

## **Mines, bombs and explosives awareness**

"To maim is more effective than to kill."  
(mines and booby traps are designed for this purpose)

Statistics:

71 countries have been contaminated with mines since World War Two.  
500,000 mines are estimated to be laid every year (this figure is additional to the mines that have already been laid over the years).  
60+ million mines are laid world-wide.  
4 countries are the most mined areas - Angola, Cambodia, Afghanistan and Iraq  
\$3 - the approximate cost of a land mine  
30 victims are killed or maimed every day.  
800 victims are killed every month.  
1,200 victims are maimed every month.  
75% of victims are children  
60% of victims are civilians  
50% of victims die within minutes of the blast  
50% of victims make it to a hospital  
33% of victims lose at least one limb  
5% of those who make it to a hospital die in a painful way, usually within 24 hours  
12 hours - the time it can take to get to a hospital in some countries  
Every 20 minutes - the estimated time for another mine to be activated and claim yet another victim  
90% of mine victims in Somalia are civilians

Remember:

- Mines are indiscriminate
- All you do is initiate them
- No one is safe
- No one is immune

The passage of time does not reduce the effectiveness of most mines, indeed the use of modern materials, such as plastics, will probably ensure that mines last longer and function as designed for a greater time span.

All mines have physical characteristics, these are:

- Shape
- Size
- Explosive content
- Fusing system (simple / smart)

The range of mines likely to be found in any conflict or post-conflict situation will have come from a large number of different sources. For example, in Angola there are believed to be 9 - 15 million mines comprising 50 different models from 20 countries. In addition to these there are hand-made and improvised mines that rely on the ingenuity of whoever makes the mine and available materials.

## **TYPES OF MINES**

### **LANDMINES - Mode of Operation**

Where the blast effect of the explosive content of the mine is the prime cause of injuries sustained by the victim.

### **ANTI-PERSONNEL MINES - DEFINITION**

A device designed to kill or injure persons who come into contact with it by means of a purpose-designed feature (e.g. by the application of direct pressure to the device or by tripping or pulling a wire connected to the device or similar means).

### **ANTI-TANK MINES - DEFINITION**

These are mines, normally large in size and containing several kilograms of high explosive, which are designed to disable battle tanks and other armoured military vehicles.

### **ANTI-VEHICLE MINES - DEFINITION**

These are either small anti-tank mines or large anti-personnel mines, which may present a threat to civilian traffic because they require less pressure to initiate an explosion than does an anti-tank mine.

### **TYPES OF ACTIVATION MECHANISMS**

#### **Pressure**

A mine which is activated by direct pressure from above. Most anti-tank and many anti-personnel mines are of this type.

#### **Pressure Release**

A rare type of activation where a mechanism under pressure must be released to activate the mine.

#### **Tilt**

A subsidiary firing mechanism which causes the mine to explode when tilted to a predetermined angle.

#### **Pressure Mines**

(blast type) These contain an explosive charge which harms the victim with direct explosive force. Incidental fragmentation injury occurs from the casing of the mine and the ground. Usually activated by foot pressure.

Various types of Pressure Mines:

**PMA-1** (nickname - FISHBOX - non metallic - made from two bits of plastic joined together clamshell style - no markings - colour olive drab or black)

**PMA2** - (nickname - LIVERBOX - size of small can of shoe polish - star shaped pressure plate - olive drab / black or white in colour depending on camouflage situation)

**PMA3** - (nickname - BEEFMEAT BOX - made from an upper / lower plastic half and is sealed by a protective rubber - size of a round can of tuna - looks like oversized hockey puck - colour black rubber and olive drab)

Type 72 PMN PMN-2 VS50 VS-MkII Gorazde PMD-6M PFM-1

#### **Bounding Fragmentation Mines**

Usually of the anti-personnel fragmentation type, this type of mine bounds (explodes) upwards into the air when triggered by the victim, secondary detonation, which is the main explosion, sprays shrapnel and maims the initiator and injures those in the vicinity. These are usually deployed under the surface and activated by trip wire or direct pressure. These type of mines eject waist high 360° spray of shrapnel.

Various types of Bounding Mines: OZM-3 PROM-1 (usually buried with only prongs and fuse exposed - activated by pressure or pull - made from cast steel - smooth appearance - colour olive drab) PS-1 OZM-3N V-69

### **Stake Type Mine (Omni-directional fragmentation mine)**

This type of mine maims victims by spraying prepacked shrapnel into the victim and is normally deployed on the surface. Can be activated by tripwire and the direct explosive effect is less. Fragmentation mines usually eject 360° spray of shrapnel. The lethal radius is 15 - 30 metres.

