Weapons Technical Intelligence (WTI) Improvised Explosive Device (IED) Lexicon

4th Edition
October 2012

DISTRIBUTION STATEMENT X. Distribution authorized to U.S. Government Agencies, their contractors (Deputy Secretary of Defense Memorandum dated April 2006, Policy on Discussion of IEDs and IED-Defeat Efforts in Open Sources, 20120907; FOIA Exemption 2 applies), state and local law enforcement, and partner nations (disclosure and release of this document is authorized to ISAF, GCTF, and NATO members). DoD Controlling Office is the Joint IED Defeat Organization, J5 Division. Provision of this information does not imply a commitment on the part of the United States government to furnish, transfer, or export information or equipment referred to herein.

Comments or requests for copies of the most current edition of the WTI IED Lexicon can be submitted to:
JIEDDOWTI@jieddo.mil

CONTENTS

As the Department of Defense confronts today's global improvised explosive device (IED) threat, we must also prepare for tomorrow's challenges by leveraging the wartime lessons learned at great cost since 2001.

Weapons Technical Intelligence (WTI) has evolved into a highly valuable capability against IEDs and threat networks, providing tactical, operational and strategic solutions for collecting, exploiting and analyzing IEDs. It produces vital and actionable intelligence to defeat IED networks.

Continued success requires a whole-of-government approach that includes our federal, state, local and international partners. We must use and maintain a common vocabulary in this highly specialized discipline. The WTI IED Lexicon Edition 4.0 will help us share information with all partners contributing to our joint success. Created by highly skilled experts who understand the IED threat and are devising countermeasures, this document is a key enabler that provides a logical structure and consistent definitions to categorize and describe IED material and events. The language and terms in this document reflect agreement among the Departments of Defense, Homeland Security, and Justice; and the North Atlantic Treaty Organization Allied Command Transformation.

Knowledge is our most valuable weapon in the fight against IEDs.

Michael T. Flynn
Lieutenant General, U.S. Army
Director, Defense Intelligence Agency

Michael D. Barbero
Lieutenant General, U.S. Army
Director, Joint IED Defeat Organization

INTRODUCTION

This publication, the Weapons Technical Intelligence (WTI) Improvised Explosive Device (IED) Lexicon, was produced by the WTI Working Group (WG), an interagency technical advisory forum commissioned by the Directors of the Joint Improvised Explosive Device Defeat Organization (JIEDDO) and the Defense Intelligence Agency (DIA). The lexicon was developed by Subject Matter Experts in coordination with representatives from the Department of Defense (DoD), the Department of Homeland Security (DHS), the Department of Justice (DoJ), North Atlantic Treaty Organization / Allied Command Transformation (NATO/ACT) as well as representatives from Allied nations.

INTRODUCTION (continued)

PURPOSE

The lexicon is intended to provide a coherent conceptual framework and an operational vocabulary to address the IED threat worldwide. It encompasses the broad spectrum of IED employment scenarios, the variety of IED devices, and their critical components.

Adoption of this lexicon will improve the collection, reporting, and exploitation of WTI IED information at the tactical, operational, and strategic levels. The lexicon will assist in:

- Standardizing terminology across IED reports and improving database content management;
- IED-related education and training; and
- Development of WTI IED policy and doctrine.

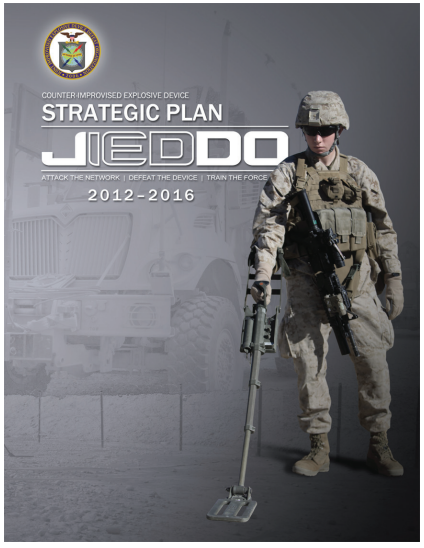
APPROACH

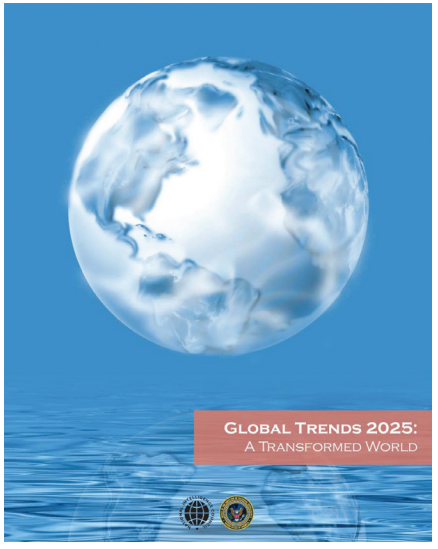
The WTI IED Lexicon is authored by technical experts from key organizations and agencies engaged in assessing the IED threat and devising operational IED countermeasures. It is a "living" document that is reviewed periodically to ensure accuracy, relevance, and currency against the ever-changing IED threat. Recommended changes and updates are accepted continually and will be considered during the review process. Updated editions of the lexicon will be submitted and approved by the interagency WTI WG which includes the intelligence, operational, and law enforcement communities. A record of all comments received and actions taken is maintained to provide an audit trail and reference for the review process.

