

DISPATCHES

VOL 2 - MINE WARFARE IN PEACE SUPPORT OPERATIONS

COMMANDER'S FOREWORD - DISPATCHES

This issue of "Dispatches" is devoted to mine awareness on Peace Support operations. Since their introduction early in this century, mines have become an epidemic in areas of conflict around the world. There are estimates that more than 80 million mines are currently deployed in current and former war zones, and their use and complexity are increasing. They continue to exact thousands of casualties, killed and wounded each year, even though the war in that area may have stopped long ago. Mines are indiscriminate long-term killers which recognize neither friend or foe. They are a constant threat to Canadian soldiers deployed in areas of conflict.

Canadian soldiers deployed on United Nations operations in the last few years have had personal and bitter experience with this threat. As a direct result of mine warfare, 24 Canadian soldiers have been wounded, and two killed! We must make every effort to ensure that this toll does not increase.

We can expect that we will be required to operate in areas now and in the future where the mine threat is high. Therefore, it is essential that we continually review and update our procedures, our training and our equipment to deal effectively with the threat. To this end, I look to our Field Engineers to lead the way in technical expertise and advice; however, it must be remembered, that mine awareness is the business of every soldier and every commander. All of you must be masters of this subject - it is the only way you will keep yourself and your comrades safe from harm.

I will close this foreword with the same challenge to you, the soldiers, that I offered in the first issue of "Dispatches". The ideas and thoughts expressed here have come from soldiers in the field, Canadian and Allied, who have done the job on operations, and who know that these procedures work. Discuss these ideas widely. Think about your tactics, your procedures, and your equipment. If you have a better idea, if you've learned an important lesson, or if you have identified problems that have not been addressed, put the observations forward



through your chain of command so we can share it with the Army. This is one way you can help to ensure that we don't repeat mistakes that may result in the death or injury of one of our comrades.

G.M. Reay
Lieutenant-General
Commander

TABLE OF CONTENTS

-  [PART ONE - INTRODUCTION](#)
-  [PART TWO - DEFINITIONS](#)
-  [PART THREE - THE MINE THREAT](#)
-  [PART FOUR - OPERATIONAL DOCTRINE](#)
-  [PART FIVE - BATTLE GROUP TACTICS](#)
-  [PART SIX - TRAINING](#)
-  [PART SEVEN - MINE EQUIPMENT UPDATE](#)
-  [PART EIGHT - DOCUMENTATION AND REFERENCES](#)

MINE WARFARE IN PEACE SUPPORT OPERATIONS

PART ONE -- INTRODUCTION

Topic selection for "Dispatches" are drawn directly from Canadian post operational reports (PORs). Mine warfare is such a topic because without fail, every POR from the Balkans through to and including Rwanda have commented on the extensive mine threat.

The proliferation of and relatively easy access to all types of mines and boobytraps ensures that Canadian soldiers will continue to be exposed to this ever growing threat while on operational duty.

This issue of "Dispatches" will therefore focus on the mine threat and how the battle group can function effectively within this environment. In addition to reviewing the current mine threat, Volume 2 will concentrate on mine warfare doctrine and tactics at the battle group level, and finally review training and operational experiences which have worked. As stated in Volume 1 of "Dispatches", "Having a healthy respect for mines and knowing their strengths and limitations means you will not be paralyzed by the fear of the threat." That is the goal of this publication.



MINE WARFARE IN PEACE SUPPORT OPERATIONS

PART TWO -- DEFINITIONS

LESSONS LEARNED

Undoubtedly, one of first requirements is to clearly define what in fact constitutes a lesson learned. After a year of reviewing the Canadian system and those of our allies, the following definitions have been approved for use by the Chief of Staff:

a. **OBSERVATION**. An observation is simply recorded raw data that takes place during an operation or exercise. Observations come from many sources such as existing Canadian and allied PORs, UNMO's reports and command and staff observations;

b. **ISSUE**. An issue is a topic that develops from one or more observations or recurring observations. For example, when a battle group comments adversely on a piece of equipment that was previously reported by an earlier rotation - this then becomes an issue for the staff to resolve; and

c. **LESSON LEARNED**. A lesson learned is an issue that results in a change to Canadian doctrine, tactics, organization, equipment or SOPs. The changes will be staffed through the Land Force Development process for approval.

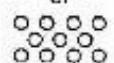
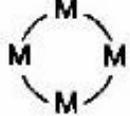


PEACE SUPPORT OPERATIONS

Peace Support Operation is a generic term used to describe "activities in international crisis and conflict resolution and management in which the Canadian Forces may be involved. These activities could be conducted in support of preventive diplomacy, peacemaking, peacekeeping or post-conflict peace-building as described in the UN Secretary General's June 1992 Report" (CFP (J) 5 (4) Joint Doctrine).

Countermine Operation - an operation to reduce the delaying, disruptive, destructive and channelizing effects of mines and minefields by detection, clearance and neutralization, in order to maintain freedom of manoeuvre and to continue operations of friendly forces.

Demining Operation - a countermine operation conducted in non-tactical conditions using predominantly military resources.

AN EXAMPLE OF NATO MAP SYMBOLS	AN EXAMPLE OF WARSAW PACT MAP SYMBOLS	
	 or 	Anti-personnel mine field Минное поле из противопехотных мин
	 or 	Anti-tank mine field Противотанковое минное поле
		Mixed mine field Минное поле из противопехотных и противотанковых мин
		Boobytrap Фугасы
		AT mine field Бouncing fragmentation bomb
		AT mine with anti-lifting device Remote-controlled mine field
		Mixed mine field Concrete Dragon's teeth
		Abatis Anti-tank barrier between trees
		Wire Nuisance mine field

Most countries use NATO or former Warsaw Pact map symbols or a modified version of either for map marking. Know them!

MINE WARFARE IN PEACE SUPPORT OPERATIONS

PART THREE - THE MINE THREAT

It is estimated that the number of uncleared landmines range between 85-90 million world wide*. As a result, for UN troops deployed or deploying on peace support operations, dealing with the mine threat has become an accepted part of day to day life.

The United Nations High Commission for Refugees estimates that 150 people a day are killed or injured by mines world wide.