Various types of Stake Mines: POMZ-2M P40 (Red) PMR-2A (cast steel body - metallic and usually visible on the surface because it is stake mounted - colour olive drab - prefragmented body on a wooden or metal stake) PPMP-2

### **Claymore Type Mines**

This mine usually sprays shrapnel (steel ball bearings over a predetermined arc or area up to a distance of 200 metres. These are directional mines. This can be activated by command wire or trip wire. The lethal range is 25 - 50 metres. Effective range is from 50 - 100 metres and the maximum range is 250 metres. Used extensively for local protection and for setting up an ambush, very quick to set up and arm.

Various types of Claymore Mines: M18A1 (original Claymore from the USA) MRUD (directional mine - found exposed on surface - mounted on scissor legs - made from plastic - similar appearance to the claymore - colour olive drab - contains 650 steel balls) Ploughshear MON-90

### **Submunitions**

These are generally delivered from the air by either vehicle, artillery, helicopter or aircraft and range from pressure, blast to the more sophisticated electronically activated systems. These range from the infamous childkiller `Butterfly Mine` to the SMART biped identifier electronic mine. These are usually mass delivered and are designed to `deny` an area to personnel, either military or civilian.

Various types of Submunitions: PFM-1 HB-876 POM-2S BLU-92 BELOUGA Rockeye

### **Anti-Tank Mines**

These can be deployed in an anti-personnel mode or reinforced.

Various types of AntiTank Mines: TMA-1 (contains no metal - made from plastic has anti-lift device - corrugated design on top - colour olive drab) TMA-5 (non metallic - made of plastic - square in shape - angled plastic legs - anti-lift wires - colour olive drab - TMA-5) M15 Type 72 TC6 TMN-46 MK7 VS-2.2 TMM-1 (made from sheet metal - low profile - has anti-lift fuse wells and pull switch attached to stake driven into the ground under the mine - colour olive drab - TMN-1 painted in yellow on top of mine)

### **Limpet Mines**

These are time delayed explosive devices that attach to metal targets by the use of magnets. Designed primarily for sabotage and designed to be fixed to ships hulls below the waterline delivered by divers to sink or disable the craft. They are compact, lethal, simple to arm and have a variable time delay system. Limpet mines are also used for initiation devices for larger explosive devices such as car bombs, have been known to be used in public places on their own as a bomb.

Types are:  
SPM Limpet  
TYPE 158

### **SMART Mines**

These are intelligent mines, such as the GATOR mine, which has sophisticated circuitry or sensors to achieve predetermined objectives. SMART mines will contain a fusing system, which may well include anti-handling, anti-disturbance or self-destruct mechanisms, and may be programmable.

**Grenades Definition of a Grenade:**

Small explosive designed to be thrown by hand or propelled by projector at a target, ignited by either a timer or impact fuse. Grenades are pretty standard and issued to most infantry throughout the world. Most terrorist groups will also use grenades due to the flexibility, availability and the size. Grenades are compact, lightweight but lethal devices, if seen - walk away and report it to the local police / security force. **DO NOT** touch.

**Types of Grenade:**

High Explosive (HE)

Phosphorous (WP)

Smoke (SMKE)

**Tripwire**

Mines employing this method of activation usually have a protruding switch from which a tripwire or filament extends to a fixed object or, in some cases, another mine. Once the pin is pulled, explosive ignites.

Learn to recognise a mine or parts of them from previous research.

**MILITARY REASONS FOR USE OF MINES**

To protect military bases and key installations

To channel or divert the enemy forces

To deny routes and strategic positions to the enemy

To gain advantage by either stopping, delaying, deflecting or killing the enemy

Within the past quarter of a century the purpose of land-mines has shifted from gaining a tactical advantage over the enemy to a policy of terrorising the civilian population.

Landmines are used by a growing number of guerrilla and terrorist groups to achieve political and economic objectives, rather than military ones.

A professional soldier will record the location of each mine that is laid to enable easy recovery. Unfortunately this is not the practice in most civil conflicts, where mines are usually laid by untrained troops who possess neither the skills nor the intent to record the location of the mines they put in the ground. This lack of recording buried landmines creates an enormous problem in their recovery.