SCOPE

The WTI IED Lexicon (Ed. 4.0) establishes the standard terminology as derived from common terms and definitions from the following lexicons: Improvised Explosive Devices; Commercial Explosives; Conventional Munitions; and, Homemade Explosives. The Lexicon (Ed. 4.0) addresses the methodology of exploiting IEDs, which leads to a better understanding of the networks of IED builders, facilitators, and emplacers.

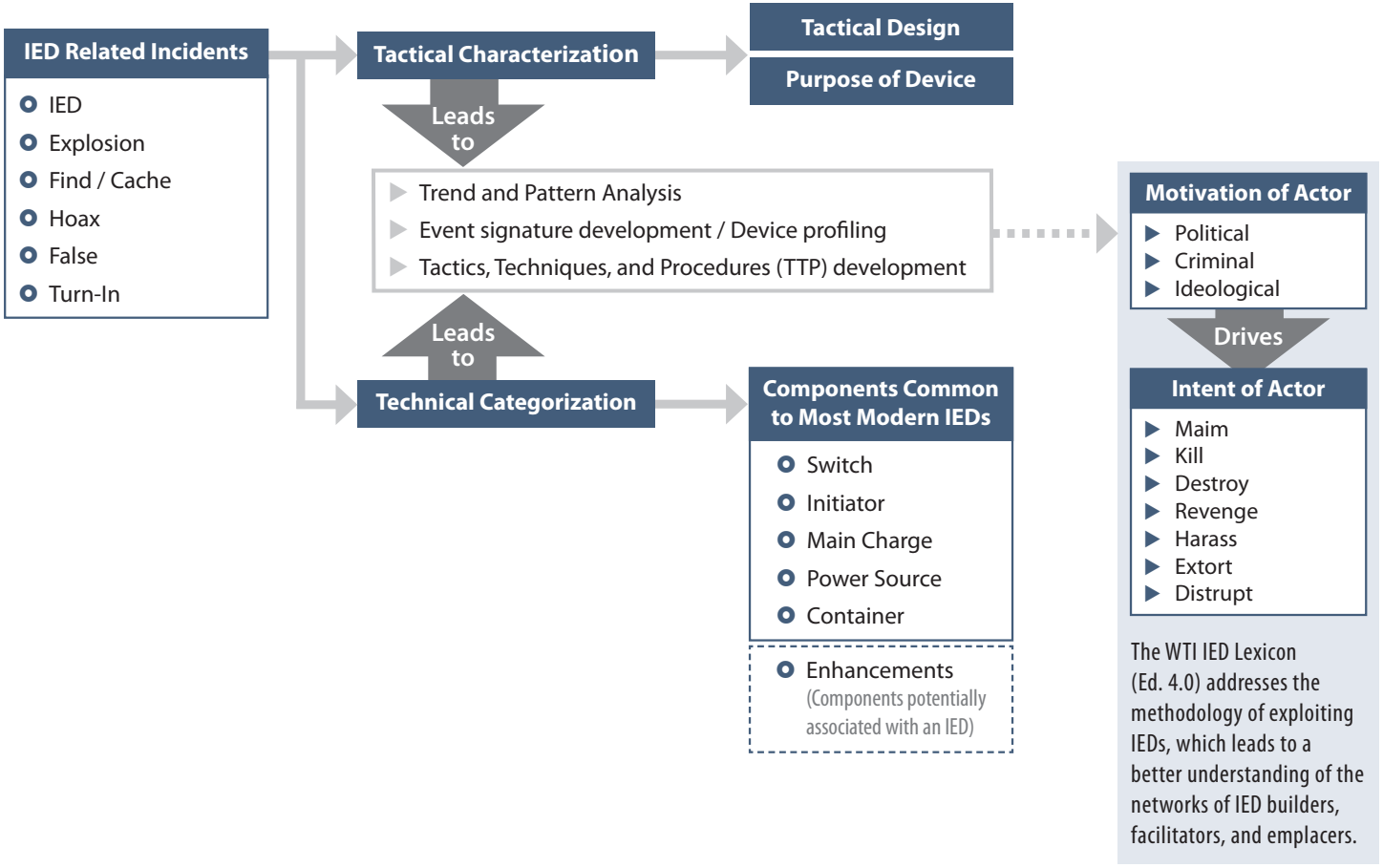
Comments or requests for copies (printed or electronic) of the most current edition of the WTI IED Lexicon can be submitted to: JIEDDOWTI@jieddo.mil





The IED Threat: Yesterday, Today and Tomorrow

WTI IED Lexicon: **CONSTRUCT**



The WTI IED Lexicon (Ed. 4.0) addresses the methodology of exploiting IEDs, which leads to a better understanding of the networks of IED builders, facilitators, and emplacers.

