

**UNITED STATES MARINE CORPS**  
FIELD MEDICAL TRAINING BATTALION-EAST  
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MCECST

**2401-CIED-1001/7/8 Counter Improvised Explosive Devices (IED)**

**TERMINAL LEARNING OBJECTIVES:**

1. Given an operating environment with an IED threat and observation aiding devices, recognize indicators of improvised Explosive Devices (IED), to identify all indicators in accordance with MCTP 10-10C.  
(2401-CIED-1001)
2. Given a mission, detection equipment, T/O weapon, combat load, and references, react to an unexploded IED, to confirm presence of all threats in a lane, route, or area with no injury to friendly personnel or damage to equipment.  
(2401-CIED-2007)
3. As a member of unit, given a mission, rules of engagement, and a detonated improvised explosive device (IED), react to an IED attack, to recognize any indicators and conduct immediate actions on the threat.  
(2401-CIED-2008)

**ENABLING LEARNING OBJECTIVES:**

1. Without the aid of reference, identify indicators of IEDs, in accordance with reference MCTP 10-10C MAGTF Counter-Improvised Explosive Device Operations.  
(2401-CIED-1001a)
2. Given an IED Lane scenario, demonstrate the ability to recognize indicators of IEDs, to ensure prevention of casualties or loss of life, in accordance with reference MCTP 10-10C MAGTF Counter-Improvised Explosive Device Operations.  
(2401-CIED-1001b)

3. Given an IED Lane scenario, react to an unexploded IED, to ensure optimal unit performance within the given mission in accordance with reference MCTP 10-10C MAGTF Counter-Improvised Explosive Device Operations.

(2401-CIED-2007a)

4. Given an IED Lane scenario, react to a follow-on attack, to ensure optimal unit performance within the given mission in accordance with reference MCTP 10-10C MAGTF Counter-Improvised Explosive Device Operations.

(2401-CIED-2007b)

5. Given an IED Lane scenario, report an IED attack, to ensure optimal unit performance within the given mission in accordance with reference MCTP 10-10C MAGTF Counter-Improvised Explosive Device Operations.

(2401-CIED-2008a)

6. Given an IED Lane scenario, react to an IED attack, to ensure optimal unit performance within the given mission in accordance with reference MCTP 10-10C MAGTF Counter-Improvised Explosive Device Operations.

(2401-CIED-2008b)

7. Given an IED Lane scenario, recover from an IED attack, to ensure optimal unit performance within the given mission in accordance with reference MCTP 10-10C MAGTF Counter-Improvised Explosive Device Operations.

(2401-CIED-2008c)

1. **DEFINITIONS.**

a. **Explosive Hazard Definition.** Any material posing a potential threat that contains an explosive component such as unexploded explosive ordnance, booby traps, improvised explosive devices, captured enemy ammunition, and bulk explosives.

b. **Improvised Explosive Device (IED) Definition.** A weapon that is fabricated or emplaced in an unconventional manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals designed to kill, destroy, incapacitate, harass, deny mobility, or distract.

2. **IED CHARACTERISTICS.** IEDs are unique in nature because the builder has had to improvise with the materials at hand. They are designed to defeat a specific target or types of targets, they generally become more difficult to detect and protect against as they become more sophisticated. The degree of sophistication depends on the ingenuity of the designer and the tools and materials available. IEDs of today are extremely diverse and may contain any type of firing device or initiator, plus various commercial, military, or contrived chemical or explosive fillers. Cached and stockpiled munitions or Explosive Remnants of War (ERW) within the current theater of operations may provide the explosive materials to "would be" enemy bombers. Specific IED Characteristics are as follows;

- a. Cause death or injury by using explosive charges.
- b. Can vary in size and sophistication.
- c. Have unlimited employment possibilities.
- d. Can be made from common household components.
- e. Have no standardized construction method.
- f. Are inexpensive and highly effective.
- g. Have become the number one threat to coalition forces.
- h. Construction and emplacement tactics, techniques, and procedures (TTPs) are shared via the internet.
- i. Provide information about the network that emplaced them.

3. **IED INTENDED OUTCOMES.**

a. **Strategic** - Intended to make a political statement in order to erode the political will of combatant countries.

b. **Operational** - Intended to isolate population from host nation control, disrupt freedom of movement and create a perception of insecurity among the populace.

c. **Tactical** - Intended to disrupt normal activities, destroy/disable material, cause personnel casualties, identify coalition TTPs and create obstacles.

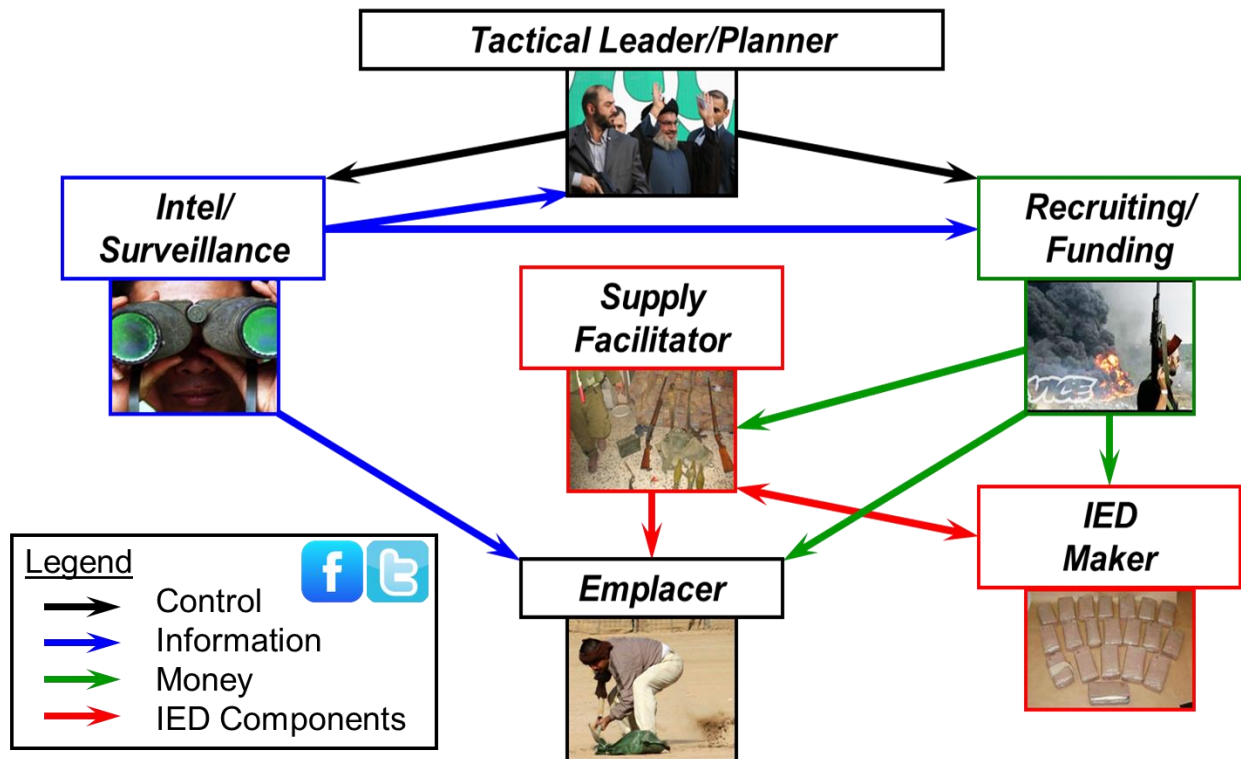
4. **IED NETWORK.**

a. A **Network** is a group or system of interconnected people and things functioning to produce a specific outcome.