Landmines are cheap to lay but difficult to detect.

**HOW MINES ARE DEPLOYED****Mechanical-emplaced**

Anti-tank and anti-personnel mines, normally elements of modern systems, may be buried by specially designed machinery. Most mines have the facility to be sown mechanically in large numbers.

**Scatterable**

Disseminated by remote means and designed in such a way as to ensure an effective dispersal pattern over a wide ground area.

**Dissemination Method**

These are hand placed, most mines can be hand placed in which case they are usually buried or camouflaged.

**Remote Deployment**

Most mines are designed to be delivered to their target area by remote means:

- Artillery
- Fixed Wing Aircraft
- Helicopters
- Mortars

### **Mine Protection**

Some mines are built with devices that stop or hinder the removal or deactivation of the mine by mine clearance personnel.

### **Magnetic Proximity**

A built-in device designed to counter mine clearance operations, the magnetic field of a mine detector is sensed, causing the mine or an attached charge to explode.

### **Light Sensitivity**

This is an anti-lift device which normally takes the form of a light sensitive cell in the base of an anti-tank mine.

### **Pressure Release Mechanism**

This is a crude arrangement where the weight of the mine is used to maintain pressure on the arming lever of a grenade from which the safety pin is removed.

### **Self-Destruct**

This is a mechanism which is designed to ensure the destruction of the device after a predetermined elapsed time span.

### **Self-Neutralising**

This mechanism is designed to make the mine's mechanism or fuse inoperable after a predetermined time span.

## **SEQUENCE OF EVENTS TO ACTIVATE A MINE**

**Three key elements in the chain are:**

- The Fuse or Ignitor
- The Detonator
- The Explosive Content

Mines are random because once emplaced or disseminated it is the victim who causes the mine to explode by a normal human and most commonly, non-military function.

## **WHY DO VICTIMS FAIL TO NOTICE MINES OR TRIPWIRES?**

- Mines are usually buried
- Deliberately camouflaged
- Naturally camouflaged by vegetation
- Victim is looking in a different direction

## **MINEFIELDS**

Minefields may be marked in a variety of ways: skull and crossbones, notices, piles of rocks, pickets, or not at all.

## **WHERE TO EXPECT MINES**

Any area which has been fought over by opposing forces must be suspected to be heavily mined. This is especially true of lowlands separating heavily defended hill positions

- Confrontation lines
- Routes
- Gravel roads
- Vacated buildings
- Woods & orchards
- Military establishments
- Strategic areas
- Road blocks / checkpoints
- Private property

## **POTENTIAL IMPACT AREAS**

- Food & emergency aid shipments
- Access to essential areas
- Repatriation of refugees
- Movement of aid workers
- General trade and communications
- Internal security
- Evacuation of injured / sick people
- Electoral process
- Rural social & cultural activities
- Areas undergoing surveys
- Children`s access to schools
- Agricultural rehabilitation
- Use of pasture
- Repair and use of irrigation systems
- Access to water sources
- Reconstruction
- Access to fuel
- Fishing
- Railway lines
- Power supplies / lines
- Roads
- Bridges
- Dams
- Wells
- Pipelines

## **MINEFIELD CLUES**

Ideally whichever country you are in, and you know it was once a hostile area (war zone) whether one year ago or even 20 years ago, seek local knowledge and intelligence regarding the area, as the place(s) where you wish to go may still have mines and unexploded ordnance still remaining. Speak to the local population, watch to see the areas they avoid and above all where practical, seek information prior to entering the local area.

## **Various Clues:**

- Packing materials
- Trip wires and posts
- Taut, partly buried or entangled thin guage wire or filament
- Uncultivated areas
- Disturbed ground
- Various safety clips and pins
- Trip wire spools and posts
- Unusual colours or shapes

- Animal carcasses
- Remnants of footwear
- Old military defensive positions (bunkers / barbed wire / ammunition dumps / destroyed vehicles, etc.)
- Rough markers, e.g. crossed sticks / sticks through leaves / small pile of stones / bits of cloth tied to trees / painted markings on trees, etc.
- Mine craters
- Unattended fields
- Empty buildings
- Mine signs

### **MINEFIELD SIGNS**

Most mined areas are not marked, but when marked a variety of materials and colours and shapes can be used.