GENERAL TERMS

Improvised Explosive Device (IED)
A device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic or incendiary chemicals and designed to destroy, incapacitate, harass or distract. It may incorporate military stores, but is normally devised from non-military components. Refers to a type of IED incident that involves a complete functioning device.

Weapons Technical Intelligence (WTI)
Intelligence derived from the processes and capabilities that collect, exploit and analyze asymmetric threat weapons systems to enable material sourcing, support to prosecution, force protection and targeting of threat networks.

Associated Components
Components that are: 1) part of an IED or improvised weapon system; 2) the tools required to produce the components; or 3) precursors to the manufacture of IED components to include explosives.

Event Signature Development / Device Profiling
The process of analyzing the tactical and technical identifiers of an IED incident to support force protection, targeting, prosecution, and sourcing.

Explosion
A nuclear, chemical or physical process leading to the sudden release of energy.

Explosive Train
A succession of initiating and igniting elements arranged to cause a charge to function.

False
An IED related incident that is incorrectly identified though reported in good faith as an IED, which is subsequently categorized as a false alarm after positive Explosive Ordnance Disposal (EOD) action.

Find / Cache
An IED related incident that involves the discovery and/or recovery of an IED not yet emplaced or employed, IED components, and/or IED paraphernalia.

GENERAL TERMS (continued)

Force Protection
Preventive measures taken to mitigate hostile actions against Department of Defense personnel (to include family members), resources, facilities, and critical information.

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

IED Related Incidents
An event that involves one or more of the following IED-related actions / activities: IED, Explosion, Find / Cache, Turn-In, Hoax, or False.

Improvised Weapons
Weapons constructed in an improvised manner designed to destroy, incapacitate, harass or distract.

Sourcing
The process of determining the origination point (such as a production facility or person, a geographic location, or a specific country of origin) for IED components.

Support to Prosecution
The process of associating related people, places, devices, or equipment to an individual for evidentiary purposes in a recognized court of law.

Tactical Characterization
The manner in which an IED incident is planned and conducted (tactical design) and the intent (purpose of device).

Tactics, Techniques and Procedures Development
Using the lessons learned from an IED attack to refine and improve the tools and methods used during all missions in which an IED may be encountered (e.g. convoys, tactical suppression efforts, ISR, Counter-IED (C-IED) missions, etc.).

Targeting
The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities.

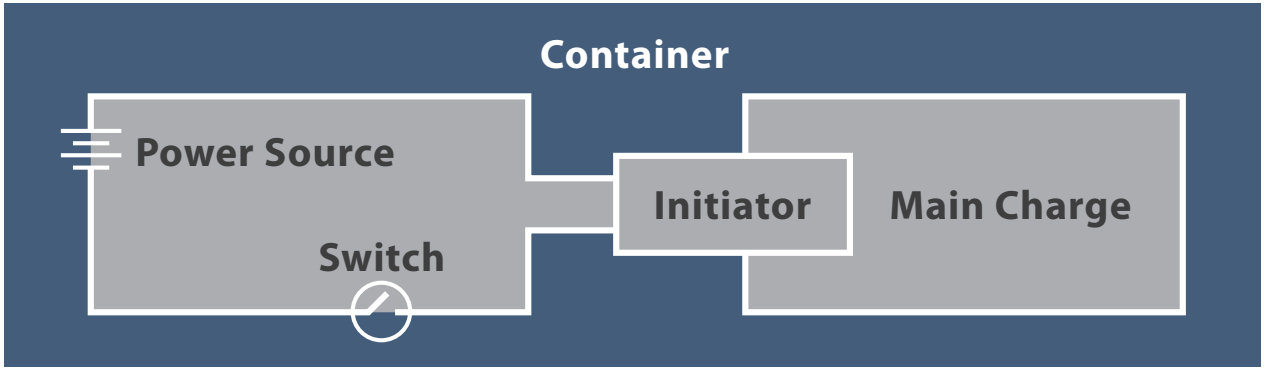
Technical Categorization
A description of an IED using a hierarchical construct to identify its key components. The components identified in this categorization are the elements from which technical and forensic information is recovered and exploited.

Trend and Pattern Analysis
Using prior actions and activities to identify trends in activities or behaviors. Once identified these patterns can be used to predict future enemy actions, and plan intelligence surveillance, reconnaissance (ISR) activities and training.

