protective vest/jacket			4		
Reinforced gloves (pair)			4		
Demining disposal of explosive ordnance/improvised explosive devices (set)					If required
Explosive ordnance disposal disrupter					If required
Explosive ordnance disposal operator toolkit					If required
Explosive storage/detonator box					If required
Firing cables (300 meters)					If required
Firing system to initiate disruptors/charges					If required
Hook and line toolkit for explosive ordnance disposal					If required
Improvised explosive device/post-blast investigation kit					If required
Vehicle-borne improvised explosive device telescopic search mirror, with light (9 feet)					If required
Mine-clearance system, vehicle-mounted					If required
Remote-control mine clearance tracked vehicle					If required
Armored cabin explosive ordnance disposal/improvised explosive device disposal team truck vehicle					If required
Mine-resistant ambush protected vehicle					If required
Remotely operated vehicle with observation and/or disruption capacity					If required
Support vehicles (commercial pattern)					
All-terrain vehicle					
Ambulance --- truck					
Buses (greater than 24 passengers)					
Truck, utility/cargo (5-10 tons)					
Truck, utility/cargo (over 10 tons)					
Truck, maintenance light					
Truck, maintenance medium					
Truck, maintenance heavy					
Truck, water (up to 5,000 liters)					
Truck, water (over 5,000 liters and up to 10,000 liters)		2			
Truck, water (over 10,000 liters)				2	
Truck, crane (up to 10 tons)					
Truck, crane heavy lift (up to 25 tons)					
Truck, recovery (up to 5 tons)					
Truck, tanker (over 10,000 liters)					
Truck, tractor					
Support vehicles (military pattern)					
Motorcycles					
Ambulance			2		
Jeep (4x4) with military radio	1	1	8	3	
Truck, utility/cargo (2.5 to 5 tons)	4	2	8	4	
Truck, maintenance medium				1	



Truck, maintenance heavy				1	
Truck, water (up to 5,000 liters) Water Sprinkler		3			
Truck, water (over 5,000 liters and up to 10,000 liters)				1	
Truck, water (over 10,000 liters)			4		
Truck, crane (up to 10 tons)					
Truck, crane (10 to 24 tons)					
Truck, recovery (up to 5 tons)				1	
Truck, recovery (greater than 5 tons)				1	
Truck, refrigerator (under 20 feet)			3		
Truck, refrigerator (20 feet and over)					
Truck, tanker (up to 5,000 liters)				1	
Truck, tanker (over 5,000 liters and up to 10,000 liters)			4		
Truck, tanker (over 10,000 liters)			3		
Truck, tractor (up to 40 tons tow)					

Note:

1. This is just a format and the planner of each unit should refer updated COE Manual and decide the concrete figures of equipment in accordance with the MOU/SUR and operational requirements.
2. Equipment for Road and Airfield Plt are basically same as Horizontal Plt. And it includes Asphalt equipment
3. EOD requirements are in accordance with Annex C and Appendix 1, 2, 3 of EOD Manual.
4. Major equipment (if not in the COE Manual) may be treated as a “special case” if the situation requires.

Annex E (Evaluations)

Appendix 1 to Annex E (Evaluations)

Sample Pre-Deployment Visit Checklists

In view of the financial and operational significance of ensuring that contingents are correctly equipped, DPO conducts a Pre-Deployment Visit (PDV) / inspection before initial deployment. PDV's are usually conducted once the troop contributor and UN Headquarters reach a MOU agreement. This MOU covers personnel, major equipment, self-sustainment and Mission factors, and is a contractual statement of what each of the respective parties will provide in these areas.

<i>Suggested evaluation criteria scoring levels</i>			
Serial	Evaluation Criteria	Evaluation score 0 to 5	Remarks
a.	Generic Peace Operations Skills. Are all personnel of the Military Engineer Unit trained on and sensitized to the generic UN policy guidelines and directives for conducting peace operations? Do they demonstrate a clear understanding of these guidelines and directives?		
b.	Mission-Specific Peace Operations Skills. Are all personnel of the Military Engineer Unit trained, equipped and organized to perform MET as per peace operations		



	norms? Is the unit capable of performing in line with Mission mandate(s)?		
c.	Basic/Conventional Skills. Is the unit trained in basic infantry skills like firing personal weapons and minor tactics in accordance with national standards?		
d.	Physical and Mental Robustness. Is the UN Military Engineer Unit physically and mentally robust enough to be deployed to the harsh conditions of the field Mission?		
e.	Core-Specific Capabilities. Is the Military Engineer Unit able to perform core tasks based on unit organization, tasks assigned and type of Mission?		
f.	Explosive Hazard Awareness. Is the UN Military Engineer Unit aware of minefield, EO and IEDs hazards or threats? Are the basic protective measures known and trained?		
g.	Organization. Is the Unit organized in task oriented groups with support structure as per the force requirements?		
h.	Leadership. Is the unit chain of command capable, responsive and accountable for delivering in a peace operations environment?		
i.	Command and Staff. Is the unit command and staff integrated, trained and capable of planning, organizing, coordinating and directing the multifaceted operational and administrative tasks in the peace operations environment?		
j.	Training. Has the UN Military Engineer Unit undertaken Peace Operation and Mission-specific training? Has it achieved the requisite standards?		
k.	Resources. Is the unit carrying or in possession of the required number of personnel, arms, ammunition, equipment, accessories, spares, unit stores and expendables as per MOU and Mission requirements?		