b. An **IED Network**, regardless of the structure or type of group that employs IEDs, key functions must be performed. In an IED network critical personnel, actions, and resources determine the enemy IED system.

c. Successful **IED Network Defeat** requires that the commander influence these functions in order to reduce or eliminate the IED threat. Interconnections between different nodes in the network mean that any disruption of one group or function may affect the actions of the entire network.

d. IED Network Common Key Functions Diagram:



5. **IED COMPONENTS**. Although IEDs can widely vary in shape and size, the following are five components common to all IEDs;

a. **Switch** - A device for making, breaking, or changing a connection in an IED. There are two purposes for switches;

(1) **Arming Switch** - Used to arm the IED to ensure that the emplacer can safely employ or emplace the IED.

(2) **Firing Switch** - Initiates the firing sequence.

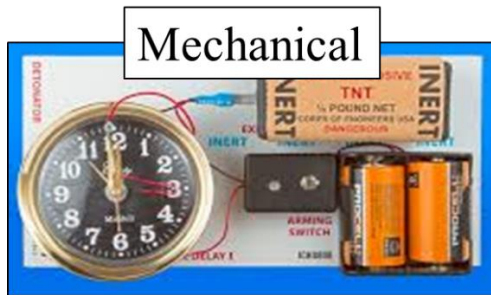
aa. **Switch Types** - There are (3) types of switched;

(1) **Command Switch** - A type of switch that is activated by the attacker in which the attacker controls the device. Command-initiated IEDs are common and allow the enemy to choose the optimal moment of initiation. They are normally used against targets that are in transit or where a pattern has been established. Command Switch examples are as follows;

- Cell Phones
- Door Bells
- Car Alarms
- Radios
- Keyless entry
- Command Wire



(2) **Time Switch** - A type of switch (*Mechanical* or *Digital*) that functions after a set time. Time initiated IEDs are designed to function after a preset delay. May be used if a unit has set a pattern of being in certain place at a certain time. Used widely against infrastructure targets. Does not require oversight, allowing the enemy to make his escape.



(3) **Victim Operated Switch (VOIED)** - A type of switch that is initiated by the actions of the victim or target. These devices rely on the target carrying out some form of action that will cause the device to function. A VOIED may be designed to target mounted or dismounted patrols. VOIED Switch examples are as follows;

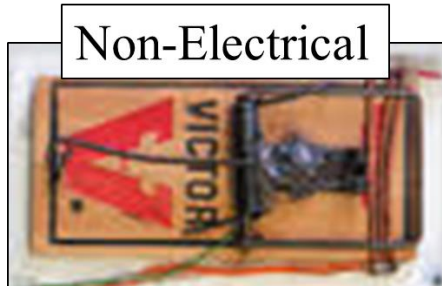
- Disturbance
- Pressure
- Pressure Release
- Tension/Pull
- Tension Release/Push
- Light
- Acoustic
- Magnetic



b. **Initiator** - Any component that may be used to start a detonation. (i.e. electrical, non-electrical)

(1) **Electric** - Any device that is activated by an electrical signal that creates heat or a spark. (blasting cap)

(2) **Non-Electric** - Any device that is activated by any means other than electric. (friction, chemical, impact, heat or percussion)



c. **Main Charge** - The explosive component of an IED. There are three types of Main Charges;

(1) **Military Explosives** - Explosives manufactured for military use, such as ammunition, ordnance or demolition charges which contain explosives, propellants, pyrotechnics or nuclear, biological, or chemical material for use in military operations.

(2) **Commercial Explosives** - Explosives produced and used for commercial or industrial applications.

(3) **Homemade Explosives (HME)** - Explosive mixtures and/or compounds which have been formulated or synthesized from available ingredients.

d. **Power Source** - A device that stores or releases electrical or mechanical energy.

(1) **Battery** - 9-volt, AA, or a vehicle battery may be used.

(2) **Local Power Supply** - Home, office or nearby building.



e. **Container** - A vessel commonly used to house the principal components of an IED and may additionally assist in;

(1) **Confinement** - Holds the main charge together. Increases the explosive power.

(2) **Concealment** - Prevents the discovery of an IED by visual inspection.



## 6. IED MANUFACTURING INDICATORS.

a. **Pressure Plate Construction** - Pressure plates can be made from a wide variety of inexpensive and easy to locate materials. Examples are as follows;

(1) Wood cut into pieces suitable for use in a pressure plate.

(2) Wire and other conductive material used in as the switch or to connect the pressure plate to the power source or initiator.



(3) Springs, foam, rubber or other items used to separate the conductors used as the switch in between the wood plates.

(4) Plastic bags, tape or other material to keep dirt and water out of the pressure plate.



b. **Low/No Metallic Content Device** - Again, can be made from a wide variety of inexpensive and easy to locate materials. Examples are as follows;

(1) Discarded battery casings, and battery components (peeled batteries) to reduce the metal content of the battery.

(2) Discarded dry cell batteries and black powder residue from manganese oxide surrounding carbon rods in dry cell batteries.

(3) Remains of non-metallic objects, such as rubber sandals, tires, plastic bottles, etc.



c. **Radio-Controlled IED (RCIED) Construction** - Again, can be made from a wide variety of inexpensive and easy to locate materials. Examples are as follows;

(1) A stockpile of two-way radios, cell phones or other devices capable of transmitting and/or receiving a radio signal may indicate RCIEDs being manufactured.

(2) Excessive circuit boards and/or associated components may indicate IEDs being constructed with complex switches or circuitry.

(3) Tools associated with circuit board construction.



d. **Common Homemade Explosive (HME) Terms;**

(1) **Precursor** - A compound that can be converted to an explosive by combining or mixing with another compound, or through chemical reaction.

(2) **Fuel** - A material that can be completely and rapidly oxidized or consumed.

(a) Organic Fuels can be charcoal, coffee, sawdust, sugar, or fertilizer.

(b) Flammable Liquid Fuels can be alcohol, diesel, gasoline, or kerosene.

(c) Powdered Metal Fuels can be aluminum, magnesium, or copper.