The principal reason for the proliferation of mines and boobytraps is simple landmines are relatively inexpensive and readily available on the flooded international arms market. Furthermore, countries which were former clients of the Warsaw Pact, suddenly found themselves in possession of tens of millions of landmines at the end of the cold war.



These factors, coupled with the fact that a soldier requires only minimal training in their use, have made mines the weapon of choice for many regional armies.

* ESTIMATED NUMBER OF UNCLEARED MINES IN THEATRES OF RECENT CANADIAN ARMY OPERATIONS

Operation	Location	No. of landmines (millions)
OP DECIMAL	Afghanistan	9-10
OP RECORD	Kuwait + Iraq	5-7+5-10
OP PASTEL	Angola	9
OP DELIVERANCE	Somalia	1-1.5
OP PASSAGE	Rwanda	unknown but estimated to be in the thousands
OP CONSONANCE	Mozambique	2
OP CAVALIER	Bosnia-Herzegovina	1.5

OP HARMONY	Croatia	1
OP MARQUIS	Cambodia	4-7

Statistics taken from US Department of State Bureau of Political-Military Affairs report - Hidden Killers, The Global Problem with Uncleared Landmines. 1993

Surprisingly, the most dangerous aspect of the mine threat comes not from the total number of laid mines, but rather from the way they are being employed. During the Cold War, military advisors instructed their many client states in classic mine warfare operations which emphasized the employment of properly recorded and laid tactical and protective minefields.

Unfortunately, with the collapse of the Warsaw Pact at the end of the Cold War, the fragile control on mines and boobytraps was lost. In fact, in many operational areas, the mine has become the principal offensive and defensive weapon as many warring factions are unable to achieve their military goals in close combat. It now appears that mines and booby traps are being employed for their effectiveness as a large scale weapon of harassment with a view to demoralizing the opposition, including the civilian population. Government forces, too weak to defeat breakaway factions, respond in turn by emplacing defensive minefields to protect key economic infrastructure. This vicious circle of mining continues until manoeuvre is restricted to key areas and routes which are strictly controlled by the one side or the other. Initially, this tactical reality came as a shock to many of the forces participating on UN operations.

OBSERVATION:

"...minefield records provided by the JNA (Army of the Former Republic of Yugoslavia) and the HV (Croatian Army), were of suspect quality. Many minefields lacked grid references and landmarks when used, had long been obliterated. The site sketches were either incomprehensible, or were so neat that they could not have been done in the field. We discovered that some supposed anti-tank minefields also contained booby trapped anti-personnel mines... it was often safer to begin from a position of complete ignorance and to assume that mines were everywhere..."

*Capt J.M. Clark
Engineer Troop Commander
4 CER*

On demining operations in the Balkans,
1993

Post Operational Interview

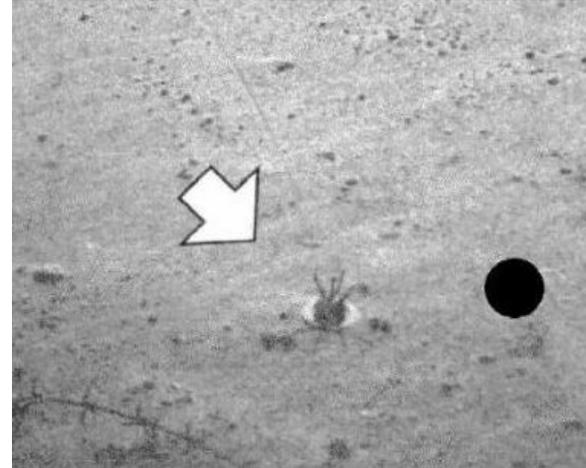
This almost indiscriminate saturation of operational areas is the core of the mine threat to UN soldiers. There is often no pattern or model to follow in combatting this weapon and, as a result, mines now share equal billing with direct and indirect fire casualties. Depending on the operational area, mines are in fact the number one threat to Canadian soldiers.

SPECIFICATION OF WAR RELATED CASUALTIES IN UNPROFOR AS OF MAY 1994

Cause of casualty	Wounded	Killed
Mines and Explosives	131	12
Indirect Fire	162	8
Direct Fire	111	18

MINE PLACEMENT

Today, mines may be placed as part of a minefield or may be laid individually or in small groups called mine clusters. While minefields and some mine clusters may be laid in a set pattern, individual mines and many mine clusters are usually laid at random in locations where there is a likelihood that personnel or vehicles may pass. Often these locations are unrecorded and known only to local forces.



BE AWARE OF THESE LIKELY LOCATIONS FOR MINES AND BOOBYTRAPS

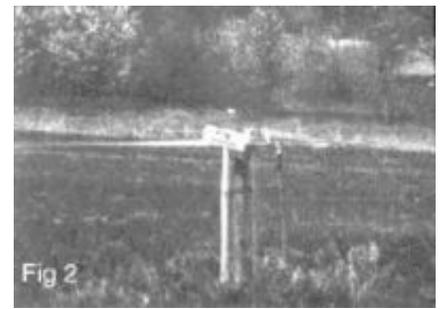
- In bottlenecks and defiles where damaged vehicles will create road blocks
- In places suitable for ambushing either vehicles or foot patrols
- On verges of roads and on tracks
- In loose surface tracks where concealment is easier
- In and around obstacles (demolitions, craters, roadblocks)
- In diversions around obstacles
- In likely waiting areas and exits from roads
- In ditches, buildings and other places where soldiers and civilians are likely to stop for cover or rest
- In places likely to be used as assembly areas or observation posts
- Around abandoned equipment to hamper recovery and to catch souvenir hunters
- Behind positions which have been occupied by the opposing force which might be used for reorganization after successful attacks
- On damaged roads, railways, airfields, ports and installation to delay repairs
- At likely helicopter landing sites, drop zones and landing zones

ALL ARMS ARE RESPONSIBLE FOR MINE AWARENESS!!

MINES AND MINEFIELD INDICATORS

Most armies have a convention for laying and marking minefields. This may include the use of some kind of fencing with signs carrying warnings such as "mines" or "danger" written in one or more languages, or by using the skull and cross-bones symbol. Minefield markings vary widely, however, and are often improvised with materials at hand. Figs. 1 and 2 are an example of minefield markings that have been seen on recent operations.