l.	Equipment Maintenance/Management. Does the unit maintain a minimum serviceability state of 90 percent and does it have the capability to organize preventive maintenance and repair/recovery in situ?		
m.	Weapons, Instruments and Vehicles. Are all weapons zeroed, instruments calibrated, vehicles maintained and inspected and certified for correctness and functionality as per required standards?		
n.	Logistics. In case of deployment at more than one location, are the forward deployed elements configured for independent and self-sustained logistics capability (food, water, accommodation, hygiene and sanitation, transport, and medical), or do they receive this support from the hosting headquarters?		
o.	Medical. Do all personnel meet the requisite medical standards? Have they been inoculated as per Mission requirements and have they cleared the periodic medical examination? Does the unit have access to a fully operational medical facility (Medical Level I) in accordance with the MOU?		
p.	Integrity. Are all unit personnel aware of applicable UN rules, regulations and code of conduct, and have they demonstrated high standards of professionalism and integrity?		
q.	Morale and Motivation. Are all unit personnel well motivated to operate in a complex, restrictive, multinational and multidimensional environment while maintaining high morale?		
r.	Welfare. Does the unit maintain high standards of personnel welfare as per national standards and Mission requirements?		
s.	Legal. Do unit personnel and commanders clearly understand the responsibility to adhere to, promote and protect the legal framework for UN peace operations with		



	specific reference to SOFA/SOMA, ROE, Human Rights and Humanitarian Law, other relevant international legal statutes and the Host Nation law?		
t.	Evaluation. Has the unit carried out a formal evaluation? Have shortcomings been rectified? Have TCC authorities certified the unit to be fit for deployment to the Mission on time?		
<u>Additional Comments:</u>			

The Military Engineer Unit Tasks, Conditions and Standards Appendix provides general guidance and recommended basic performance standards to assist TCCs in the Force Generation of the desired military engineering capabilities.

Appendix 2 to Annex E (Evaluations)

UN Military Engineer Unit:

TASKS, CONDITIONS AND STANDARDS

TASK 01 - ENGINEER PLANNING AND CONSIDERATION TASK

(Combat and Construction Engineering Task)

TASK DESCRIPTION: The unit is tasked to update engineer planning pertaining water resource, power supplies, terrain and infrastructure in the AOR. In many circumstances, UN deploys troops in areas where there is absence of such facilities. It is therefore the engineers who plan and coordinate with the mission staff to assess the shortfall of engineering issues to mitigate the shortfalls. The unit is tasked to assess and formulate a concrete engineer intelligence plan.

STANDARDS:
1. The Unit commander can appreciate details of data requirement for accomplishment of engineer support to the force. The initial assessment may include following data: <ul style="list-style-type: none">• Water resources• Power supplies• Details of terrain to include lines of communication, build up areas, go and no go areas• Infrastructure details• Availability of local engineer resources.
2. While ascertaining, the unit commander is able to prioritize the information requirements.
3. The Unit/commander prepares an updated information collection plan.
4. The Unit commander undertakes liaison with mission resources and other entities to ascertain details.
5. The unit has a process/capability to analyze and synthesize the collected information.
6. The Unit Commander maintains the information of the database and present same to mission leadership.

TASK 02 - OBSTACLE CROSSING

(Combat Engineering Task)

TASK DESCRIPTION: The unit is tasked to construct standard / improvised crossing over obstacles using expedients in a given time. It is basically to evaluate if the unit is capable to construct a crossing using the available resources like the earth moving equipment. Bailey bridge construction may be evaluated only if the unit has the bailey bridge capability. In this case, the unit is considered for establishing an entry and exit approach for men and vehicles across a water obstacle.