(3) **Oxidizer** - A substance that provides the oxygen for the burning of a fuel. Common oxidizers used in homemade explosives are;

- Nitric Acid  $\text{HNO}_3$
- Ammonium Nitrate  $\text{NH}_4\text{NO}_3$
- Hydrogen Peroxide  $\text{H}_2\text{O}_2$
- Potassium Chlorate  $\text{KClO}_3$
- Sulfuric Acid  $\text{H}_2\text{SO}_4$
- Hydrochloric/Muriatic Acid  $\text{HCl}$
- Acetone  $(\text{CH}_3)_2\text{CO}$



e. **Tools and Equipment** - Discovery of equipment that does not appear to belong can be an indicator of manufacturing HME or IEDs. The equipment used will depend on the IED or HME being manufactured. The equipment may be scientific, simplistic, or improvised in nature. Common capabilities include grinding, mixing, stirring, distilling, filtering, drying, and cooling. The following list includes equipment that can be associated with the production of HME or refinement of precursors:

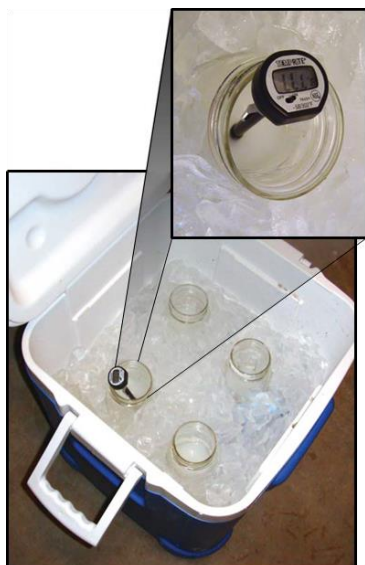
(1) **Grinders** - Used to refine the particle size of solid HME precursors to improve mixing and enhance the explosive effects of the final product. (e.g. logs, artillery shells, mortar/pestle, coffee grinders, ball mill).



(2) **Mixers/Stirrers** - Mixers are used to physically blend components and stirrers are used to combine liquid components. HME residue can remain on mixers and stirrers and should be considered hazardous. (e.g. kitchen blenders/mixers, buckets/plastic ware, magnetic stirrers).



(3) **Cooling Baths** - Some chemical reactions require cooling to prevent a runaway thermal reaction. A cooling bath may consist of a container in ice or by dissolving chemicals such as fertilizers (ammonium nitrate, CAN-26 or urea) in water which will cause an endothermic reaction thereby reducing the water temperature. There may not be any visual indicators of this method other than one container sitting in another container of water.



(4) **Distillers** - Used to concentrate (remove water) from liquid precursor chemicals to enhance their effectiveness. (e.g. slow cooker, Rotovap, coffee pot, hot plate).



(5) **Filters** - Used to separate solid HME products from liquids. (e.g. coffee filters, filter funnels, cloth sheets).



(6) **Drying Equipment** - Facilitates the drying of an HME product. (e.g. Heaters, Heat Lamps, Fans, Tarps, or Plastic. Sheeting)



(7) **Safety Equipment** - Due to the hazardous nature of most homemade explosives and precursors, bomb-makers will take measures to protect themselves or prevent the formation of other indicators such as skin discolorations. (e.g. Dust/Vapor Masks, Face Shield, Safety Goggles, Venting).



(8) **Human Indicators** -

(a) **Stains** - . Staining may occur on exposed skin (face, hands, arms, etc) or clothing.

(b) **Burns** - Burns on skin or clothing from chemicals or fire.

(c) **Missing Appendages** - Missing fingers, hands or scarring on exposed skin from accidents or testing HME.



## 7. IED EMPLOYMENT CHARACTERISTICS.

IEDs can be used in multiple fashions, constantly changing and adapting to coalition countermeasures and Tactics, Techniques and Procedures (TTPs). IEDs are only limited by the enemy's imagination. Multiple cells conducting independent attacks means less possibility for coalition forces to exploit an enemy pattern. Enemy TTPs vary throughout AO based on knowledge, experience, material availability, etc. Enemy TTPs will adjust in an attempt to exploit friendly vulnerabilities. The following are known types of IED employment;



a. **Vehicle Born (VBIED):** An IED delivered by or concealed in any ground based vehicle (e.g., passenger vehicle, motorcycle, moped, bicycle, donkey cart, etc.).

(1) A VBIED is typically an unattended vehicle placed in an area with the intent of causing the most damage.

(2) VBIEDs and SVBIEDs use larger amounts of explosives and have ranged up 7000 lbs.



b. **Suicide Vehicle Born (SVBIED):** A mobile Vehicle-Borne IED (VBIED) initiated by the attacker at a time of their choosing.

(1) A **SVBIED** is a vehicle that is filled with explosives and driven by an individual to attack convoys, check points, buildings or other high value targets. May be used in an attempt to breach security.

(2) **SVBIEDs** are successful because the enemy is mobile and can choose the time and place to detonate with much greater



flexibility. This unpredictability makes SVBIEDs difficult to identify. There have been instances of trucks carrying generators, donkey drawn carts and ambulances used as SVBIEDs to attack coalition forces.

**c. SURVEILLANCE of both Vehicle Born (VBIED) and Suicide Vehicle Born (SVBIED):**

(1) **Enemy Surveillance** is used to assist in recruiting, funding and propaganda. Enemy Surveillance is also used for target selection of a VBIED and to ensure the VBIED remains undisturbed or, if disturbed, may be detonated prior to discovery/render safe.

(2) **Friendly Surveillance** is used to identify the following attack indicators;

(a) Situation Indicators.

(b) Vehicle Indicators. Examples are;

- Regularity or irregularity in a vehicle route.
- Noticeable sagging of the vehicle (increased weight due to explosives).
- Darkened or covered windows to conceal either the vehicle's contents or actions of the driver.
- Crudely covered holes made in the vehicle or new welding marks to hide explosives.
- Unusual scratches, possibly made by screwdrivers, wrenches, or similar tools (when modifying the vehicle). Signs of tampering, such as broken parts or bent sheet metal.
- Recent painting of the vehicle to cover body alterations.
- Areas and components cleaner or dirtier than surrounding areas.
- Escorted by unusual security detail for the type of vehicle.
- Unusual wiring or components anywhere inside or outside of the vehicle.
- Anything unusual in factory built compartments. (Glove box, truck, cargo area)

d. **Person Born (PBIED)**: is an IED worn, carried, or housed by a person either willing or unwillingly, such as a vest, belt, backpack, box, briefcase, etc.

(1) A **PBIED** is often initiated by the person wearing the IED (suicide); however, not all PBIEDs are triggered by the person wearing the IED (proxy).

(a) As we develop effective TTPs to counter the use of VBIEDs and SVBIEDs the potential for the enemy to adapt to using PBIEDs increases.

(b) Mechanism for instilling fear and intimidation. The ability of the suicide bomber to be anywhere at any time coupled with the destructive nature of the attack mechanism has a tremendous psychological impact on the target population. The fear of attack transcends the reality of the event.

(2) **PBIED Design** - If the charges used by bombers are effectively packaged and concealed, it is possible for a suicide bomber to carry up to 45 pounds of explosives; however, most suicide vests and belts are designed to hold smaller amounts, up to 12 pounds.

(a) A smaller weight of explosive promotes conformity of the belt to the individual, improving concealment.

(b) Fragment producing materials are often incorporated into the design of these devices.



(3) **PBIED Characteristics** - The bomber will tend to wear the IED high on the body, vice near the legs creating a greater blast effect.

(a) It is not uncommon for terrorist states to employ women, children or the mentally handicapped people in attacks or as PBIEDs - anyone can be a threat.

(b) May include a remote triggerman. This technique is used in case the suicide bomber decides not to detonate.