### **VISIBILITY OF MINES ARE AFFECTED BY A COMBINATION OF FACTORS**

- Colour of mine
- Size of mine
- Shape of mine
- Surrounding vegetation
- Local distractions
- Perception and state of mind of potential victim

### **Be alert for:**

- Former military positions
- Road check points
- Old defensive positions
- Old airfields
- River crossing points
- High ground
- Parts of weapons and military equipment
- Sections of barbed wire entanglements
- Unusual straight lines (mother nature does not provide anything in straight lines)
- Assorted unusual shapes and colours in the natural surroundings
- Minefield markers warning signs (assorted shapes / colours as pictured above)
- Improvised signs
- Animal / human bones
- Uncultivated, unmarked areas
- Disturbed soil (along tracks, etc.)
- Disused or rotting stakes
- Thin electric cables - bits of cut wire (in the middle of nowhere)
- Discarded evidence of mining activities
- Waxed paper wrappers (military writing on them)
- Ammunition boxes
- Plastic caps / covers

### **IF IN DOUBT WHATSOEVER:**

- **STOP**
- **DO NOT TOUCH OR PICK ANYTHING UP**
- **GO BACK THE WAY YOU CAME**
- **REPORT THE SIGHTING**

## Additional Points

If you know you are going to / have to travel to an area that is suspected of previously having or still does have reported mine incidents:

- Ask yourself - is this trip really necessary.
- Do not go exploring for the sake of it.
- Brief all personnel in the team regarding danger areas and what to look out for - remember they may not have the knowledge you have.
- Obtain local maps of the area if possible - if there is no map available ask a local to draw you one.
- Speak to the locals and if need be ask them to outline / draw on your map known areas of avoidance - most villages in vacated mined areas have education training from the de-mining groups, e.g. teachers, etc.
- Seek intelligence from a military / security force if in the area.
- Talk to aid workers / de-mining groups who may be in the area.
- Stay with someone - do not go off on your own.
- Where possible wear personal protective jackets / helmet (PPE).
- Carry some form of identity sheet with types of markers / signs / mines for easy recognition.
- Preferably walk on tarmac / concrete roads and tracks to mud and grass tracks as it is harder to conceal mines on hard surfaces.
- Never take it for granted that if you were in the area a year ago the ground / danger areas remain the same - again seek local knowledge.
- If for any reason you need to abandon your vehicle and get out of the area - walk back along the vehicles tracks - at least you know the tracks are free of mines.
- Never think - "It will never happen to me" and destroy all attempts of individuals` machoism.
- Carry a first aid kit with the required field / shell dressings / stores, etc.
- If you survive a mine blast it will be self help for the initial 20 minutes before shock sets in - you should ideally be able to use the correct first aid stores to deal with the immediate injury.
- Always inform a local official, etc. if travelling in a known mined area.
- Use a booking out and booking in procedure, estimated time of travel, mobile telephone numbers, etc.
- Take a mobile phone / radio with you if practical.
- Carry a whistle in case of emergency and you are stuck in a minefield.
- Carry a small pocket sized stainless steel mirror for signalling if you are stuck in a minefield.
- Carry some form of "prodder" - whether it is a straightened out coat hanger / large knife - bayonet type / meat skewer, etc. in order to prod the area to seek a safe route.
- Carry some form of markers (roll of bright coloured electric masking tape / hankerchief which can be torn in strips, etc.). If a mine is located after prodding, a piece of marker can be tied or placed near to the mine in order to alert the other group.
- Select a good solid pair of boots - these may save your feet from severe blast damage.
- Ensure the group maintains a vigilant attitude. Everyone should be observing at all times for anything unusual.
- If carrying radios, ensure that all members know how to operate them in case of an emergency.
- If travelling in vehicles in unknown territory, try to stay in the tracks of the forward vehicle.
- Stay away from abandoned buildings and vehicles.
- If passing obstructions like landfalls / landslides / abandoned military trucks / burnt out vehicles on any form of road or track - pass with caution, observe ahead at all times. Most mines are placed and disguised in natural incidents.
- If travelling and you need to go to the toilet, do not wander off the track. Look for a place that has been previously used - it may be safer.
- If walking along a track, try to walk in a single file and place feet in footprints from in front. In some areas the use of local guides is necessary and very useful - try to use them.