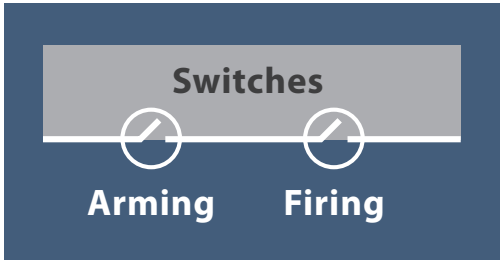
Turn-In
An IED related incident where an IED or component is turned over to friendly forces.

Photo 1 – Weapons / Component "*Turn-In*" in Afghanistan

The five components common to most modern IEDs.



Multiple switches are sometimes present and connected together



A booster is sometimes present in the IED explosive train

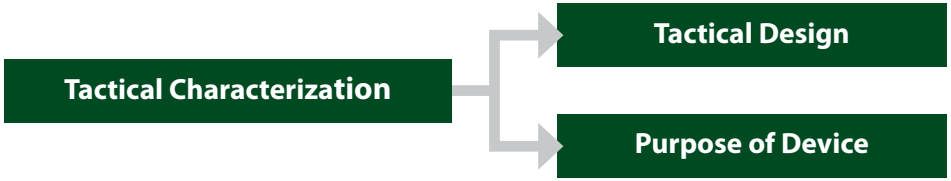
TWO aspects for understanding an IED incident:

1. TACTICAL CHARACTERIZATION
2. TECHNICAL CATEGORIZATION

Photo 2 – After effects of an IED attack in Mogadishu, Somalia

TACTICAL CHARACTERIZATION

The manner in which an IED incident is planned and conducted (tactical design) and the intent (purpose of device).