(c) PBIEDs have been employed as a defensive measure to protect High Value Individuals (HVI) or to avoid capture by coalition forces.

(d) May also be used as a secondary device to target first responders.



(4) **Suicide Attack (Behavior & Appearance):**

(a) **Behavior** - As the suicide bomber prepares to attack, you may notice certain behavioral indicators.

- **Nervousness** - They may seem preoccupied or have a blank stare. Profuse sweating that is out of synch with weather conditions.
- **Focused** - Acute focus may result in no response to verbal or other commands. Walking/driving deliberately toward a specific object or target, often pushing

their way through a crowd or driving around barriers.

- **Avoiding Authority** - The enemy may try to remain inconspicuous and actively avoid security or checkpoints.
- **Talking to Self** - May be praying fervently to themselves. This gives the appearance of talking or whispering to someone.

(b) **Appearance** - As the suicide bomber prepares to attack, there are certain clues in appearance than may alert you.

- **Inappropriate clothing** - Clothing that is too heavy for the weather or too large may be designed to conceal a device.
- **Grooming** - A beard may have been recently shaved and/or the hair cut short to disguise their appearance or as a cleansing ritual. There may be a noticeable difference in the skin color of the recently groomed areas.
- **Smell** - They may use herbal or floral scented water as part of the ritual preparing them for the attack.
- **Clenched Hand** - The detonating switch is often held in a clenched fist.
- **Excess Luggage** - Backpack, bag, briefcase or excess weight.

e. **Enemy Unmanned Aerial System (UAS):** The enemy may use various types of UAS as they were originally designed or they may modify them for additional purposes. Although the enemy may use any UAS for any purpose, certain platforms are more suited to certain tasks.

- Observation
- IED Emplacement
- Targeting
- Attack
- Propaganda
- Multiple



f. **Victim Operated (VOIED)**: A type of IED that is initiated by the actions of the victim or target. These devices rely on the target carrying out some form of action that will cause the device to function.

- Disturbance
- Pressure
- Pressure Release
- Tension/Pull
- Light
- Acoustic
- Magnetic
- Tension Release/Push



## 7. IED EMPLOYMENT TECHNIQUES.

a. **Encasements:** are objects used to hide or camouflage one or more IED components. IEDs can be hidden or molded into an encasement of some kind, such as concrete or foam. Typical encasements include cinder blocks (either behind within), piles of rock or sand (providing a directional blast) and carcasses (animal and human).



b. **Hoax IEDs:** An IED incident that involves a device fabricated to look like an IED and is intended to simulate one in order to elicit a response.

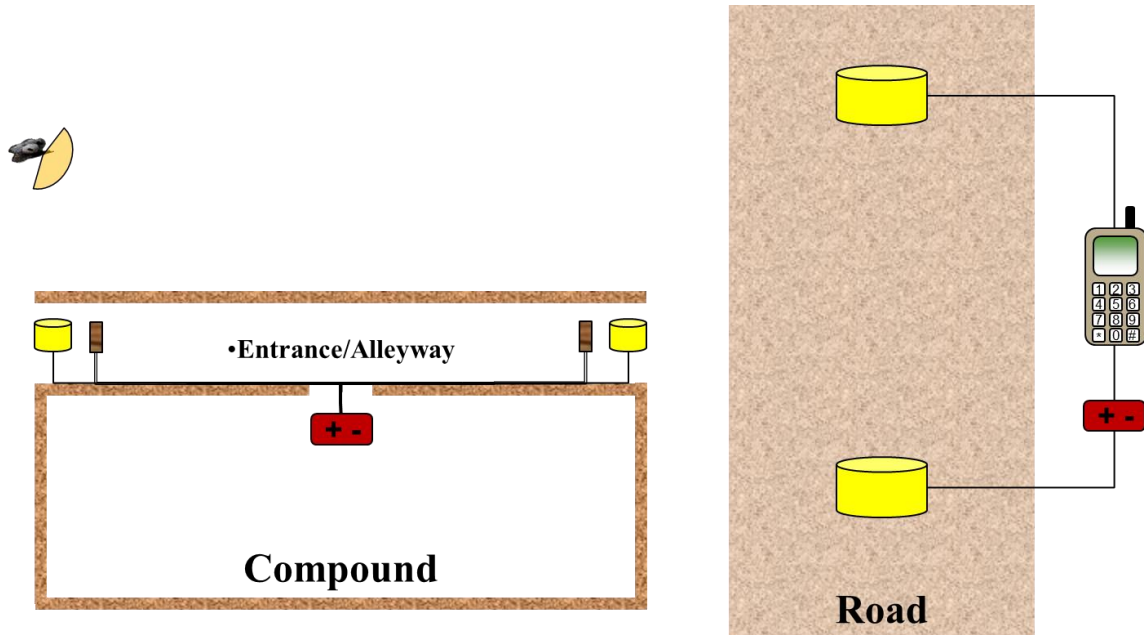
(1) Enemy forces may also use/force local nationals to initiate a false report of a found IED in order to draw coalition forces into an ambush or to evaluate response times and TTPs.

(2) Used to observe coalition TTPs, delay or harass convoys, or to place the convoy in a kill zone and can be incorporated into a coordinated or complex attack.



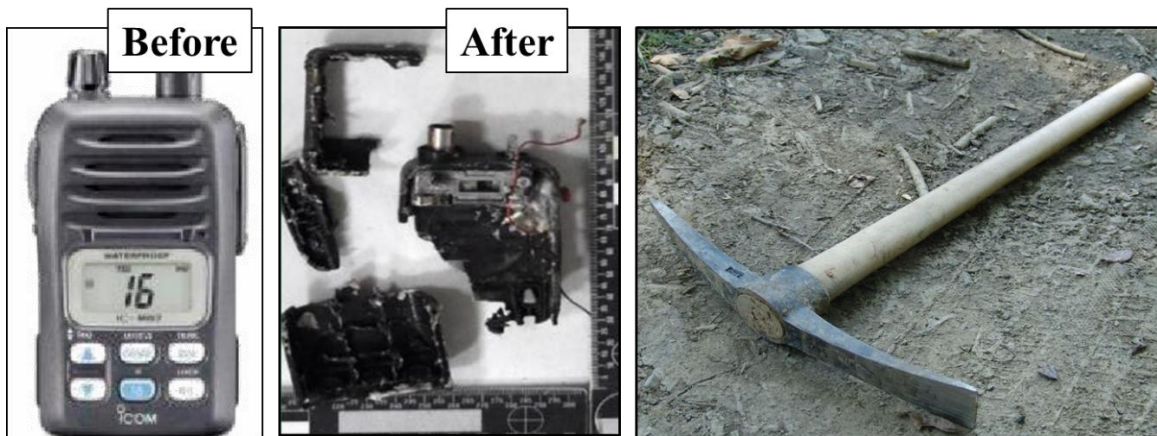
c. **Offset Employment Technique:** An IED emplacement where some components are not co-located with the other components.