- Do not prod / poke / cut items, wires, string, etc. It may be attached or concealing a mine or booby trap.
- Never touch or pick up an attractive item in the wilderness. Ask yourself "Why is it there?" Obviously if you are walking in a busy street in town and you see an item lying on the floor then you would assume it is safe to pick it up but not in unknown / unfamiliar territory.
- Remain suspicious at all times - never take anything for granted, look for clues - it may save lives.
- If you can see a mine you are too close.
- If you can identify the type of mine you are too close.
- Get out of the area immediately by following your own tracks but in a calm, controlled manor - **DO NOT PANIC**.

**NB:** In some countries and if military are in the area they may assume that you may be spying if you have a map with a marked area of minefields, etc. Be cautious!

### **IF A MINEFIELD IS ENTERED**

If you or your colleague stray into a minefield the probable consequence will be death or severe injury.

If accompanied by a guide, stay static and send for assistance.

If the guide is the casualty - one of the crew will have to go for help.

If assistance has not arrived within 10 - 15 minutes, clear a safe lane to the casualty, of minimum width 0.6m, as follows:

- Gently prod for mines as you move towards casualty
- Feel for trip wires and surface antipersonnel mines
- If small antipersonnel mines are found, gently negotiate around them and mark them
- Continue until casualty is reached
- Clear area immediately around casualty
- Carry out first aid.
- Remove casualty along established safe route
- Mines are often indicated by dead wildlife.
- When travelling in convoy stay a good distance clear of the vehicle in front and try to stay in the same tracks if roads are thought to be mined.

### **IF A MINEFIELD IS ENTERED ON FOOT**

Maintain a high level of awareness at all times while moving in an area which is known or suspected to be mined.

Usually the first sign informing you that you are in a minefield is a mine will explode, set off by its victim, however you may be lucky due to vigilance and see the mine first.

Whichever it is:

- Immediately stand still and shout "**STAND STILL - MINEFIELD**".
- Warn all other parties, and check the immediate area around your feet, for wires, disturbed earth, unnatural foliage, etc.
- Before moving - **THINK!**
- Do not rush to the aid of the victim - no matter how high they scream.
- You are all on your own and all exposed to the same risk.
- Try to identify the safest refuge - possibly the way you have just come, hardstanding tarmac, etc.
- If in a single line it is recommended that the individual nearest to the `safe area` to probe and find a safe route, everyone else stays put until this is done.
- If clearing your immediate area it should be out to your arms length. At this point it may be necessary to ignore the cries for help from the victim.
- Without moving your feet, study the immediate area for slight depressions and obvious signs of previous disturbance.
- Look first then use your fingers lightly to feel around a 360° circle from your feet outwards. You are feeling for tripwires, protruding mine fuses, any element of a mine.

You are unlikely to detonate a mine by doing this but to be extra careful do it as lightly as you can.

- If happy with the finger search, try to clear the immediate area of undergrowth preferably with a knife. Gently comb long grass with the fingers and sweep away loose material, do not rush this as your life depends on this search. If necessary search again.
- By using your improvised "prodder" prod the ground gently but firmly preferably held at an angle of 30° to intervals of 30mm to a depth of 90mm. Ideally by doing this you will make contact with the side of a mine and not the top where the initiation device is.
- If you suspect a mine do not prod any deeper or harder, it may be a large rock but you cannot afford to take that chance. Extract the prodder and mark the site very near to the suspected mine with some form of a marker.
- If your immediate area around you is clear try and lie down in the area directly behind you from where you have come from and in the area that you have just searched and cleared, you should lie down facing the safe area that you are heading for.
- In this position, **LOOK, FEEL, PROD** one metre wide in front of you, crawl to the next safe cleared area and continue to do this until you have reached your safe area, remembering to mark every suspected mine and also mark the cleared path you have created.
- If you have secured a safe route to the casualty, ensure you have cleared it to one metre across and marked either edge with some form of markers - this will assist you on the return journey and minimise confusion.
- You should be prepared to either carry or drag the casualty back out of the area away from the initial blast. If necessary take a line of some form or belt and pass it around and under the casualty's chest in order to assist in dragging the casualty out. Secure all casualty's loose equipment and restrain the casualty's arms if they are flailing around.
- It is up to you to attempt first aid on the spot remembering that space will be restricted and could cause further initiation of immediate mines if you happen to move out of the safe area around casualty, but at all times **REASSURE** the casualty.
- Simply drag the casualty clear back along the safe route to the safe area. Immediate first aid only should be administered at this point if at all.
- This stage of removing the casualty will not be easy and will not be quick. It will also be extremely hard work, so take your time and be vigilant as one casualty will be enough already.