It is also important to note that minefields may be intentionally unmarked or may be scatterable. However, even in the instance of unmarked minefields, indicators that mines have been laid are often visible.

LEARN TO RECOGNIZE THESE MINE AND BOOBYTRAP INDICATORS ...

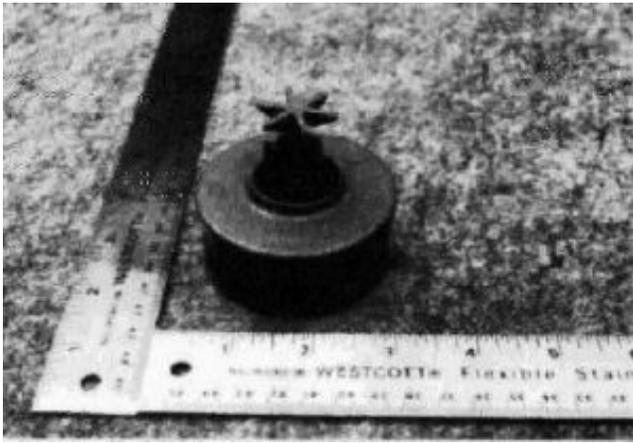
- Disturbance of the ground surface particularly on roads and grass, or loose sand scattered over grass
- Trampled earth or vegetation, footmarks or marks of wheeled or tracked vehicles in a pattern suggesting a minefield
- Damaged bushes, hedges, shrubs, etc
- Improvised methods of marking minefields, such as piles of stones, spray painted trees, gasoline cans or other containers
- High and low trip wires
- Partial blockage of a road by a seemingly harmless obstacle which forces traffic onto the verge
- Empty containers of mines and components, which may have been left deliberately and booby trapped
- Papers, wrappings, seals
- Personnel or animals killed by no apparent means
- Damaged vehicles on the road or on the verge of the road
- Unattended vehicle, apparently undamaged
- An attractive object in an abandoned building or vehicle



EMPLACEMENT

The Anti-personnel (AP) Mine

AP mines are specifically designed to kill or maim personnel. Many AP mines are also designed to injure or maim personnel attempting to clear them. AP mines are of no direct threat to crews of armoured vehicles. However, the blast effects of many AP mines pose a serious threat to the safety of personnel riding in soft skinned vehicles. AP mines vary widely in size and shape, and there are literally hundreds of different makes. However, they may generally be divided into four categories based on common characteristics to inflict casualties, as outlined in these photographs.



BLAST

PMA-2

Small plastic contact mine designed to maim or kill by the blast effects of the explosion. Many blast mines also have fragmentation effects from the mine casing.

Lethal radius 1 metre

DIRECTIONAL

MRUD MINE

Plastic and metal contact and remote mine designed to kill or maim. Fires 650 steel pellets in a 600 mil arc.

Lethal radius 50 metres



FRAGMENTATION

PMR-3

Cast metal contact mine designed to kill or wound by fragmentation of the cast metal body.

Lethal radius 50 metres

BOUNDING FRAGMENTATION

PROM-1

Metal and plastic contact mine, designed to kill or maim. When detonated, the mine is propelled 0.7-0.8 metres in the air before exploding.

Lethal radius 50 metres

Currently the mines encountered by the Canadian Army, such as those described above are mostly first generation mines, and some second generation scatterable mines. The technology for advanced second and even third generation mines, which are called "smart mines", is now widely available on the world arms market. Therefore, the Canadian Army must continue to develop mine-counter measures in order to keep abreast of this growing threat.

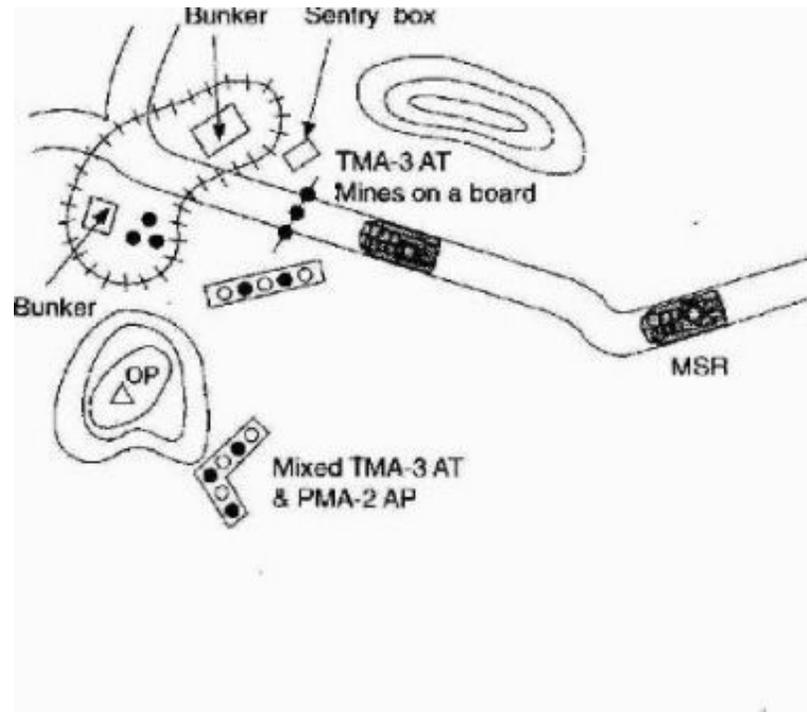


The Anti-Tank (AT) Mine

AT mines are designed to disable or destroy all classes of armoured vehicles and therefore pose a serious threat to all vehicles. These mines may be laid on or in roads, trails and areas that are considered good going for armoured vehicles. At road blocks, mines are often attached to a board or on a rope and are laid across the road to act as the physical barrier. Occasionally heavy munitions and other explosives are wired to remote firing devices and contain sufficient explosives to produce the same effect as a powerful AT mine.