STANDARDS:
1. Unit commander undertakes initial survey of the task <ul style="list-style-type: none">• Commander performs engineer appreciation for the task• Calculates the time and resources required• Calculate the mobilization and deployment requirements
2. The survey party conducts a detailed survey of the obstacle including an exit and approach survey.
3. The Unit Commander issues the order for construction of obstacle crossing. The order includes following: <ul style="list-style-type: none">• Details of expected task• Requirement of resources (store & manpower) to include transport requirement• Tactical movement plan of party• Force protection measures provided / to be adopted while on move and execution of tasks• Communication, liaison and reporting• Contingency plan and MED/CASEVAC plan• Logistical concerns/resupply considerations
4. The unit is organized based on the envisaged task and may include following elements <ul style="list-style-type: none">• Mobilization• Task execution to include earthwork tasks as required• Store management• Protection party (if required)• Logistics support.
5. The unit is able to use earth moving plants to include excavator loaders, dumpers, dozers etc. to carry out the task.
6. The Unit Commander exercises appropriate C2 during the move and execution of task (e.g. undertake resource management and caters for contingencies).
7. The Unit is sufficiently self-sustained to undertake task and has ability to construct crossing using appropriate stores and expedients.
8. The Unit Commander is aware about the reporting procedures and reports progress of task to higher HQ.

TASK 03 - COUNTER EXPLOSIVE THREAT SEARCH (CET SEARCH) **(Combat Engineering Task)**

03 - 1 CONDUCT REACTIVE SEARCH TASKS IN SUPPORT OF EOD UNITS **(Improvised Explosive Device Disposal, IEDD)**

TASK DESCRIPTION: In order to return a scene of EOD action to an explosively safe state, CET Search units are able to clear a safe path for IED Operator(s) to gain access to a known or suspected IED. This task is generally performed where the area of unproven terrain to be traversed exceeds the capability of on-scene IEDD Unit(s).

STANDARDS:	
1.	<p>The CET Search Team Leader receives and understands orders from the CET Coordination Cell or Engineer Unit C2 Element and obtains all available information related to the task. The Team Leader plans and prepares for execution of the task and delivers his orders. When developing his plan, the Team Leader shall consider and include in his orders:</p> <ul style="list-style-type: none"> • All information relevant to the task including the nature known or suspected threat • What effects the Search Team are expected to achieve • Critical timings to be met • Command, Control and Communications to be employed including coordination with FP units which may be assigned to support the task • TTPs and SOPs to be reviewed/rehearsed where appropriate including but not limited to: <ul style="list-style-type: none"> ○ Vulnerable Point Check drills ○ Contact/Ambush Drills ○ Methods of marking searched areas ○ Procedures for collecting forensic evidence • Location and Route to RV with the outer Cordon/Force FP Commander; • Disposition and means of requesting support from QRF, CASEVAC or other mission enablers.
2.	<p>The CET Search Unit members</p> <ul style="list-style-type: none"> • Are appropriately trained and equipped for the task including any task specific roles as described in the Team Leaders orders. • Complete all preoperational equipment inspections, function tests and corrective measures and report the state of equipment including mission critical deficiencies to the Team Leader in a timely manner prior to proceeding to task locations.
3.	<p>The CET Search Team conducts movements to RV location:</p> <ul style="list-style-type: none"> • Adhering to all relevant TTPs and SOPs consistent with known threat levels, FP measures and ROE.
4.	<p>On arrival at ICP, the Search Team Leader will:</p> <ul style="list-style-type: none"> • liaise with the Incident Commander and EOD Team Leader to gather further relevant information related to the task • Issue confirmatory orders to the Search Team • Execute the Search as required • Provide Incident Commander, EOD Team Leader with situational awareness regarding task progress and estimated time of completion of the task • On completion of task conduct post-task handover of scene to EOD Team Leader and remain on scene to provide continued Search support or return to base as the tactical situation and direction with CET Coordination Cell dictate.
5.	<p>On return to base:</p> <ul style="list-style-type: none"> • Conduct all required post-task administrative requirements including: <ul style="list-style-type: none"> ○ required reports and returns and lessons learned where applicable ○ Replacement of consumable stores expended ○ Planned maintenance of equipment ○ Report to CET Coordination Cell when available for retasking including estimated timings for completion of necessary maintenance

03 - 2 CONDUCT PREVENTIVE SEARCH TASKS IN SUPPORT OF FREEDOM OF MOVEMENT (FoM)

TASK DESCRIPTION: Search Units can be deployed to conduct preventive, planned searches along routes, on vulnerable points and vulnerable areas as well as within buildings and other infrastructure. The Search Task can be executed with or without the support of other specialist assets (EOD, MWD, MP, etc.), although it is recommended to have at least an EOD unit on standby.