Below are two different variations diagrams of power supply and switch located away from charges to help avoid detection.



d. **Trojan Horse:** An IED designed to look like a benign object the victim believes is safe to handle. Devices may include:

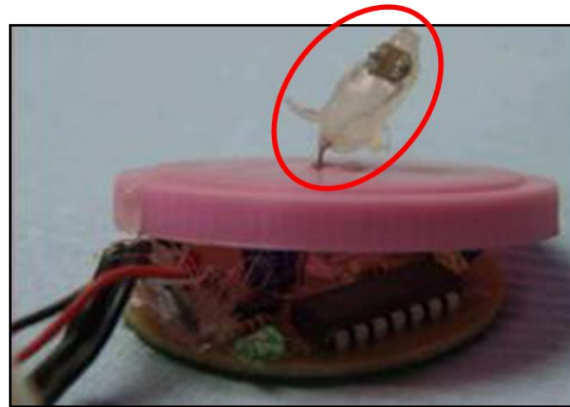
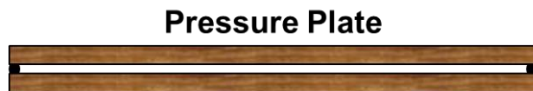
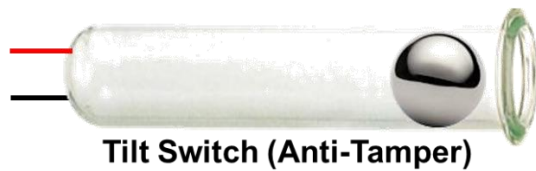
- Discarded coalition or ANSF military equipment or radios.
- Digging equipment.
- Detonations have occurred inside armored vehicles and FOBs.



e. **Anti-Tamper Devices:** An IED designed to initiate the device upon manipulation.. Devices may include:

- Tilt Switch.

- Light Dependent Resistor.
- Detonations occur immediately when the device is manipulated.



f. **Magnetically Attached IED (MAIED):** The enemy may attach a device to your vehicle using magnets or other sticky substance and detonate it later using a time switch or, more commonly, a radio controlled switch. They may employ crowds or benign looking individuals such as children to camouflage their approach to the vehicle. If a MAIED is possible:

- Do not turn off your Counter Radio-Controlled Electronic Warfare (CREW) equipment.
- Halt when tactically feasible and inspect the vehicle. Ensure your vehicle is inspected prior to entering friendly lines.
- Conduct the 5-Cs and report.



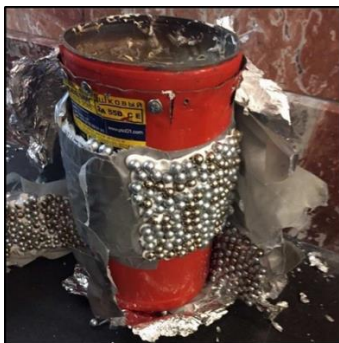
g. **Multiple / Secondary Devices:** It is common for the enemy to emplace multiple devices in the same area to increase the likelihood of a successful attack. These additional devices also serve as secondary devices to continue the attack in the aftermath of the first detonation as forces perform immediate actions.



- Targets likely friendly positions.
- Targets First Responders.
- Where there is one IED, assume there are more!



h. **IED Enhancements:** An optional additional component deliberately added as opposed to a secondary hazard that modifies the effects of the IED. Causes a different, measurable effect through the addition of fuel, fragmentation material or other dangerous substances, such as radioactive materials, chemicals, etc.



**Fragmentation**



**Chemical / Chlorine**



i. **Main Charge Configuration:** Changing the shape, size, or configuration of the main charge to produce a desired effect.



## •Directional Fragmentation Charge (DFC)



## •Explosively Formed Projectile (EFP)



### 8. IED DETECTION.

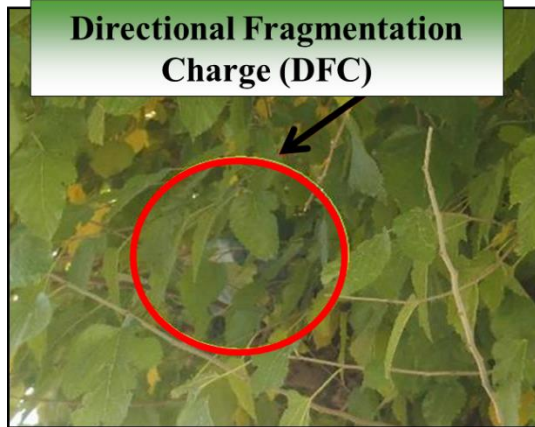
a. **Location Selection:** The enemy may emplace IEDs anywhere that enough space exists or can be created to hide or disguise the IED.

(1) **The enemy does not randomly emplace IEDs.** After observing friendly forces, locations are selected to increase the likelihood of a successful attack. Locations are selected in order to:

- **Exploit Friendly Patterns** - Typically located to exploit known friendly patterns, such as main/alternate supply routes.
- **Exploit Friendly Vulnerabilities** - May be employed to take advantage of vulnerabilities such as attacking gunners in turrets, or soft sides/underbellies of unprotected vehicles
- **Exploit Danger Areas** - May be employed in danger areas such as choke points and previous IED sites.

#### b. **Common IED Locations:**

(1) **ELEVATED** - trees, light posts, signs, overpasses, and bridges.



(2) **PREVIOUS IED SITES** - Attempt to repeat past successes. Used to exploit known patterns and ease of emplacement.



**Previous IED Sites**

(3) **PREDICTABLE ROUTES** - Common patrol routes (patterns). High probability of success due to large amount of traffic and multiple targets. Roads leading to forward operating bases (FOBs).



**Predictable Routes**

(4) **BOUNDARY TURNAROUND POINTS** - The boundary area between adjacent units where patrols typically turn around. In short, a pattern of stopping a patrol and turning around has been established.



**Boundary Turnaround Points**

(5) **CHOKER POINTS/SHARP TURNS/BLIND SPOTS** - Natural obstacles canalize friendly forces. These areas have reduced forward visibility on approach and are prime ambush locations.



**Choke Points  
Sharp Turns & Blind Spots**

(6) **BRIDGES & CULVERTS** - Used for ease of concealment (little to no digging required). Provides ability to emplace large amounts of explosives directly beneath the targeted vehicle and metal detectors are not as effective.



**Bridges & Culverts**

(7) **CANALS & STREAMBEDS** - Forces have to slow down to negotiate the terrain. Limited visibility on the approach. Natural obstacles canalize the unit when crossing the area.



**Canals & Streambeds**

(8) **UNATTENDED VEHICLES** - Employed the same as other IEDs; however, uses the vehicle as a concealment container. Has the capability of containing a much larger main charge.



**Unattended Vehicles**

(9) **ABANDONED BUILDINGS OR STRUCTURES** - Exploit friendly patterns, using same abandoned structure as harbor site/hide/patrol base. Some buildings may have charges that have been rigged for years.