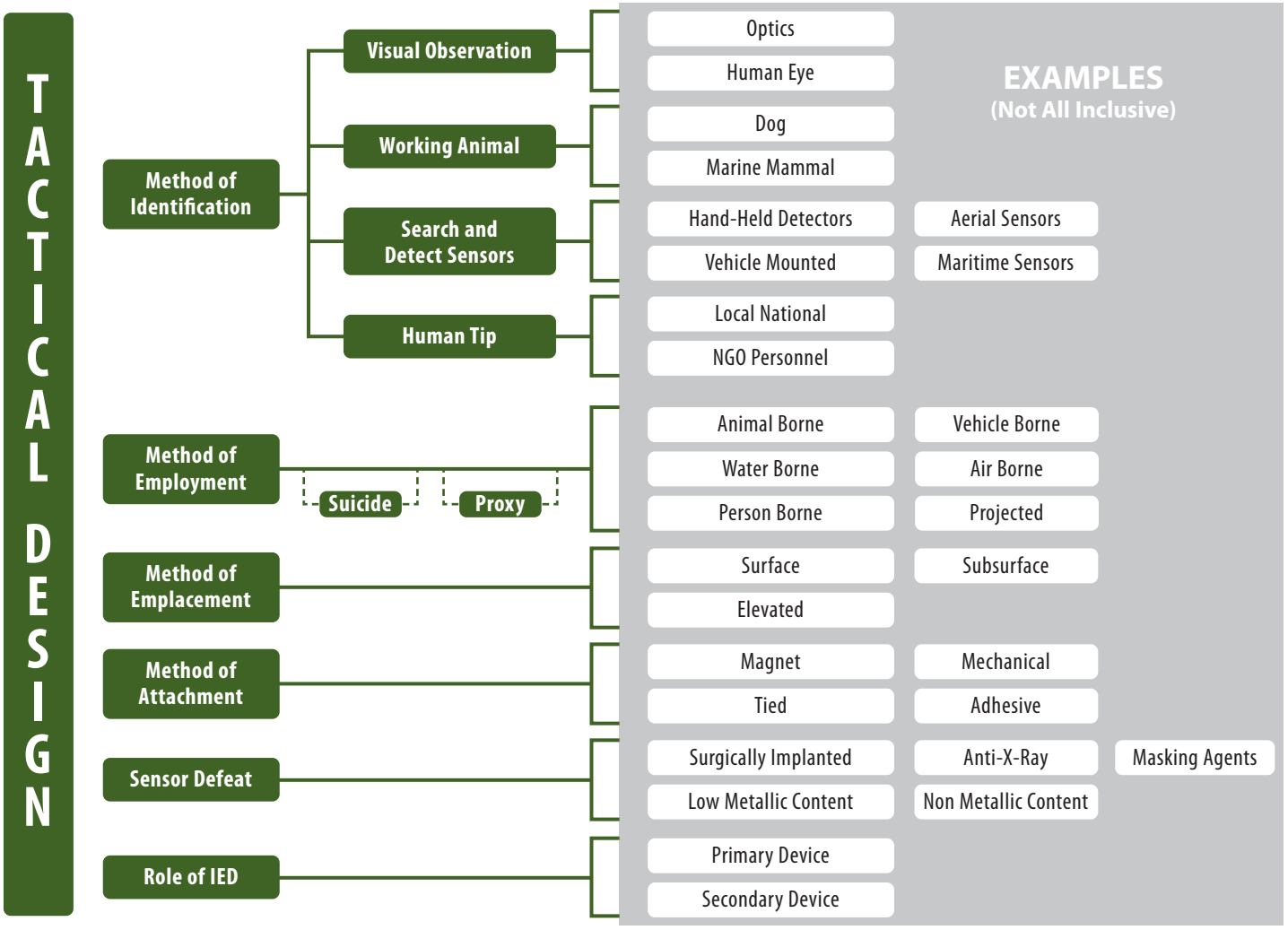
TACTICAL DESIGN

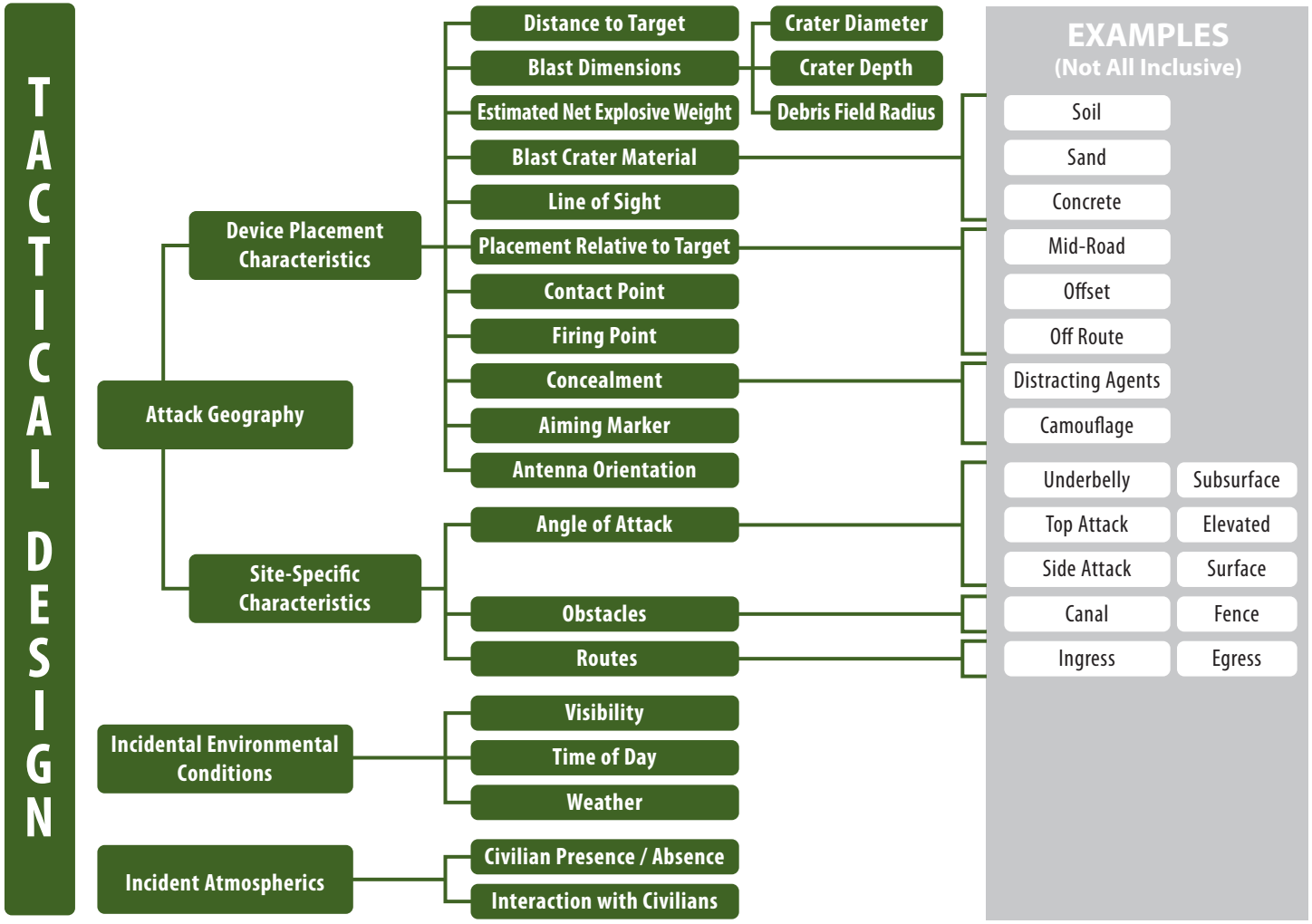
The specific design of an IED attack – including but not limited to: position of the IED, the type of IED, type of road segment used, concealment technique, use of secondary devices, the time of day, etc. Tactical design addresses the questions:

- Why here?
- Why now?
- Why in this way?