STANDARDS:	
1.	<p>The CET Search Team Leader receives orders from the CET Coordination Cell or Engineer Unit C2 Element and obtains all available information related to the task. The Team Leader plans and prepares for execution of the task and delivers his orders. When developing his plan, the Team Leader shall consider and include in his orders:</p> <ul style="list-style-type: none"> • All information relevant to the known or suspected threat including possible hotspots, danger areas (DA) and adversary TTPs • What effects the Search Team are expected to achieve • Command, Control and Communications to be employed including coordination with assigned FP Units which may be assigned to support the task • TTPs and SOPs to be reviewed/rehearsed where appropriate • Location and Route to RV with the outer Cordon/Force FP Commander • General Concept of Operations is clear to all units involved in the Search Task, and is in line with the General Search Principles (as described in Annex C, UNMUM Military Engineers) • Critical timings to be met • Disposition and means of requesting support from QRF, MEDEVAC or other mission enablers.
2.	<p>The CET Search Unit Members</p> <ul style="list-style-type: none"> • Are appropriately trained and equipped for the task including any task specific roles as described in the Team Leaders orders • Complete all preoperational equipment inspections, function tests and corrective measures (for example Metal Detectors adjusted to the environment that is to be searched, Electronic Counter Measures, medical equipment) and report the state of equipment including mission critical deficiencies to the Team Leader in a timely manner prior to proceeding to task locations.
3.	<p>The CET Search Team moves to RV Location</p> <ul style="list-style-type: none"> • Adhering to all relevant TTPs and SOPs consistent with known threat levels, FP measures and ROEs.
4.	<p>On arrival at RV</p> <ul style="list-style-type: none"> • Cordon and evacuation is ensured including security of the targeted area, point or building. • Establishment of a secured (and searched) Incident Control Point (ICP) • Issue confirmatory orders to all units involved in the Search Task
5.	<p>Execute the Search Task. Correct use of search procedures and equipment, including:</p> <ul style="list-style-type: none"> • (if tasked) marking and registering of searched areas • Respecting the general framework of a search task (as in accordance with chapter 5, Annex C, UNMUM Military Engineers)



<ul style="list-style-type: none"> • Correct procedures are adopted in case of a Find.
6. Unit is sufficiently self-sustained to provide maintenance, supply and other services during the assigned tasks.
7. On completion of Search Task <ul style="list-style-type: none"> • If required: Search Area is to be handed over to appropriate authorities or follow-up units. • As soon as relieved from task, CET Search Unit regroups and returns to base • Upon returning to base: the CET Search Team fills out a comprehensive Search Report with correct Grids, Areas, Search Methods, Sketches and Findings. This report shall be transmitted to CET Search Coordination Cell. • Reconstitution of consumable stores • Post-Task maintenance of equipment • Conduct debriefing and After Action Review (AAR) of CET Search Team Members and identify Lessons Learned.

TASK 04 - EXPLOSIVE ORDNANCE DISPOSAL, EOD
(Combat Engineering Task)

Refer to Military EOD UNMUM for Military EOD specific and complete Tasks.

TASK 05 - ESTABLISHMENT OF FIELD DEFENCES / IMPROVEMENT OF EXISTING DEFENCES (Combat and Construction Engineering Task)

TASK DESCRIPTION: Establishment of field defence of own base/camp is the responsibility of each military unit. Yet some field defence tasks like defence barriers, chain link fence, earth embankment, dug in position/ shelter might be considered as mission priority. Considering the resource limitations of other units those tasks can be given to Engineer units for implementation. The unit is tasked to prepare field defences / improve existing field defences for hardening of key points in a given time.

STANDARDS:
1. The Unit commander undertake initial survey of the task <ul style="list-style-type: none"> • Commander performs engineer appreciation for the task • Calculates the time and resources required • Earmark trade proficient personnel for construction / maintenance • Calculate the mobilization and deployment requirements.
2. The Unit Commander issues order for construction of field defences. The order includes following: <ul style="list-style-type: none"> • Details of expected task • Requirement of resources (store & manpower) to include transport requirement • Earmarking correct trade personnel for the task • Movement plan of party

<ul style="list-style-type: none"> • Force protection measures provided / to be adopted while on move and execution of tasks • Communication, liaison and reporting • Contingency plan and MED/CASEVAC plan • Logistical concerns/resupply considerations
<p>3. The unit is organized based on the envisaged tasks and may include following elements</p> <ul style="list-style-type: none"> • Mobilization • Task execution to include earthwork tasks as required • Store management • Protection party (if required) • Logistics support
<p>4. The Unit is sufficiently self-sustained to undertake tasks including:</p> <ul style="list-style-type: none"> • Survey Equipment • Earth moving plants
<p>5. The Unit has proficient trade personnel for Construction works including masonry, woodwork, metal works etc.</p>
<p>6. Survey personnel/party of the unit is setting out field defence work. A survey of ground levels is carried out and GPS is used to mark maps and layout sketches.</p>
<p>7. The unit is levelling the ground, filling up the defence barriers, creating earthwork for embankment or dug in position/ shelter by using earth moving plants to include excavator loaders, dumpers, dozers etc. (use of available equipment)</p>
<p>8. Construction of field defences and necessary protection of structures like drainage, revetment, overhead cover/ protection etc. is prepared.</p>
<p>9. The Unit Commander exercises appropriate C2 during move and execution of task (e.g. undertake resource management and caters for contingencies).</p>
<p>10. The Unit Commander is aware of the reporting procedures and reports progress of task to higher HQ.</p>

TASK 06 - CONSTRUCTION OR REPAIR OF HELIPADS **(Combat and Construction Engineering Task)**

TASK DESCRIPTION: UN Engineers mobilization task includes construction and repair of Helipad which for some remote deployments constitute the main supply route and only viable option for medical evacuation. Basing on mission priority Helipad construction and repair task will be implemented by Construction/Combat Engineer companies. Construction or repair of a Helipad is a time sensitive task.