UN Patrol encounters typical belligerent check-point



NOTES:

- Second C/S provides security at check-point
- Each vehicle should have a hand held mine prod
- Second C/S should carry the "A" frame for emergency towing
- Each vehicle should carry an extra radio antenna and rolls of mine tape
- Second C/S should carry the Advanced First Aid Trauma Kit
- Map symbols are Russian

OBSERVATION:

The entire AVGP family has proven to be remarkably mine proof as a by product of their boat shaped hull. Several of these vehicles including the Bison and Cougar variants have driven over modern, powerful AT mines such as the Belgian made PRBs and sustained only moderate damage to their wheel assemblies (no casualties). On the other hand, the effects of these same kind of mines on light tracked vehicles have in many cases been catastrophic.



TACTICAL HINT:

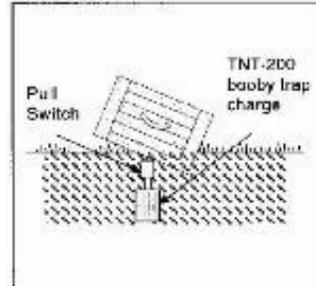
Regardless of the armoured vehicle, when the mine threat is higher than the direct fire threat, keep your hatches "cracked" open a few mm. If you drive over a mine, the jet from the explosion must have somewhere to escape if it penetrates the hull.

PORs and Post Operational Interviews

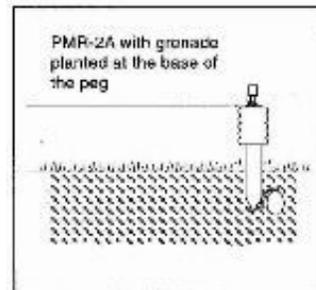
ANTI-DISTURBANCE DEVICES AND BOOBYTRAPS

Anti-disturbance Devices. Many mines, particularly AT mines, are manufactured with extra fuze wells in which anti-disturbance devices may be inserted. Once armed, these devices are designed to detonate the mine when any attempt is made to move it.

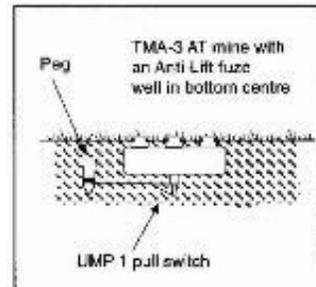
Boobytraps. Boobytraps may be found anywhere, but are most commonly found in built-up areas where burying mines is difficult or impossible. In and around buildings are ideal locations for boobytraps. Doorways, gates, under floorboards, paving stones and trip wires in dark corridors are just a few examples of the areas where boobytraps may be effectively employed. Clearing a building or defensive position that has been boobytrapped is one of the most dangerous tasks for engineers. Therefore, only those buildings which are required for operational reasons will be cleared by battle group engineers. Never enter a building that has not been cleared of boobytraps !!



Boobytrap connected to an object



Anti-disturbance device using mechanisms separate from the mine



Anti-disturbance device connected to an AT mine

IF YOU DON'T KNOW WHAT AN OBJECT IS, DON'T TOUCH IT!! IT COULD KILL YOU

MINE WARFARE IN PEACE SUPPORT OPERATIONS

PART FOUR -- OPERATIONAL DOCTRINE

CFP 320 (10) 2 Mines and Boobytraps - Part 2, Engineers and Assault Pioneers, explains the drills used to conduct the hasty and deliberate minefield breach in general combat operations. In this type of general combat operation, it is clear that casualties are generally an accepted part of the risk assessment due to the requirement for speed over caution in order to retain freedom of manoeuvre. The same is "NOT" true in peace support operations.

The goal of our current operational doctrine is to eliminate the mine threat in Canadian areas of operational responsibility (AOR) during peace support operations. These procedures have been developed and refined by Canadian Military Engineers on UN operations over the past 10 years. Again, it is important to note that this kind of countermine operation is very distinct from those procedures used in general combat operations. The main distinction is the degree of risk associated with the operation and the time involved to complete the mission.

In fact, unlike general combat, time is the commander's key ally during peace support operations. In other words, there is sufficient time to use a cautious approach in demining operations without jeopardising the success of the mission. This is the core philosophy of risk assessment.

DO NOT ASSUME!

Because a route has been cleared by your engineers, do not assume it will remain cleared. Often, warring parties will lay a hasty minefield on a cleared route in retaliation for a perceived threat or insult from the UN.

Stay Alert! Look for mine and boobytrap indicators!!

Post Operational Interview

OBSERVATION:

28 October 1992, a CANBAT 1 recce patrol, consisting of two M113 APCs, was travelling down a black track near Lipik, Croatia in the UNPA when the second vehicle struck a TMA-3 AT Mine disabling the vehicle. The patrol commander immediately halted and went to the aid of the junior C/S. The crew of the disabled vehicle was shaken up and the driver had serious facial injuries. MEDEVAC and engineers were called and the patrol was safely extracted from a newly laid minefield.

Note 1: The route used up by the patrol was cleared and used earlier.

Note 2: If the injuries to the crew are not life threatening and you are not in any immediate danger then remain in your vehicles until the engineers extract you.

**A SOLDIER WHO IS NOT ENGAGED BY
DIRECT OR INDIRECT FIRE SHOULD NEVER
BECOME A MINE CASUALTY!**

BATTLE GROUP LEVEL OPERATIONS

Risk assessment is a relatively new process now being used by Canadian UN troops to combat the mine threat during peace support operations. The process, which is incorporated into regular battle procedure, ensures that the battle group commander has all of the information available on the layout and disposition of minefields and boobytraps within his AOR. Risk assessment commences every time the battle group receives a mission or task. The first step is to gather and update all of the information available on the extent of the mine threat in the mission area and how it may affect the actual plan. This portion of the assessment is primarily the responsibility of the battle group and sector engineers. Further mine information may also be provided by belligerent forces, deployed sub-units, NGO's and of course the LO's extensive knowledge of the area. Once the information is compiled and recorded, the battle group then seeks the assistance of local belligerent forces in actually clearing the mines in question. This is a critical factor which may actually affect the "GO" or "NO GO" decision on any given mission. Finally, the terrain and engineer resources are included in the analysis before the clearance method is decided upon by the commander. The importance of engineer advice cannot be overstated.