Terms used to describe a specific type of device or component of a device (e.g., VBIED) are often used to describe all or part of the tactical design.

- Method of Identification
- Method of Employment
- Method of Emplacement
- Method of Attachment
- Sensor Defeat
- Role of IED
- Attack Geography
- Incident Environmental Conditions
- Incident Atmospherics


TACTICAL DESIGN
Method of Identification
Visual Observation
Working Animal
Search and Detect Sensors
Human Tip
Method of Employment
Suicide
Proxy
Method of Emplacement
Method of Attachment
Sensor Defeat
Role of IED
EXAMPLES
(Not All Inclusive)
Optics
Human Eye
Dog
Marine Mammal
Hand-Held Detectors
Vehicle Mounted
Aerial Sensors
Maritime Sensors
Local National
NGO Personnel
Animal Borne
Water Borne
Person Borne
Vehicle Borne
Air Borne
Projected
Surface
Elevated
Subsurface
Magnet
Tied
Mechanical
Adhesive
Surgically Implanted
Low Metallic Content
Anti-X-Ray
Non Metallic Content
Masking Agents
Primary Device
Secondary Device


TACTICAL DESIGN
Attack Geography
Device Placement Characteristics
Site-Specific Characteristics
Incidental Environmental Conditions
Incident Atmospherics
Distance to Target
Blast Dimensions
Estimated Net Explosive Weight
Blast Crater Material
Line of Sight
Placement Relative to Target
Contact Point
Firing Point
Concealment
Aiming Marker
Antenna Orientation
Angle of Attack
Obstacles
Routes
Visibility
Time of Day
Weather
Civilian Presence / Absence
Interaction with Civilians
Crater Diameter
Crater Depth
Debris Field Radius
EXAMPLES
(Not All Inclusive)
Soil
Sand
Concrete
Mid-Road
Offset
Off Route
Distracting Agents
Camouflage
Underbelly
Subsurface
Top Attack
Elevated
Side Attack
Surface
Canal
Fence
Ingress
Egress

TACTICAL DESIGN

Air Borne IED (ABIED)
An IED delivered by or concealed in an air-based vehicle.

Animal Borne IED
An IED delivered to a target by means of an animal.

Attack Geography
A description of the road segment, buildings, foliage, etc. Understanding the geography indicates enemy use of landscape to channel tactical response, slow friendly movement, or prevent pursuit of enemy forces.

Elevated
IED emplaced above the surface: hanging from an overpass, on a roof, etc.

Emplacement
A description of where a device was placed to attack the intended target.

Estimated Net Explosive Weight
A reference to the estimated weight of the main charge derived from observations of the blast effects and crater characteristics.

Human Tip
Information provided in an advance and/or confidential manner regarding an IED, IED related materials, or associated personnel. This information can be received from, but not limited to, the local populace or government, intelligence agency, or an inside source.

Incident Atmospherics
A description of the demeanor of the civilian population at an IED event to include mood, absence or presence, changes in previously experienced interactions, etc.

Incident Environmental Conditions
A description of the ambient surrounding conditions to include weather conditions such as temperature, precipitation, fog, dust, etc.

Method of Employment
A description of how a device was delivered to the target.

Method of Identification
The manner in which a unit located a device, components or improvised weapon via visual observation, working animal, sensor, or human tip.

Person Borne IED (PBIED)
An IED worn, carried, or housed by a person, either willingly or unwillingly.

Primary Device
The first of two or more IEDs encountered or initiated. Subsequent devices will be marked in the order found.

Proxy
A person (unwitting or coerced) who acts as a means of delivery of an IED.

Role of IED
Identifying enemy use of IEDs as a primary, secondary, or subsequent form of attack.

Search and Detect Sensors
Equipment which detects, measures, may indicate and/or record objects and activities by means of energy or particles emitted, reflected, or modified by objects for the purpose of identifying IED activity.

Secondary Device
An additional IED used to attack individuals or vehicles after the initial event.

Sensor Defeat
Methods and technologies incorporated into the device construction and employment for the purpose of defeating detection or identification methods and friendly TTPs.

Photo 3 – Hamas female suicide bomber

Suicide
An IED initiated by the attacker at a time of their choosing in which they intentionally kill themself as part of the attack, or possibly to deny capture.

TACTICAL DESIGN (continued)

Underbelly
A type of IED attack in which the device is intended to target the underside of a vehicle.

Vehicle Borne IED (VBIED)
An IED delivered by or concealed in a ground-based vehicle.

Visual Observation
Attained or maintained by sight, done or executed by sight only and relating to, or employing visual aids.

Water Borne IED (WBIED)
An IED delivered by or concealed in a water-based vehicle.