<p>STANDARDS:</p>
<p>1. The Unit commander undertakes initial survey of the task</p> <ul style="list-style-type: none"> • The Commander performs engineer appreciation for the task • Calculates the time and resources required • Estimates requirements of expedients, earth work and earth moving plant Requirements • Calculates store requirements for helipad marking • Calculate mobilization and deployment requirements

<p>2. The Unit Commander issues the order for construction of helipad. The order includes following:</p> <ul style="list-style-type: none"> • Details of expected task. • Requirements of resources (store & manpower) to include transport requirement and earth moving plant requirements • Movement plan of party • Force protection measures provided / to be adopted while on move and execution of tasks • Communication, liaison and reporting • Contingency plan and MEDEVAC/CASEVAC plan • Logistical concerns/resupply considerations
<p>3. The Unit is organized based on envisaged tasks and may include following elements</p> <ul style="list-style-type: none"> • Mobilization • Task execution to include earthwork tasks as required • Store management • Protection party (if required) • Logistics support.
<p>4. The Unit is sufficiently self-sustained to undertake tasks with:</p> <ul style="list-style-type: none"> • Survey Equipment • Earthmovers including vibrating rollers • Concrete mixer machine • Portable Generator with flood light
<p>5. The Unit has proficient:</p> <ul style="list-style-type: none"> • Earth moving plant operators • Surveyor • Masons
<p>6. Survey party/personnel set out the Helipad site and conducting an estimation of earth work requirement for repair of the Helipad.</p>
<p>7. Survey of ground levels is carried out and GPS used to mark maps and layout sketches.</p>
<p>8. The unit level, the ground, fill up defence barriers, moves earthwork for embankment or dug in position/ shelter by using earth moving plants to include excavator loaders, dumpers, dozers etc.</p>
<p>9. The Unit uses concrete casting of pavement or rapid deployable lading mats.</p>
<p>10. Helipad marking and setting up clear zone, markers, illuminations is performed by the unit.</p>
<p>11. The Unit Commander exercises appropriate C2 during the move and execution of task (e.g. undertake resource management and caters for contingencies).</p>
<p>12. The Unit Commander is aware about the reporting procedures and reports progress of task to higher HQ.</p>

TASK 07 – CONSTRUCTION / MAINTENANCE OF TRACKS **(Combat and Construction Engineering Task)**

TASK DESCRIPTION: A UN Engineers’ Unit mobilization task includes construction and repair of

tracks which, for some remote deployments, constitute the supply routes or an option for casualty/medical evacuation. This task can be suitably implemented by construction platoon of the Engineer unit. The unit is tasked to undertake construction or repair of macadam or gravel track in a given time.

STANDARDS:
<p>1. The Unit commander undertake initial survey of the task</p> <ul style="list-style-type: none"> • The Commander performs an engineer appreciation for the task • Calculates time and resources required • Estimates requirements of survey, earth work and earth moving plant requirements • Calculate store requirements for resuscitation • Calculate mobilization and deployment requirements.
<p>2. The Unit Commander issues order for construction of track. The order includes:</p> <ul style="list-style-type: none"> • Details of expected task • Requirement of resources (store & manpower) to include transport requirement and earth moving plant requirements • The Unit commander estimates details of construction material requirement • Movement plan of party • Force protection measures provided / to be adopted while on move and execution of tasks • Communication, liaison and reporting • Contingency plan and MED/CASEVAC plan • Logistical concerns/resupply considerations
<p>3. The Unit is organized based on envisaged tasks and may include:</p> <ul style="list-style-type: none"> • Mobilization • Preparation of construction material • Transportation of construction material to the road segment • Earthwork, leveling and compaction of earthen road • Store management • Protection party (if required) • Logistics support
<p>4. The Unit is sufficiently self-sustained to undertake the following tasks:</p> <ul style="list-style-type: none"> • Survey equipment • Plants for preparation of construction material (Stone crusher, excavators) • Transportation of construction material and earthmovers (Loaders, dumpers) • Plants for track leveling and compacting (dozer, motor graders, rollers)
<p>5. Surveyors conduct a survey to identify the best location of the track. (To be tested: Level survey work of 500 M of track segment)</p>
<p>6. The unit commander creates the work flow plan with earth movers.</p>
<p>7. The Unit has proficient operators for using earth moving plants/excavators and/or stone crushers etc.</p>
<p>8. The unit is preparing materials required for the construction of tracks (e.g. stone crushers).</p>
<p>9. Track materials are transported using loaders and dumpers.</p>
<p>10. An earthen track is constructed by using dozers, motor graders and rollers.</p>
<p>11. The Unit Commander exercises appropriate C2 during the move and execution of task (e.g. undertake resource management and caters for contingencies).</p>