RISK ASSESSMENT KEY ELEMENTS

- MISSION
- EXTENT OF MINE THREAT (gather information)
- BELLIGERENT FORCE ACTIVITIES (seek assistance)
- TERRAIN
- ENGINEER RESOURCES
- ALTERNATIVES (such as "Go" or "No Go")

Generally, mine risk assessment provides the battle group commander with three options in his decision cycle:

- **"GO"**. After conducting the risk assessment, the battle group commander decides if he has sufficient engineer resources or alternative options available to successfully complete the mission.
- **"GO WITH RISK"**. There will exist occasions when the battle group commander will have to make a conscious decision to "GO WITH RISK" on a mission even though the known mine risk assessment is high and only limited engineer resources are at hand. In these rare cases, the importance of the mission outweighs any delay to the tactical operation.
- **"NO GO"**. After completing the mine risk assessment, the battle group commander decides that he does not possess sufficient engineer resources to successfully complete the mission without suffering unnecessary casualties. The mission is therefore a "NO GO" until additional engineer assets can be allocated to the battle group, and there are no other alternatives available to the commander that would allow the battle group to complete the operation.

COMPLACENCY AND FATIGUE

The battle group must always be conscious of and guard against complacency and fatigue in the face of a ubiquitous mine threat. Stress and the requirement for intense concentration for weeks on end can quickly wear down battle group engineers. Watch for any signs of a lackadaisical attitude or exhaustion from over exposure from mine clearing tasks. Regular breaks must be enforced at all levels of command. The danger is very real.

While the battle group commander is ultimately responsible for all aspects of dealing with the mine threat in his AOR, all sub-unit commanders have an important role to play in day to day operations. It is now expected that risk assessment will be done routinely at the company/squadron/engineer troop commander level, with periodic involvement by the battle group commander. The same assessment process is used with the accepted limitation "if you are not sure then STOP and request support from the battle group headquarters". A former UN Force Engineer Commander best summarizes this process as follows:

"The key factor in conducting UN mine clearance operations is the decision, on a case-by-case basis, to commit these resources (engineer and other) to a task which is always life



threatening."

OBSERVATION:

- **Terrain Analysis**

On major UN operations, a Terrain Analysis (TERA) Team may be provided at the mission headquarters level. This section has access to satellite and digital terrain maps of the operational area and using these resources is able to provide a detailed ground analysis on specific UN AORs. The three major functions provided by a TERA team are:

- **Minefield Positioning.**

First by determining the accurate position, of a minefield by either:

- using GPS and simple survey techniques, or
- determine exact coordinates from marked photography/imagery.

- **Maintaining Database.**

Once the location is known, the boundaries can be put into a graphical database. The TERA Team can then incorporate minefield locations into movement overlays and presentations for risk analysis of a given area. If the extent of composition of a minefield changes, the database can be easily updated. The first graphical database was developed by the TERA Team deployed to support CANBAT 2 in the summer of 1994.

- **Specialized Studies:**

Finally the TERA Team is capable of conducting special studies to determine how the geology and mineral content of the ground might affect mine detectors. This was done in February 1994 in support of Canadian operations in Somalia.

TERRAIN ANALYSIS IS A POWERFUL PLANNING TOOL IN RISK ASSESSMENT!

Mapping and Charting Establishment, NDHQ

MINE WARFARE IN PEACE SUPPORT OPERATIONS

PART FIVE -- BATTLE GROUP TACTICS

COUNTER MINE SOPs

Battle group SOPs for dealing with the mine threat have been developed over the last three years from operations both in the Balkans and Africa. These SOPs are generally divided in to the following three parts:

- Route and Area Mine Clearance
- Convoy and Patrol Countermine Drills
- Mine Incident - Immediate Action Drills

As a direct result of the threat, it is accepted that all new deployment areas and routes are mined and boobytrapped. Therefore, when the battle group is tasked to occupy or clear an area with its own limited engineer resources, only essential areas and routes are cleared of mines. In these situations the SOP is to conduct a detailed risk analysis for the mission and assign a priority mine clearance list to the battlegroup engineer. This includes "GO" and "NO GO" areas within the AOR. Interviews with several battle group commanders has produced the following mine clearance priority list:

- ROUTES TO FIGHTING POSITIONS
- FIGHTING POSITIONS (COMPANY/SQUADRON AREAS)
- MAIN SUPPLY ROUTE
- ADMINISTRATIVE CAMP
- CHECK POINTS
- OBSERVATION POSTS & PATROL ROUTES
- MAINTENANCE OF THE ABOVE

All other areas within the AOR are then marked as "**NO GO**" areas and will only be cleared when UN formation engineer resources are made available.

OBSERVATION:

In recently completed peace support operations where the mine threat outweighed the threat of direct and indirect fire, the engineer troop commander replaced the FOO/FAC as the battle group commanders principal arms advisor.

Post Operational Interview with a Commanding Officer



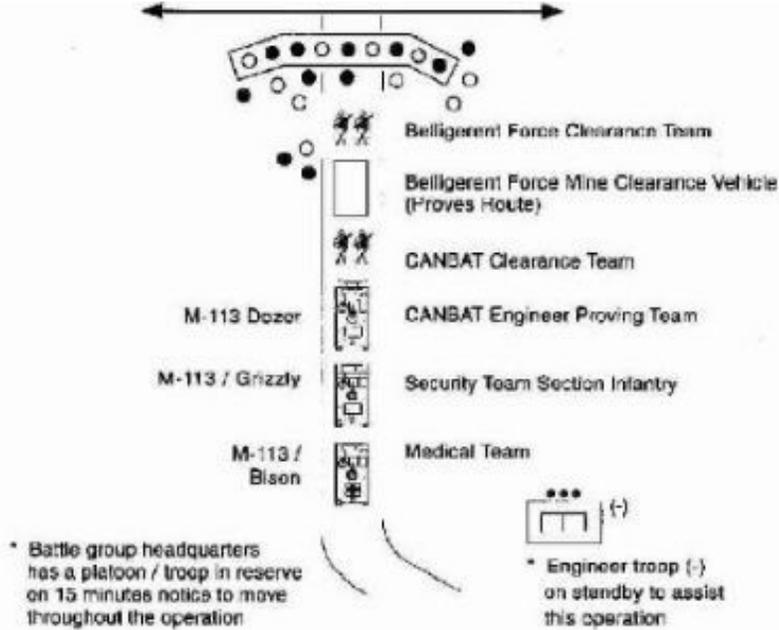
BELLIGERENT FORCE ASSISTANCE IN MINE CLEARANCE