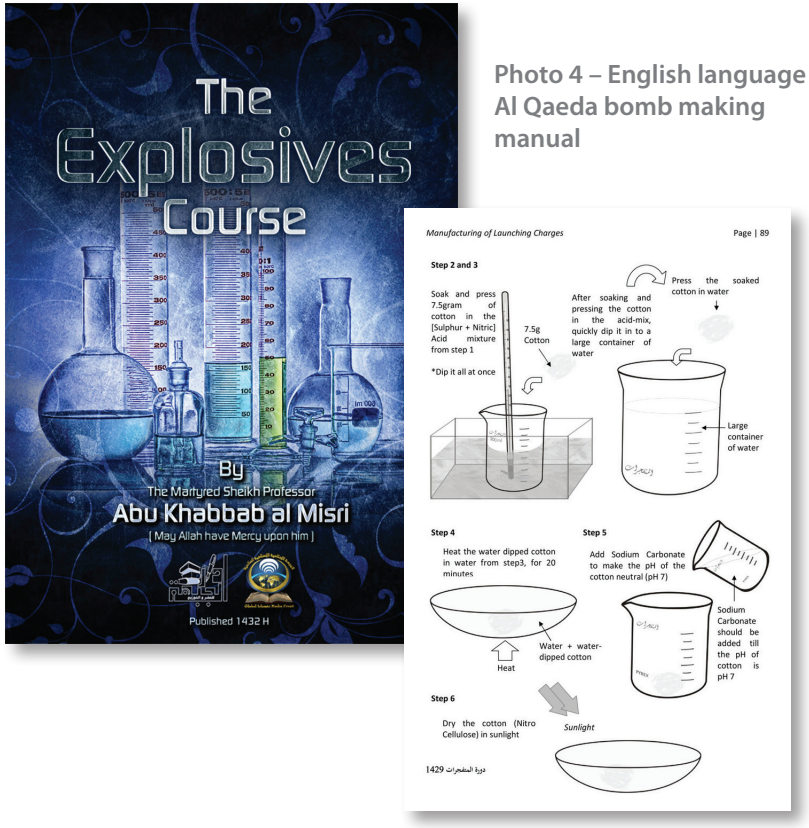
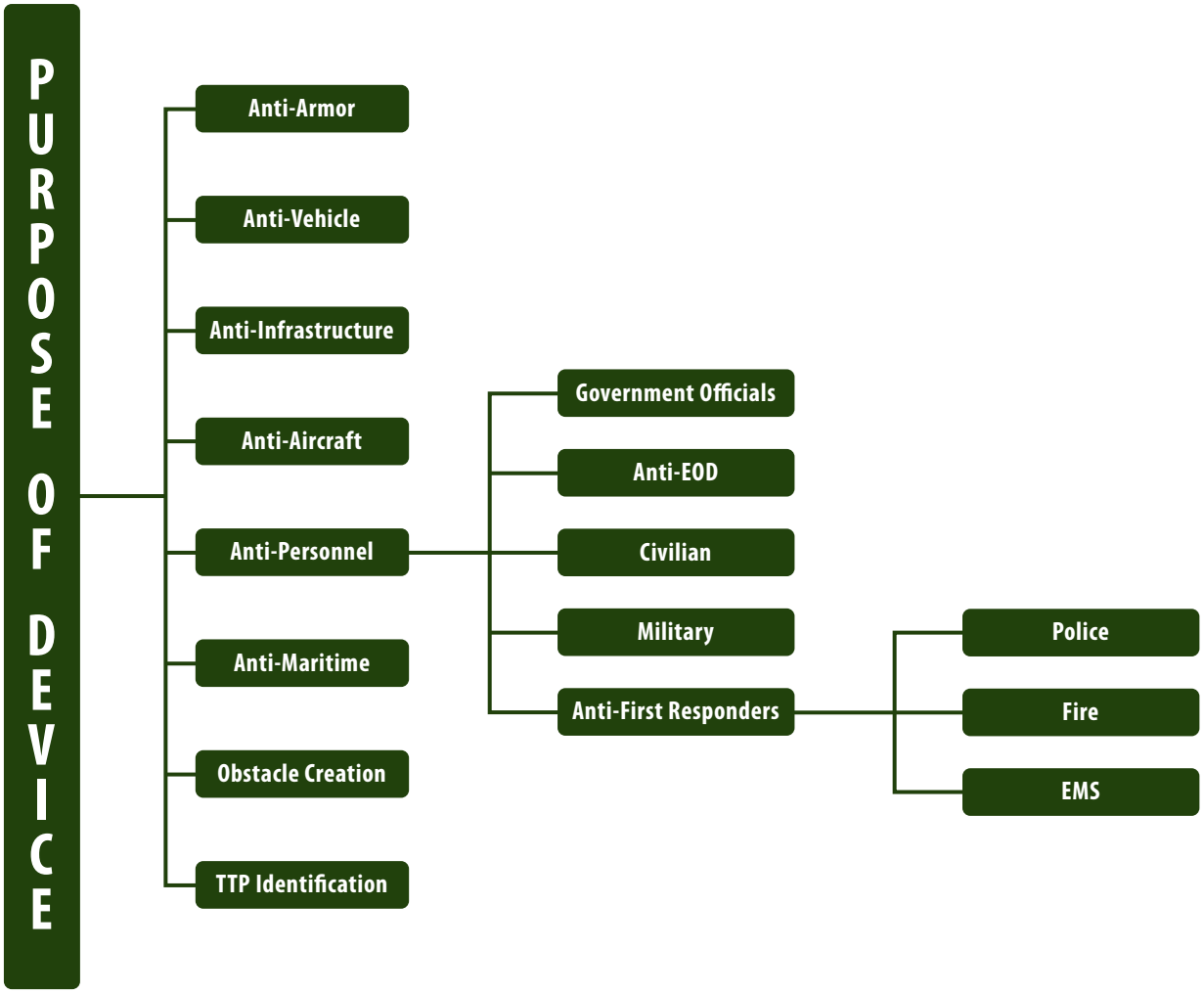