12. The Unit Commander is aware about the reporting procedures and reports progress of task to higher HQ.

Additional Note:

While constructing and rehabilitating the roads and tracks, engineering equipment are transported from the base however with the pace of progress in construction sites, it takes long time to reach and return, Similarly, haulage between quarry site and the construction site also consumes time this affects the working hours, efficiency/output of the troops and causes economic burden to the UN. Considering haulage, security factors and the availability of force, it may be better to establish a TOB as a support base for engineers working on the site.

TASK 08 – CONSTRUCTION / DISMANTLING OF RIGID / SEMI RIGID / PRE-FABRICATED STRUCTURES (Construction Engineering Task)

TASK DESCRIPTION: UN Engineers survivability tasks include construction of accommodation in camps. UN Military Construction Engineer Units are often tasked for the construction of UN provided rigid/semi-rigid/pre-fabricated structures in camp sites in the initial phase of mission. The unit is tasked to undertake construction of rigid/semi-rigid/pre-fabricated structures including siting of base camps.

STANDARDS:

1. The Unit commander undertake initial survey of the task
 - The Commander performs engineer appreciation for the task
 - Calculates the time and resources required
 - Estimates the requirements of survey, earth work and earth moving plant requirements
 - Calculate store requirements for construction /maintenance
 - Calculate the mobilization and deployment requirements.
2. The Unit Commander issues order for construction of structures. The order includes:
 - Details of expected task
 - Requirement of resources (store & manpower) to include transport requirement and earth moving plant requirements
 - The Unit commander estimates details of construction material requirement
 - Movement plan of the party
 - Force protection measures provided / to be adopted while on move and execution of tasks
 - Communication, liaison and reporting
 - Contingency plan and MED/CASEVAC plan
 - Logistical concerns/resupply considerations.
3. The Unit is organized based on envisaged task and may include following elements:
 - Mobilization
 - Task execution to include earthwork tasks as required
 - Store management
 - Protection party (if required)
 - Logistics support.
4. The Unit is sufficiently self-sustained to operate/undertake tasks:
 - Generator
 - Welding Machine
 - Water pumps

<ul style="list-style-type: none"> • Water Trucks • Concrete Mixers • Carpentry Shop • Earth movers required for levelling of campsite
<p>5. The Unit has proficient:</p> <ul style="list-style-type: none"> • Generator Operators • Earth moving plant operators; Survey tasks Masonry works Metalsmiths Plumbing Electricity works Woodwork/carpentry • Air conditioning & heating/boiler room specialists (if tasked) Air-conditioning is a specialist task and will not be available at a basic engineer formation level.
<p>6. Setting up of the camp site work is done by survey personnel. Survey of ground levels is carried out and GPS used to mark maps and layout sketches.</p>
<p>7. Drainage of the camp site is adequately addressed.</p>
<p>8. Earth work, including leveling with dozer, excavator, loader, dumper, motor grader, roller etc. is performed by the unit.</p>
<p>9. The Unit performs masonry work to include concrete casting, brickwork & foundations.</p>
<p>10. Safe electric connections, plumbing & metalsmith works are performed by the unit.</p>
<p>11. The Unit Commander exercises appropriate C2 during the move and execution of task (e.g. undertake resource management and caters for contingencies).</p>
<p>12. The Unit Commander is aware of the reporting procedures and reports progress of task to higher HQ.</p>

TASK 09 - CONSTRUCTION OF DRAINAGE WORKS **(Construction Engineering Task)**

TASK DESCRIPTION: To prevent any type of disputes between the local population and the UN staff, managing surface water and waste water is an important function. Managing such water is also important in terms of hygiene and sanitation. Establishing effective drainage for managing surface and waste water or constructing a ditch is one of the solutions to harmonious living between the locals and the UN. The unit is tasked to undertake construction of drainage works in a given time.