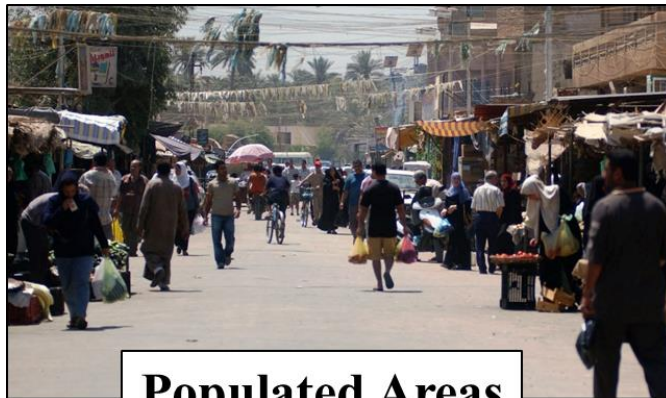
**Abandoned Buildings**

(10) **GOVERNMENT INFRASTRUCTURE** - Police stations, government buildings, or public utilities. A symbolic attack in an attempt to demonstrate the host nation's inability to protect vital resources.



**Government Infrastructure**

(11) **POPULATED AREAS** - Targeted with IEDs to induce panic and fear in the population as well as reduce confidence in host nation and friendly forces.



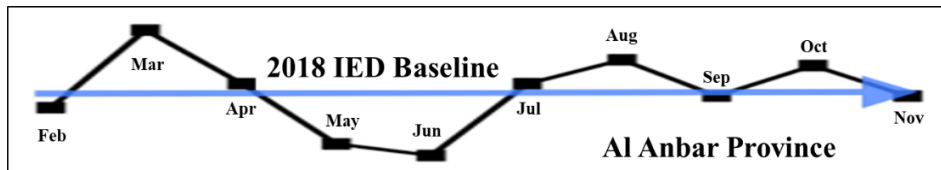
**Populated Areas**

c. **Baseline Indicators:** - There are numerous indicators of IEDs and means to detect them; however, the best means of detection is to maintain situational awareness and detect changes in the baseline.

(9) **BASELINE** - A basis for comparison which is established by repetitious observations over time and determining the established norms of human nature, natural/manmade surroundings, environmental patterns and animal behaviors.

(a) **Everything has a baseline**, including cultures, neighborhoods and environments.

(b) **Once a baseline is established,** vigilant observation for subtle changes in the baseline can increase the likelihood of IED detection.



d. **Changes in the Baseline:**

(1) **Personnel** - Unusual behavior patterns or changes in the community's normal routine, such as noticeably fewer people in a normally busy area, open windows or the absence of women and/or children.

(2) **Vehicles** - Unusual vehicular patterns, such as the presence of vehicles where there typically are not any, the absence of vehicles in an area that usually has vehicles present, vehicles following or driving through convoys when not authorized, etc.



(3) **Surveillance** - People taking pictures or videotaping ordinary activities or military actions. The enemy often documents their activities for recruitment, training tools, or financial gain.



**Surveillance Pictures**

(4) **Minefield Markers** - Red side faces the minefield, white side faces away. This is an internationally recognized standard for minefield marking. Minefield markers may be manipulated by enemy forces to direct friendly forces into explosive hazards.



(5) **Absence of the Normal / Presence of the Abnormal** - Anything that should normally be there but is not, or is normally not there but is now may indicate a dangerous situation or enemy activity. These determinations may be based on your previous observations of the area or societal norms for similar situations.



(6) **Ground Sign Awareness** - Identifying ground signs left behind by the enemy will enhance your ability to detect IEDs.

(a) **Disturbance** - When an IED has been emplaced by digging in the area, it causes a disturbance to the natural pattern of the earth. When the disturbance occurs, there are usually noticeable signs existing in the texture of the ground and soil near the IED emplacement; the site will not match with its surrounding area. The soil over the IED may reveal a small mound over the location.





(b) **Discardables** - Items the enemy may intentionally or unintentionally leave behind at the emplacement site of an IED. The enemy may leave behind metal fragments or expended brass in order to confuse sweepers and give false hits with the metal detector. The enemy has been known to leave "souvenir" type items that may be connected to an anti-tamper device. Items left behind include helmets, rifle magazines, weapons, and ammunition cans.



(c) **Color Change** - When the enemy emplaces an IED in the ground, the soil from the hole may differ in color from the surrounding area due to the difference in moisture content below the surface. Enemy forces have been known to pour water or urinate on the top of IED holes in order to pack soil back into the hole. Certain chemicals contained in Homemade Explosives (HME) can leak from their containers causing a discoloration in the surrounding soil and vegetation.



(d) **Degree of Regularity** - How regular or irregular something looks against its surroundings. Straight lines rarely exist in nature. When the enemy tries to conceal an IED some things appear out of place compared to nature's emplacement of soil, rocks, and vegetation. When the enemy buries or tries to conceal command wire, pull lines, or trip lines there is often a distinct line that would not naturally occur on the surface of the ground.



(e) **Flattening** - Flattening is the general leveling or depression caused by pressure on an area, such as boot prints on grass, where someone has sat down, etc., and is identified through a comparison with the immediate surroundings. Flattening occurs after a hole is filled. Air trapped between particles of dirt escapes over time and the top of the filled area collapses to an area lower than that of the surrounding area.



(f) **Transference** - Transference occurs when the IED emplacer takes soil, or any other material, from one area to conceal the IED at a separate location. Often times the transferred material will not naturally blend with the surrounding area. Examples of transference can be large rocks where only small rocks have been observed, dead brush in an area

with green vegetation, or large dirt clods in an area where there is only moon dust.



(g) **Markers** - The enemy frequently uses markers for multiple purposes. Some may be used to warn locals about the presence of IEDs along a certain path or route while other may be used as aiming stakes. Examples of aiming stakes may be discarded engineer stakes, telephone poles, corners of compound walls, or stacked rocks. The enemy has also been known to mark safe or unsafe routes, depending on the area, with a line of rocks across the road. Other examples of indicators may include painted rocks, discarded chemical lights, or out of place branches.



(7) **Observation** - The goal is to derive as much detailed information from the natural environment (baseline) as possible and be able to detect individual disturbances. This involves knowing the natural setting (baseline), interpreting the unusual, and identifying the unknown. Before any procedures can be performed in response to an IED it must first be detected. As the enemy improves construction and camouflaging techniques finding IEDs becomes more difficult. This is an important task requiring advanced techniques. Note that you are looking for target indicators, not the IED as a whole. Such indicators are the clues you use to construct the entire picture, and the actual device.



(a) **Patience** - To successfully find a device, be patient and do not rush; rushing may cause you to miss visual cues.

(b) **Combination** - Look for a combination of outline (shape), contrast in color, texture, and shine. Concentrate on what you know to be likely emplacement areas.



(c) **Components** - Look for the smaller parts of an object instead of the whole object. Generally, the whole object is not visible. By concentrating on detecting components, the chances of finding the object increases. If you program your mind to look for the IED as a whole it will automatically filter out the numerous smaller clues, indicators, and components that could lead to the discovery of a device. You must become familiar with components and indicators and consciously search for those items.



(d) **Look Beyond** - Use optics to burn through vegetation / windows to see beyond what is obscuring your field of view.

(e) **Shadows** - Use optics to look deep into shadows to identify objects.

(f) **Angles** - If possible, attempt to view the suspected object from multiple angles.

(g) **Optics** - Use optics to maintain as much standoff as tactically possible. Be aware that areas that provide obvious cover and concealment are a good location for secondary devices.



e. **Types of Searches:** There are three types of visual searches performed (Hasty, Deliberate, Detailed) progressing from the fastest and easiest to the most time consuming and difficult.