#### **IF A MINEFIELD IS ENTERED BY VEHICLE**

When travelling in convoy stay a good distance clear of the vehicle in front and try to stay in the same tracks if roads are thought to be mined.

If your vehicle or another vehicle drives over a mine whether it is an anti-personnel mine or anti-tank mine -

- **STOP** all vehicle movement.
- Switch off all engines to prevent unnecessary ground vibration.
- Check for any onboard casualties.
- **DO NOT** jump out of the vehicle.
- Try to communicate with all vehicles to assess the damage, casualties and to obtain a general situation report.
- If in touch with a base by radio, pass on all details to them immediately - they may be able to offer assistance by other means, i.e. mine clearing team, military assistance, etc.
- You will need to assess the options open to you and this needs to be done quickly but calmly.
- Your best option is to remain in the vehicles until expert help arrives. In most cases this is not practical, therefore: Identify a safe area, and if you can slowly reverse the vehicle along the exact tracks that you came in on, all vehicles should do this.
- If the vehicle is damaged and is immobilised you will need to exit the vehicle from the rear exit, but **LOOK, FEEL, PROD** in the immediate area prior to making your way on to the tracks.
- You should nominate one person only to initially clear and **LOOK, FEEL, PROD** a route to the safe area.
- Everyone else should remain quiet, calm and be patient.

- Where the vehicle tracks are on soft ground this will give you a safe route out as long as you stay in the tracks. If a vehicle's weight has not detonated a mine then it is safe to presume you won't.
- Remain vigilant at all times and if there is any suspicion at all on the return safe route revert back to **LOOK,FEEL,PROD**.
- If suspicious areas are found then clearly mark these and mark a safe route in order for remainder of group to follow safely.
- If you have a casualty in the vehicle due to the blast, immediate first aid should be administered and reassurance be given.
- Once safe route has been established remove the casualty, slowly and carefully.
- You can normally work on the following safety distances if moving out to a safe area: 20m between persons if crawling and 50m if walking.

#### **Remember the nemonics:**

- Look - for mines
- Feel - for mines
- Prod - for mines at 30mm intervals to a depth of 90mm.
- Mark - but not on top
- Avoid - lie prone or crawl
- Move - patiently and slowly to a safe area with L-F-P

#### **If you have a casualty remember:**

- L-F-P to casualty
- Reassure casualty
- Minimum first aid to casualty
- Extract casualty (or wait for help)

#### **Remember if prodding:**

- Use 30/30/90 procedure

#### **Remember if in minefield:**

- Stop - immediately
- Warn - all others by shouting
- Report - if using radio to base
- Assess - support may be needed / casualty / are you under fire / is vehicle mobile / nearest safe area / think!
- Act - on the assessment you have made

### **AVOIDING MINES - RISK AREAS**

#### **Visible Minefields**

Simple way where mines or some mines are scattered on the surface of the ground or mounted on stakes.

#### **Concealed Minefields**

Areas where mines are buried, camouflaged or concealed by growth of vegetation.

#### **Marked Minefields**

Areas laid with mines, either visible or concealed. Danger signs are present but perimeter or expanse of the minefield is not delineated.

### **Fenced Minefields**

In mined areas there may be fenced areas interspersed with mine marking signs.

### **MINE CLEARANCE**

Mine clearance is carried out for two main reasons:

1. The first is for a military operation when it is called "mine breaching".
2. The second is for humanitarian purposes.

There is a significant difference in the two activities although they are both carried out by highly trained equipped personnel.

The military mine breaching operation is usually carried out using mechanical means or for a silent breach as a manual operation carried out by specialist military personnel.

Mine breaching achieves the highest clearance standard possible within operational constraints of time and service.

The main objective of the humanitarian mine clearance is to clear the area to the highest possible probability of clearance. The UN require a 99.6% probability of clearance as part of its criteria. It is for this reason that military breaching operations will normally involve plant, whereas humanitarian mine clearance currently tends to rely on the operator.

### **INFORMATION**

The best source of information is local knowledge or the local inhabitants from the likes of village chiefs and elders if in a remote area. There may be soldiers who may have actually taken part in the construction of the minefield, they may be able to relate mine incidents such as injuries and identify certain key features. They may even show you an updated local map where areas are to be avoided.