<p>STANDARDS:</p>
<p>1. The Unit commander undertakes initial survey of the task</p> <ul style="list-style-type: none"> • The Commander performs engineer appreciation for the task • Calculates the time and resources required • Estimates the requirements of survey, earth work and earth moving plant requirements • Calculate store requirements for resuscitation • Calculate the mobilization and deployment requirements
<p>2. Survey personnel/team is performing a survey of ground levels and water flow patterns.</p>
<p>3. The Unit Commander issues order for construction/improvement of drainages. The order may</p>

<p>include following:</p> <ul style="list-style-type: none"> • Details of expected task • Provide details of survey and water flow patterns • Requirement of resources (store & manpower) to include transport requirement and earth moving plant requirements • The Unit commander estimates details of construction material requirement • Movement plan of party • Force protection measures provided / to be adopted while on move and execution of tasks • Communication, liaison and reporting • Contingency plan and MED/CASEVAC plan • Logistical concerns/resupply considerations
<p>4. The Unit is organized based on the task and may include following elements:</p> <ul style="list-style-type: none"> • Mobilization • Task execution to include earthwork tasks as required • Store management • Protection party (if required) • Logistics support
<p>5. The Unit is sufficiently self-sustained to undertake task.</p>
<p>6. The Unit has proficient:</p> <ul style="list-style-type: none"> • Earth moving plant operators • Survey personnel • Masonry specialists
<p>7. Earth work including leveling with Dozer, excavator, loader, dumper, motor grader, roller, etc. are performed by the unit.</p>
<p>8. Concrete casting and masonry works are performed by the unit (if required).</p>
<p>9. The Unit Commander exercises appropriate C2 during the move and execution of task (e.g. undertake resource management and caters for contingencies).</p>
<p>10. The Unit Commander is aware of the reporting procedures and reports progress of task to higher HQ.</p>

TASK 10 - AIR FIELD MAINTENANCE **(Construction Engineering Task)**

TASK DESCRIPTION: A UN Engineers mobilization task includes maintenance of an Airfield. Airfield maintenance must adequately address the ICAO technical specifications or specification set by the UN Aviation safety authorities. Certification of the maintenance works are of utmost importance. This task is a specialist tasking however support could be provided by the Construction Engineering Unit to assist with the air field maintenance.

TASK 11 - WELL DRILLING

(Well drilling and maintenance of bore holes is a specialist tasking and a specialist construction unit with the necessary well drilling equipment would be required depending on the MOU)

TASK DESCRIPTION: UN Engineers survivability tasks includes provision of water for the UN personnel. Well Drilling is a viable solution for provisioning water in severe drought condition of several missions. The unit is tasked to conduct well drilling and maintain several bore holes.

STANDARDS:	
1. The Unit commander undertake initial survey of the task	<ul style="list-style-type: none"> • The Commander performs engineer appreciation for the task • Utilizes the available geological survey estimates and select the most suitable site administratively and security wise • Estimates the requirements consumables basing on the geological survey result and maintain liaison with the Mission Support for planning continuous supply of consumables • Ensure coordination with other services, such as medical for testing and Engineering section for supply of consumables • Calculates store requirements for well drilling • Calculates the mobilization and deployment requirements
2. The Unit Commander issues order for well Drilling. The order includes:	<ul style="list-style-type: none"> • Details of expected task • Requirement of resources (store & manpower) • Details party for various services to be maintained • Movement plan of parties • Force protection measures provided / to be adopted while on move and execution of tasks • Coordination with other services to ensure testing and movement control • Communication, liaison and reporting • Contingency plan and MED/CASEVAC plan • Logistical concerns/resupply considerations.
3. The Unit is organized based on envisaged task and may include:	<ul style="list-style-type: none"> • Mobilization • Task execution to include earthmover operators, well drilling rig operators, welders, plumbers, electricians etc. • Store management (consumables) • Operation and maintenance of Well • Protection party (if required) • Logistics support.
4. The Unit is sufficiently self-sustained to undertake tasks:	<ul style="list-style-type: none"> • Well drilling rig • Generators • Welding machine • Water pumps • Earth movers • Consumables.
5. The Unit has proficient:	



<ul style="list-style-type: none">• Well drilling rig operators• Water testing facility operators• Electricians• Welders• Plumbers.
6. The unit sets up the well drilling rig with standard equipment.
7. The unit estimates and calculates the required consumables and maintaining a store list.
8. Plumbers/Welders/generator Operators can operate their machine/equipment and other accessories proficiently in coordination with rig operators.
9. The Unit Commander exercises appropriate C2 during the move and execution of task (e.g. undertake resource management and caters for contingencies).
10. The Unit Commander is aware of the reporting procedures and reports progress of task to higher HQ.