(1) **Hasty Search** - This is a continuous, naked-eye, scan around the general area looking for any immediate enemy threat. Start at the nearest terrain feature that could conceal a threat and continue checking likely emplacement/trigger positions out to maximum visual range. Concentrate on specific points throughout the area. Using the naked-eye allows the observer to cover a large area in a short period of time. The focus should be on detecting variations in the established baseline.

(2) **Deliberate Search** - Follow the same procedures used in the hasty search, this time incorporating the ACOG/RCO. The only significant difference is that during the hasty search your vision jumps from likely position to likely position, but with the use of optics, you pause at each position long enough to process the complete image. Look for small components of a concealed object, roughly grapefruit sized. Employment requires pointing the weapon system at the observation area.

(3) **Detailed Search** - The detailed search is the most thorough technique, takes the most time, and uses the most powerful optics at your disposal. Again check the likely areas that were covered during the hasty and deliberate searches, spending time studying each, in case something was missed. Then start a systematic search of the area starting with the terrain closest to the observer. When time is available, detailed scans are conducted even if no baseline variations are detected in order to ensure that possible indicators are not missed.

f. **Enemy Unmanned Aircraft System Detection (UAS):**

(1) **Enemy UAS Detection** - Detection of enemy UAS is important to mitigate any benefit the enemy may gain from their use.

(2) **Intelligence** - All hands must be briefed on the trend of the enemy's use of UAS including location, and description of the UAS as well as potential future use.



(3) **Guardian Angel** - Assigned members of a patrol.

(a) **Purpose** - The Guardian Angels are dedicated to force protection and security, to include searching the sky. Observation methods are; Vertical Scan, Horizontal Scan, and Overlapping Sectors.



9. **REACT TO AN UNEXPLODED IED.**

a. **Fundamentals of Defeat the Device:**

- (1) **Predict** - Forecast specific enemy operations & TTPs
- (2) **Detect** - Identify and locate the enemy & IEDs
- (3) **Prevent** - Disrupt and defeat the IED chain of events
- (4) **Avoid** - Keep forces from being attacked by IEDs
- (5) **Neutralize** - Destruction or reduction of enemy personnel, explosive devices, or supplies
- (6) **Protect** - Decrease the effectiveness of IEDs and improve survivability
- (7) **Exploit** - Scenes, events, and associated physical materials are recorded and analyzed

b. **Offensive Mindset:**

- (1) **Situational Awareness** - Avoid IEDs by maintaining situational awareness in order to detect variations in the baseline. Think like the enemy and ensure you are seeing the situation from the enemy's point of view.
- (2) **Understand the Threat** - Keep up to date on intelligence to ensure you understand the current threat to include enemy TTPs.

(3) **Use Enablers** - Understand and use C-IED enablers to detect and avoid IEDs as well as mitigate their effects.



**c. Actions at Halts:**

(1) If a patrol or convoy must stop during movement; avoid clustering vehicles, vary the vehicle interval between elements, establish your own local security, and employ techniques to create standoff.

(2) If stopping for any length of time; improve your position constantly, make detailed searches, and consider contingencies for the site you are occupying. Maintain an aggressive security posture and have a plan for dealing with civilian traffic. Make sure you do not present a soft target for a SVBIED/PBIED.



(3) **Rolling Stop** - Communicate that you are stopping the vehicle. All Marines/Sailors look for suspicious objects prior to stopping, use optics where available. Once a safe spot is identified the vehicle is brought to a halt.





(4) **5 & 25 Meter Check**

(a) **Mounted** - At every halt, no matter how short the duration, the vehicle crew must conduct visual 5&25 meter checks. This begins during the rolling stop to avoid stopping on top of an IED.

(b) **Dismounted** - 5&25 meter checks should be conducted whenever the movement has to be stopped for significant periods of time and the tactical situation requires security outside the vehicles. Sweep visually/mechanically from near to far to emplace security.

(c) **5 Meter Check Procedure**

- **1** - All crew members visually check the area 5 meters around vehicles, from inside the vehicle.
  - Look for disturbed earth, suspicious objects, loose bricks in walls, or anything out of the ordinary (Markers and Indicators).
  - Search everything you can from inside the vehicle before opening the door to take advantage of the protection offered by the vehicle's armor.
- **2** - Driver and Gunner should remain inside as it may be required to employ the vehicle.
- **3** - Dismounts exit the vehicle one at a time by looking where they will place their feet.
- **4** - After exiting the vehicle, close the door; this reduces the chance of the vehicle occupants being subject to an IED blast or sniper fire.
- **5** - Check under the vehicle to ensure that it is not stopped on top of an IED. Once the underside

of the vehicle has been cleared, the dismount communicates with the gunner to deploy the second dismount.

- **6** - Once both dismounts have checked under the vehicle, confirmation is passed through the gunner and they visually clear a path out to 5 meters then tactically move to a position 5 meters away from the vehicle.
  - Dismounts should maintain communication with the gunner to coordinate security.
  - Do not become so focused on the 5 meter check that 360° security is neglected.
  - Dismounts will then move tactically around the vehicle.
  - Start searching at ground level and continue up above head height.
  - Check quickly and be systematic.
  - Dismounts will continue sweeping around the vehicle.



**(d) 25 Meter Check Procedure**

- **1** - Visually clear a path out to 25 meters then move tactically to 25 meters away from vehicle.
- **2** - Dismounts will again move tactically around the vehicle, searching towards the vehicle, in an attempt to see a device from the back - generally exposed - side.
- **3** - Dismounts will continue sweeping around the vehicle until they reach their own start-point.
- **4** - Once the 25 meter check is performed there are a number of options available to the dismounts based on the unit SOP, the mission, the environment and the threat situation.
  - Perform a more detailed search of the same area.

- Expand the search radius.
- Find a covered and concealed over-watch position to provide security for the vehicle. Ensure 5&25 meter checks are performed at the selected position--IEDs are sometimes emplaced at likely positions of over-watch.
- Re-mount the vehicle.

d. **Actions on Contact:**

(1) Every IED, detonated or not, should be treated as an enemy attack. Contingency plans and rehearsals are key to concluding the contact.

(2) Every IED site should be treated as an ambush site. By finding the IED, the enemy's primary attack may have been disrupted; however you must be aware of other possible attacks, such as Rocket Propelled Grenades (RPGs), small arms fire, mortars and secondary IEDs.

(3) If an IED is found before it detonates, it must be treated like it will detonate at any moment. The enemy may be waiting for forces to gather around the device before initiating it.

(4) If an IED is detonated, it may be used to draw in first responders and spectators in order to conduct another IED attack.

(5) If an IED is found, or detonated, conduct the 5-Cs.

(a) **Conduct the Five C's:** May be conducted in any order.

- **CONFIRM** the presence of a suspected IED.
- **CLEAR** all personnel to a safe tactical position.
- **CORDON** the area to prevent anyone entering.
- **CHECK** the surrounding area for secondary devices.
- **CONTROL** the area to ensure authorized personnel, such as EOD, have access.

e. **Actions on a Find:** If an IED cache, HME lab or other life threatening find is discovered, conduct the following immediate actions.