Ideally, mine clearance should be conducted by belligerent force engineers under the supervision of the battle group's engineers. These operations require the use of proven SOPs which involve engineers, a security element, medical support and the critical battle group liaison with the opposing factions. When there is general agreement on combined minefield clearing operations, the following procedure has proven successful



- The battle group coordinates the operation including the security plan as part of battle procedure.
- The battle group engineer troop leader conducts negotiations with the belligerents. A detailed plan is produced and agreed upon by all parties involved.
- Once the operation commences, the belligerent force clearance team clears the agreed upon area or route under the supervision of the battle group engineers.
- The belligerent force clearance team then proves the area or route by driving it with an appropriate vehicle.
- Following this, battle group engineers conduct their own clearance and if deemed necessary, scrape the top of road surface with an APC dozer to mark the lanes.
- Finally the engineer troop commander is responsible to his sector engineer for itemizing the mine clearance serials and the resulting work.

BELLIGERENT FORCE ASSISTANCE MINE CLEARANCE ORGANIZATION



Note: In all cases the engineer troop is ultimately responsible to prove the work of belligerent mine clearance teams.

Croatian mine-clearing vehicle



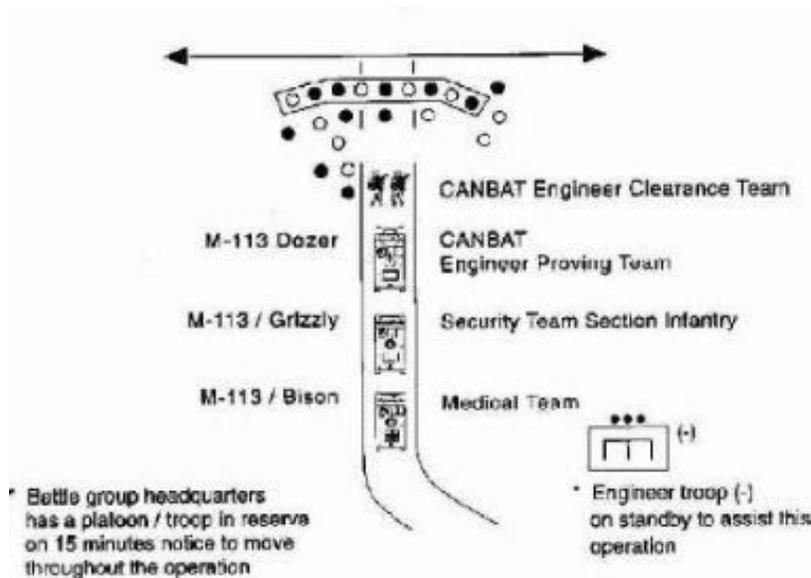
Belligerent mine-clearing vehicle



MINE CLEARANCE BY BATTLE GROUP

It is important to note that the previously mentioned procedure will only work when opposing factions agree to participate, as those experienced in Croatia. On the other hand, battle group engineers have had to work alone in many cases due to the absence of a belligerent force mine clearance capability, or their refusal of their participation in this type of operation. This is the tactical reality in many parts of the Balkans, Somalia and Rwanda. When this situation occurs, battle groups use a modified version of the aforementioned procedure, less the belligerent engineer support.

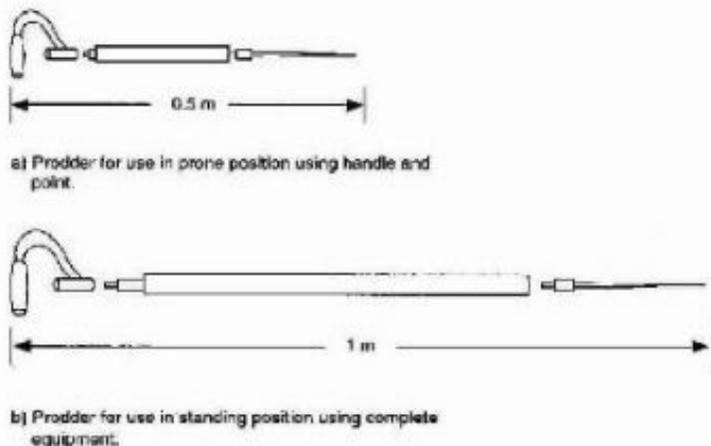
MINE CLEARANCE BY BATTLE GROUP ENGINEERS