### **BOOBY TRAPS OR IMPROVISED EXPLOSIVE DEVICES (IEDs)**

Although the statistical chances of any one individual becoming a victim of a bombing are fairly extreme, the location, type of population, type of threat will determine the facts and figures. Obviously if living in the heart of an area of unrest where conflict rages from one day to the next then the risk has greatly increased even though you are not actually involved. You or the company you work for can be specifically targeted for reasons known to the terrorists / faction or the device was left in or near the building, primed to go off at random. If this is the case there will be individuals who will be in the wrong place at the wrong time who will be involved and suffer extreme injury or in the worst case death.

Bombs are attractive to terrorist groups, criminals and assorted individuals who are suffering from a vendetta or who are basically upset about something!

Bombing is the most widely used terrorist tactic. It is known that vast quantities of plastic explosive have been distributed to terrorist organisations worldwide by specific countries. Explosives like C4 and Semtex can be readily shaped into any shape or form to make their detection difficult. They are low volatile explosives making them difficult to reliably detect with mechanical and sniffing devices.

Explosives are easy to obtain, are easy to construct and are readily concealed. They can be disguised to look like anything and can be placed or delivered in numerous ways. They allow the perpetrator to operate with relative anonymity and separated from the event by time and distance.

### **Vehicle Bombs (Under Vehicle Improvised Explosive Device - UVIED)**

A vehicle bomb can be defined as being a large explosive device that is transported to and placed into a vehicle by means of human assistance.

Large blasts are similar to other explosions, regardless of source, and all have similar mechanisms:

- Air Shock (incident air shocks cause window and masonry breakage and direct injury to humans)
- Air Blast (detonation products and dynamic pressure loading that causes structural failure and collapse, accelerates debris and causes direct injury and death)
- Fragmentation (primary device blast vehicle debris, secondary blast generated debris)
- Thermal Loading / Fire (hot debris or gases start material and fuel fires and injuries to personnel)

If your lifestyle or occupation makes you a possible terrorist target, the vehicle bomb is one of the most easiest ways of getting rid of you. The vehicle bomb is usually fixed under the vehicle by magnets. This is the simplest, most effective and quickest means of planting a bomb on a vehicle as the terrorist does not want to draw attention to themselves in wasting time breaking into a vehicle, playing around with wires and ignitions, etc. They will have the car alarm to deal with as well, therefore it is far easier to walk alongside your vehicle, bend down and quickly place a bomb on the bottom of your car.

**The only defence against such attacks is:**

- Constant vigilance
- Parking your vehicle in a secure garage
- Keep it under well lit areas if no garage is available
- Keep it away from the road where possible
- Having good personal security
- Having a good vehicle alarm
- Leave your vehicle in a well lit, public, well populated area if possible

**You should conduct the following:**

- Check your vehicle every time
- Always lock the vehicle
- Ensure the sunroof is closed and locked
- Clear out the boot / glove compartment of all unnecessary items
- Place strips of thin clear tape over the doors / boot and bonnet (if tape is unstuck it is likely someone has been tampering with the vehicle).
- If your vehicle is dusty or slightly dirty this is not a bad thing as you will see if anyone has been tampering around your vehicle by the marks they will leave.

**If returning to your vehicle after time away:**

- Search the vehicle without touching it
- Check wheel arches, bumpers and any spoilers
- Check for false panels under the mud flaps
- Inspect the locks for any sign of tampering
- Do not use under vehicle search mirrors - they are a waste of time and you will miss out visually, the only way to inspect the underside of your vehicle properly is by getting down on one knee and inspecting it with the naked eye.
- Check externally for any visible wiring that should not be there.
- If parked near a wall or other vehicle, check between for unwanted wires and pressure plates.
- Look for disturbed areas on the vehicle - fingerprints, etc. in the dust / dirt.
- Look through the windows down the inside of the doors / look in the footwells / look at the interior roof / look at the back shelf.
- Beware of fresh paint or glue.
- Check for additional panels on inside of door / floor / under carpets

- Check under all seats / under steering wheel

**If you are suspicious about your vehicle:**

- Move out of the area and advise any passers by to do the same
- Phone the Police immediately
- Keep alert and inform all passers by to get back and find an alternative route.
- Remain calm

One of the first rules of counter-terrorism is to know what is normal so you can recognise the unusual.

Always be alert for suspicious looking or unfamiliar objects or people.

If you think an object may be a bomb, it is to be regarded as a bomb until proven otherwise by a trained bomb technician.