- Inform all members of the search team/squad of the discovery.
- Do not touch any suspected components, chemicals, or HME.
- Stop all search activities.
- Place a red marker in the vicinity of the find (do not move further into the area in order to place a marker).
- Exit the area. Retrace the entry route on the way out.
- Account for all search personnel and inform the cordon commander.
- Evacuate all personnel, military and civilian, from the area if necessary.
- Execute the 5-Cs.
- Notify HHQ / EOD and do not re-enter.

f. **Potential Suicide Attacker:** Conduct immediate action when a potential suicide attacker is identified.

- Alert - Alert all personnel using 3-Ds (distance, direction, and description).
- Seek Cover - if available, seek cover in a tactically safe position.
- EOF - Escalate force in accordance with the Rules of Engagement (ROE) to prevent suicide attacker from approaching.
- Report to HHQ.



g. **Actions for Enemy Unmanned Aerial System (UAS):** Any UAS not positively identified as friendly, must be assumed to be a threat. Reactions to enemy activity, including use of UAS for surveillance, reconnaissance, and attack must be covered in the ROE.

- Alert all hands in the event of an enemy UAS detection.
- If an enemy UAS is overhead, consider your position already compromised.

- Take actions to minimize exposure. Use camouflage, cover, concealment, and hardening techniques.
- Due to the limited range of most enemy UAS, the presence of the UAS indicates the enemy is likely nearby and may be a precursor to an attack.
- Repel the enemy's assault in accordance with the ROE.
- Reorganize and relocating as necessary.
- Report as required.

h. **Crossing a Danger Area:** There are additional C-IED considerations that need to be planned for when crossing a danger area in an IED operational area.

(1) Route Selection - Choose a route that is not well used. Look at the situation from the enemy's perspective.

(2) C-IED Enablers - Use all available enablers to look at the route to ensure it is free of IEDs prior to use. (Metal Detectors, etc.)

(3) Formations - Select the appropriate formation to cross a danger area with potential IEDs:

- V-Sweep
- Box Recon
- Column
- Bounding Over-watch
- Satellite Patrolling

## 10. REACT TO AN IED ATTACK.

a. **Casualty Evacuation:** Immediate actions are as follows;

(1) **Security** - Suppress/eliminate hostile fire.

(2) **Sweep to/from casualty** - Do not rush immediately to the casualty. Use available C-IED enablers to sweep a safe route to the casualty.

(3) **Casualty Collection Point (CCP)** - If the casualty is going to be moved to a casualty collection point, select an appropriate location, sweep and secure the CCP.

(4) **Landing Zone (LZ)** - If the casualty is going to be evacuated by air, select an appropriate LZ. Sweep the LZ to

ensure it is clear of IEDs. Inbound helicopters will alert the enemy. Provide security of the LZ during the evacuation operation.



b. **Vehicle Recovery:** Immediate actions are as follows;

(1) **Security** - Suppress/eliminate hostile fire.

(2) **Notify HHQ and/or EOD** - If vehicle is disabled due to IED attack, there are several courses of action which may be taken depending upon HHQ direction (self-recover, await recovery team, destroy/abandon vehicle to continue mission, etc.).

(3) **Sweep to/around vehicle** - Sweep enough area around the vehicle to allow safe recovery operations.

(4) **Conduct 5 - C's** - If additional IEDs are confirmed, cease recovery operations and notify HHQ/EOD. Continue as directed by HHQ.



c. **Confirmation Devices and Techniques:** There are many different enablers available in order to assist in confirmation. Always attempt to confirm the presence of an IED using as much standoff as possible.

(1) **UAS** - Provide the ability to observe areas out of normal view and beyond obstacles while remaining in a tactically safe position.

(2) **Optics** - Binoculars, thermals, night vision goggles from various angles from a tactically safe position.

(3) **Robots** - Assigned to EOD units.

(4) **Military Working Dogs (MWD)** - Can request MWD support from outside agencies such as Law Enforcement (LE) battalion.

(5) **Holley Stick** - Long pole with a curved blade attached to one end.

(6) **Handheld Detector** - Assigned to EOD units.

d. **Holley Stick - (Explained):** A long (10' to 15'), lightweight, non-metallic pole with a curved blade on one end.

(1) **Purpose** - To assist in confirming or denying the presence of an IED.

(2) **Capabilities** - Provides limited standoff from the area being scraped which will typically place the operator under the blast wave of a buried charge if detonation should occur.

(3) **Limitations** - Employing the Holley Stick in an area with a high concentration of command pull switches or anti tamper switches may result in inadvertent detonations. Very fine wires (angel hair wire) are difficult to detect.





e. **IED Encounter Reporting:** A continuing/follow-on action.

(1) **NATO Casualty Evacuation (CASEVAC) 9 Line Report** - is the report format used when requesting a CASEVAC to extract wounded/injured personnel.

**LINE 1: Location**

**LINE 2: Call Sign**

**LINE 3: # of Patients by Type (Urgent 1hr / Priority 4hr / Routine 24 hr)**

**LINE 4: Special Equipment (None / Hoist/Winch / Extraction)**

**LINE 5: # of Patients / Type (Litter / Ambulatory / Escort Woman/Child)**

**LINE 6: Security at HLZ (No Enemy / Security Force / Escort Req.)**

**LINE 7: HLZ Marking Method (Panels / Pyro / Smoke / None / Other)**

**LINE 8: Nationality/Status (Coalition Forces / Coalition Civilians / Other)**

**LINE 9: MIST Report (Mechanism / Injury / Symptoms / Treatment)**

(2) **EO Incident 10 Line Report** - is the report format used when an IED is discovered or detonated.



**LINE 1: Date-time group (DTG)**  
**LINE 2: Reporting unit**  
**LINE 3: Type and Description of Explosive Ordnance (UXO/IED)**  
**LINE 4: Location of UXO/IED**  
**LINE 5: Location of link-up with requesting force**  
**LINE 6: Link-up / Communication method**  
**LINE 7: Tactical situation**  
**LINE 8: Collateral damage or potential for collateral damage**  
**LINE 9: Protective actions taken**  
**Line 10: Recommended Priority**

(3) **Enemy UAS Spot Report (7-line)** - is the report format used when an Unmanned Aircraft System is discovered.

**LINE 1: Unit call sign and frequency**  
**LINE 2: Reporting unit location (grid)**  
**LINE 3: Location of UAS (grid or distance/direction from unit)**  
**LINE 4: Time UAS spotted / detected**  
**LINE 5: Estimated time on site**  
**LINE 6: Flight characteristics**  
- loitering in one spot (observing)  
- flying straight (direction)  
- flying randomly (searching)  
**LINE 7: Estimated size, elevation, physical description**  
**(FW/RW, wingspan, color, tail, height, payload, markings, number of propellers)**

## **SUMMARY**

During this lesson we have discussed definitions, IED components, initiation methods, employment and targets, indicators, IED locations, and operations. These skills should help you to safely and effectively react to an IED. Hone these skills so that they become second nature to you because any Marine from any MOS can find themselves exposed to IED threats. With the knowledge you received today, I am confident that you will be able to operate effectively in an IED environment. Please respond to the questions and make comments on your instructional rating forms, as appropriate. Once you are done, I will collect all of them.