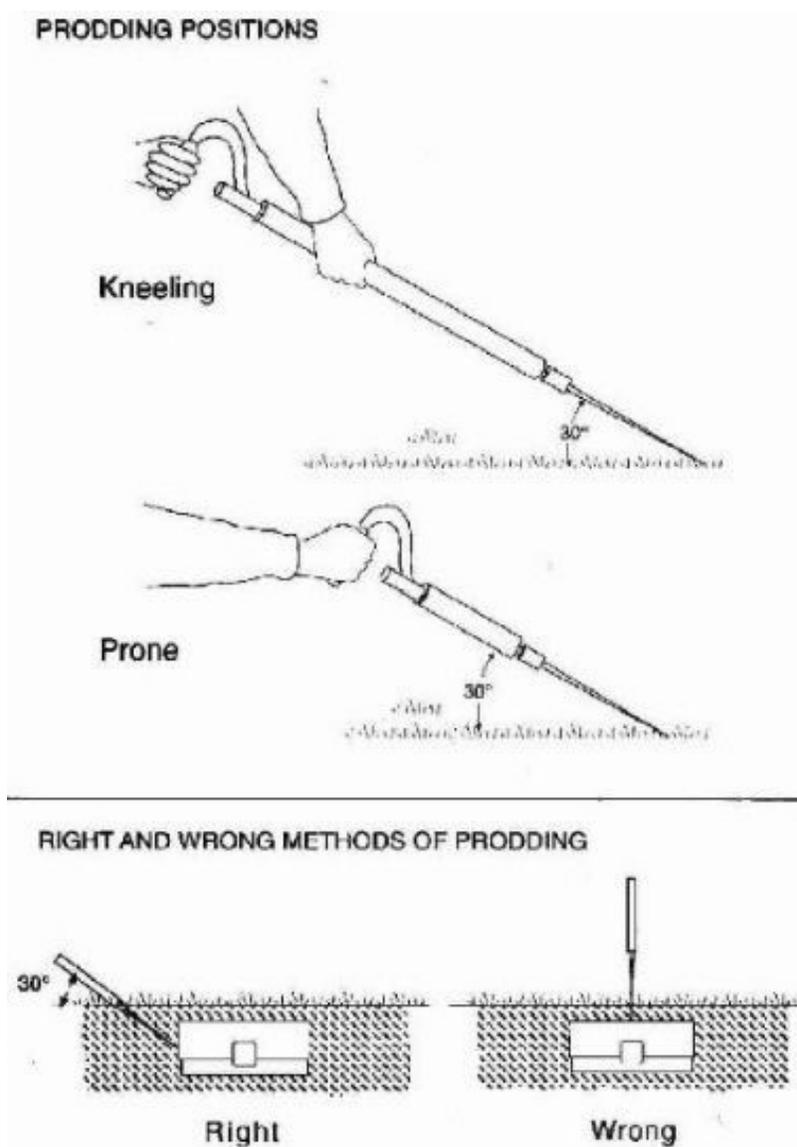
NON-MAGNETIC MINE PRODDER (NSN 6665-99-840-0116)

METHOD OF USING THE PRODDER

- The use of the prodder is still one of the most effective and safe methods of detecting mines. It is however a slow procedure which is taxing on a soldier's patience and level of concentration.
- Prodding can be done either kneeling or lying on the ground. It is generally necessary for prodding to be preceded by feeling the ground with your hands to locate trip wires and surface laid mines.
- The prodder is pushed gently but firmly into the ground at an angle of 30° to the ground.



- If the prodder strikes a solid object, a mine must be suspected. A prodder must never be jabbed into the ground and if there is a solid strike, there is a good chance that it is a mine. It must be firmly impressed on all soldiers engaged in prodding that any relaxation in the standard of prodding will lead to casualties. The right and wrong ways of using the prodder are also illustrated below.



TACTICAL HINT:

Experiences have shown that soldiers should spend no more than 20 minutes searching with a prodder before being relieved.

CONVOYS AND PATROLS

The organization and SOPs for convoy mine action drills are outlined in detail in "Dispatches", Volume 1. In terms of mounted and dismounted patrolling, the current tactics detailed in CFP 305 (2), The Recce Sqn in Baffle and CFP 309 (4), Dismounted Patrolling, are current and applicable documents for Peace Support operations. In these situations, it is clear that general purpose combat training remains the backbone of the training programme.

MINE INCIDENT - IMMEDIATE ACTION DRILL

Regardless of the type of mission, all soldiers in the battle group must be trained to know exactly how to react in the event of a mine incident. This may involve the detonation of a mine or the sudden realization that you or your unit has inadvertently stumbled in to a mined area. **Know this drill COLD!**

PLATOON / TROOP MOUNTED OR DISMOUNTED MINE ACTION DRILL

- **STOP, OBSERVE** and **REPORT** immediately
- Don't rush in to help or you too may become a casualty!
- Is the mine field covered by fire?
- Be prepared to cover your injured mate or damaged vehicle
- Call for MEDEVAC (if necessary) and combat engineers
- Once the area is secure, commence clearing a lane to the casualty or disabled vehicle, or a route out of the mine field
- **THINK, ALWAYS THINK**, mines don't care who they kill or maim.

OBSERVATION:

8 April 1994. A CANBAT 1 recce patrol consisting of two M113 APCs, three soft skinned OP vehicles, an UNMO team vehicle and an ambulance set out to establish two new OPs in the zone of separation. The local Serb battalion commander agreed to provide his engineers to guide the patrol into the new positions. The Serbs led on foot followed by their civilian pattern car and the CANBAT patrol. Almost immediately after starting their move, the Serbs had to negotiate their way around a road crater. The lead CANBAT APC, following the car, detonated an TMA-3 AT mine that blew off the left track and seriously injured the driver. At the same time the Serb car struck on AP mine that caused no serious injury. MEDEVAC and Canadian engineers were then called forward and extracted the patrol and the Serbs from the minefield.

NOTE: Mine clearance conducted by belligerent forces must always be checked.

NOTE: This scenario is an excellent example of where Risk Assessment is essential.

Source: Command
Engineers Land Force
Command Headquarters

MINE WARFARE IN PEACE SUPPORT OPERATIONS

PART SIX -- TRAINING

MINE AWARENESS

Mine warfare training must commence immediately upon receipt of the warning order and end only after the battle group boards the planes to return home. While there is now a well defined two week pre-deployment training package, the key to preparing for and surviving this threat (casualty free) lies in the development and implementation of an aggressive mine awareness campaign. Mine posters, notices and platoon hour discussions are but a few ways to keep this important subject in the soldiers' mind. In addition, a weekly update on the local mine situation by sappers from the engineer troop or members of the operations staff will reinforce the importance of remaining vigilant to this silent threat.



THE THEMES AND CORE SUBJECTS FOR FORMAL PRE-DEPLOYMENT TRAINING

- **STRESS** the importance of mine awareness throughout the mission
- **KNOW** the threat. Be able to recognize the various kinds of mines, minefield markings and booby traps known to be employed in the theatre of operations
- **KNOW** their likely locations and the various indicators that mines and booby traps are present
- **KNOW** the procedures for reporting a mine or minefield, or mine incident
- **KNOW** the immediate action and emergency drills (individual and collective) for extracting yourself or others, including casualties, from a mined area

RECOMMENDED TRAINING SCENARIOS

SCENARIO ONE "Emergency Extraction". A section patrol walks into a mixed minefield and suffers a casualty. Communications do not work and the section must extract itself.