Appendix 3 to Annex E (Evaluations)

Sample In-Mission Evaluation Checklists

<i>Suggested evaluation criteria scoring levels</i>			
<p>0. Not mission capable</p> <p>1. Not yet mission capable with major capability deficiencies</p> <p>2. Not yet mission capable with minor deficiencies</p> <p>3. Mission capable with improvements highly recommended</p> <p>4. Mission capable with minor improvements recommended</p> <p>5. Fully mission capable</p>			
Serial	Evaluation Criteria	Evaluation score 0 to 5	Remarks
a.	Performance. Does the unit plan and perform all MET effectively and safely as per Mission mandate(s), peace operations norms and Mission SOPs?		
b.	Shortcomings. Has the unit taken corrective action on shortcomings in performance or resources observed by the unit, COE team or Mission leadership?		
c.	On-The-Job Training. Does the chain of command institute measures for on-the-job training of all personnel (based on their basic job categories) to maintain qualification standards?		
d.	In-Mission Training. Is the unit carrying out periodic in-Mission refresher, task-oriented and Mission-specific training as per IMTC guidelines?		
e.	Counter-IEDs. Is the Unit trained in the current hazards/threat and related of search capabilities, EO and IEDs?		



f.	Serviceability. Is the unit carrying out periodic inspection, preventive maintenance and repairs on time and replacing items that are unserviceable?		
g.	Conduct and Discipline. Does the unit continue to maintain high standards of conduct and discipline in all ranks?		
h.	Outreach and Engagement. Has the unit been able to establish (where relevant) good rapport and effective interface with the local population through CIMIC, Quick Impact Projects and welfare activities?		
<u>Additional Comments:</u>			

References

General References

United Nations Peacekeeping Operations, Principles and Guidelines (UN Capstone Doctrine) (Jan 2008)

Policy on Authority, Command and Control in United Nations Peacekeeping Operations (Oct 2019)

A New Partnership Agenda: Charting a New Horizon for UN Peacekeeping (Jul 2009)

Generic Guidelines for Troop Contributing Countries Deploying Military Units to the United Nations Peacekeeping Missions (2008)

Mission Start-up Field Guide for Mission Managers of United Nations Peace Operations (Sep 2010)

United Nations Infantry Battalion Manual (Jan 2020)

Manual on Policies and Procedures Concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions (COE Manual) (Sep 2017)

United Nations Peacekeeping Missions Military EOD Unit Manual (Sep 2017) and revision (2020)

United Nations Security Management System, Security Policy Manual (Nov 2017)

Aviation Manual (Oct 2018)

Medical Support Manual for United Nations Field Missions (Dec 2015)

Handbook on United Nations Multidimensional Peacekeeping Operations (Dec 2003)

UN Force Headquarters Handbook (Nov 2014) and revision (2020)

United Nations IED Threat Mitigation Military and Police Handbook (Dec 2017)

United Nations Improvised Explosive Device Disposal Standards (May 2018)

Office for the Coordination of Humanitarian Affairs (OCHA) Glossary of Humanitarian Terms in relation to the Protection of Civilians in Armed Conflict (2004)

Policy on Weapons and Ammunition Management (Jan 2019)

UN policy on Casualty Evacuation in the Fields (Mar 2018) and revision (2020)

UN National Support Element Policy (Nov 2015)

UN Force Link: The Online Strategic Movements and Force Generation Knowledge Center

Training References

The following list of training references will assist UN military unit commanders and their staff. These documents provide better understanding of the Peace Operations training system, its participants' roles and responsibilities, and available resources. These and other important Peace Operations documents include:

- Policy on Training for all UN Peacekeeping Personnel (2010)
- Policy on Support to Military and Police Pre-Deployment Training for UN Peacekeeping Operations (2009)
- Guidelines on Roles and Training Standards for UN Military Staff Officers (2009)
- United Nations Peacekeeping Training Manual
- SOP on Mobile Training Support Team (2009)
- SOP on Mobile Training Teams (2018)
- SOP on Training Recognition (2009)
- SOP on Training of Trainers (2009)
- UN MILENG Specialized Training Materials (STMs)
- UN MILEOD Specialized Training Materials (STMs) (2019)
- Pre-Deployment Information Packages (PIP)
- UN Training Support to Member States

Evaluation References

In addition to this manual, the following UN peacekeeping documents provide guidelines and standards by which UN military units can evaluate their operational readiness. The following documents are available on-line.

- Generic Guidelines for Troop Contributing Countries Deploying Military Units to the United Nations Peacekeeping Missions (2008)
- Guidelines on Peacekeeping Training
- TCC-specific UN peacekeeping operations manuals, guidelines and standard operating procedures.
- Manual on Policies and Procedures Concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions (COE Manual) (Sep 2017)
- Mission mandate, Memorandum of Understanding, Status of Forces Agreement and Rules of Engagement and TCC Guidelines.
- States of Requirements (SUR) issued by the UN Office of Military Affairs, DPO.
- Mission Concept of Operations, operational directives and orders, Operational Plans, Standard Operating Procedures and Mission-specific case studies.
- Lessons learned and best practices of current and past peacekeeping Missions.
- Information obtained during the military unit's command group reconnaissance visit and feedback from the unit being relieved.
- After action reports and end of assignment reports of units and previous commanders.