SCENARIO TWO "Emergency Extraction". The lead vehicle in a two vehicle patrol drives over an AT mine and suffers a casualty. Communications do not work and the patrol must extract itself.

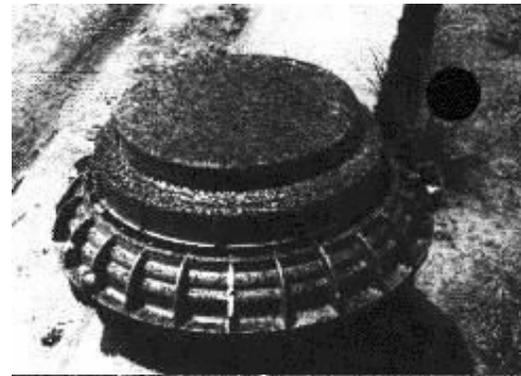
SCENARIO THREE "Risk Assessment". A platoon/troop is tasked to occupy an OP that could not be cleared by battle group engineers. It is obvious that the area around the OP is heavily mined and booby trapped. Time is short.



SCENARIO FOUR "Security Duty". A platoon/troop is tasked to provide a security detail for an engineer mine clearance team. During the operation, the engineers come under sniper fire.

SCENARIO FIVE "Risk Assessment - Map Exercise". A company/squadron receives a warning order to occupy an OP line in a new area. A member of the supporting engineer troop is tasked to help conduct the terrain analysis for the recce plan. Battle group to act as higher control.

SCENARIO SIX "Identifying and Reporting". Several different types of mines, minefields and boobytraps are laid. Individuals and sub-units then find, identify and report these contacts up the chain of command. Engineer troop leader OPI.



MINE WARFARE IN PEACE SUPPORT OPERATIONS

PART SEVEN -- MINE EQUIPMENT UPDATE

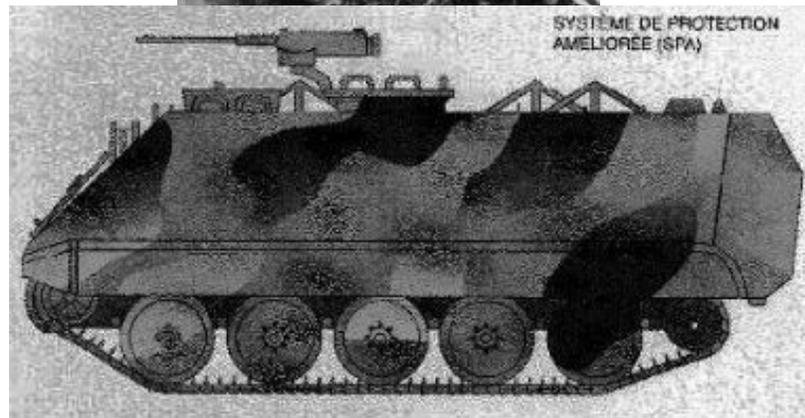
- Canadian field engineers have used the AN 19/2 mine detector extensively on UN operations. This detector has gained a reputation as one of the best metallic mine detectors on the market today.



- Blast Protective clothing is used extensively during demining operations. This is particularly true when the boobytrap threat is "HIGH".



- The new Protection Enhanced System (PES) provides the M113A2 FOV with a 95% probability of crew protection against blast and fragments from buried blast mines of up to 6.5 kg TNT when detonated by the track or wheel moving forward at up to 20 km/hr, including driver protection against shock.



- The Canadian Army is currently employing several Wolf APCs on loan from the UN in the Balkans. This APC is just one of several proven South African mine protected vehicles.



- The RCAC employs two rollers with each tank squadron which work in tandem with tank ploughs in order to conduct "Hasty" or "Deliberate" mine field breaching operations. Slovak UN troops have deployed a similar type of roller to Croatia (attached to a T-55 MBT) in order to conduct formation level route clearance.



- The RCAC employs four mine ploughs with each tank squadron to clear the mines found by the roller tanks. The Canadian Army has not deployed either rollers or ploughs on UN operations.



EMERGING TACTICS AND TECHNOLOGIES

MINE DOGS

- The Canadian Army is again exploring the possibility of employing dogs to aid engineers in the detection of mines and boobytraps on operations. Canada has recently been involved with a UN dog trial in the Balkans with a view to possibly incorporating this capability within the Engineer Branch.



JINGOSS

- The Defence Research Establishment Suffield has developed a prototype remote control mine detection system called JINGOSS which shows potential to be a valuable demining tool. The system basically consists of an eight-wheeled all terrain vehicle called an Argo. The Argo tows a metallic mine detector head which locates and marks the location of mines.



ARGO

- The Argo is controlled remotely from an APC which travels 100 to 150 metres behind the demining vehicle. The operator hears an audio signal and also gets a graphic readout on a video screen which helps to identify the mine. GPS is then used to mark the exact location of the mine for future removal. The photograph below shows a Bison APC which has been fitted with the remote control system and the trailer used to transport the Argo. JINGOSS is still in its development stage as the current system cannot detect low metallic contact mines such as some of the AT mines found in the Balkans.



MINE WARFARE IN PEACE SUPPORT OPERATIONS

PART EIGHT -- DOCUMENTATION AND REFERENCES

CANADIAN

CFP (J) 5 (4) Joint Doctrine
CFP 309 (4) Dismounted Patrolling
CFP 320 (10) 2 Mines and Boobytraps
Part 2 Engineers and Assault Pioneers
CFP 305 (4) Recce Sqn in Battle
Op Harmony ROTO 1 POR
Op Harmony ROTO 2 POR
Op Harmony ROTO 3 POR
Op Cavalier ROTO 1 POR
Op Cavalier ROTO 2 POR
Op Deliverance POR
PPCLI UN Battle Group SOPs

ALLIES

US Army CALL Publications
Op Grapple POR British Army
Nordic UN Tactical Manual Vol 2
UNPROFOR Magazine Number 1

LOCAL REPRODUCTION OF THIS NEWSLETTER IS STRONGLY ENCOURAGED