Photo 4 – English language Al Qaeda bomb making manual

PURPOSE OF DEVICE

The immediate or direct tactical effect of the IED.

- Method of Identification
- Anti-Armor
- Anti-Vehicle
- Anti-Infrastructure
- Anti-Aircraft
- Anti-Personnel
- Anti-Maritime
- Obstacle Creation
- TTP Identification


PURPOSE OF DEVICE
Anti-Armor
Anti-Vehicle
Anti-Infrastructure
Anti-Aircraft
Anti-Personnel
Anti-Maritime
Obstacle Creation
TTP Identification
Government Officials
Anti-EOD
Civilian
Military
Anti-First Responders
Police
Fire
EMS

PURPOSE OF DEVICE

Anti-Aircraft
An IED primarily intended to damage or destroy aircraft and/or their payload.

Anti-Armor
An IED that utilizes a directional explosive effect primarily intended to penetrate armored vehicles.

Anti-EOD
An IED primarily intended to kill or wound EOD personnel or to counter Render Safe Procedures.

Anti-First Responder
An IED primarily intended to kill or wound first responders such as police/law enforcement, medics, and firefighters.

Anti-Infrastructure
An IED primarily intended to damage or destroy physical infrastructure such as pipelines, communications towers, bridges, buildings, utility lines and/or facilities such as electrical transformers or water pump houses.

Anti-Maritime
An IED primarily intended to damage or destroy maritime vessels and/or their payload.

Anti-Personnel
An IED primarily intended to kill or wound people.

Anti-Vehicle
An IED primarily intended to damage or destroy vehicles – is not intended to penetrate a vehicle's armor.

Obstacle Creation
An IED primarily intended to create an obstacle to impede movement or channel movement into a desired location, possibly as part of a complex attack or ambush.

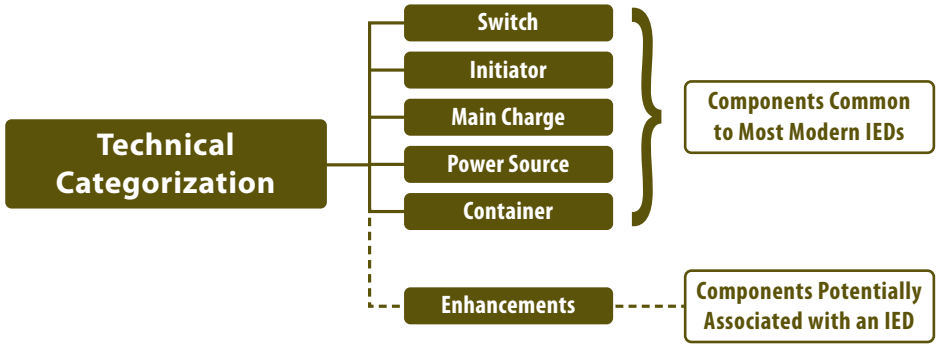
TTP Identification
An IED primarily intended to cause a reaction by forces in an effort to learn and understand employed tactics. This knowledge is then used by the attacker to plan new attacks incorporating the lessons learned to inflict additional casualties or to avoid countermeasures. The IED need not function to serve this purpose. A Hoax IED can have TTP Identification as its intended outcome.

TWO aspects for understanding an IED incident:

1. TACTICAL CHARACTERIZATION
2. TECHNICAL CATEGORIZATION

TECHNICAL CATEGORIZATION

A description of an IED using a hierarchical construct to identify its key components. The components identified in this categorization are the elements from which technical and forensic information is recovered and exploited.



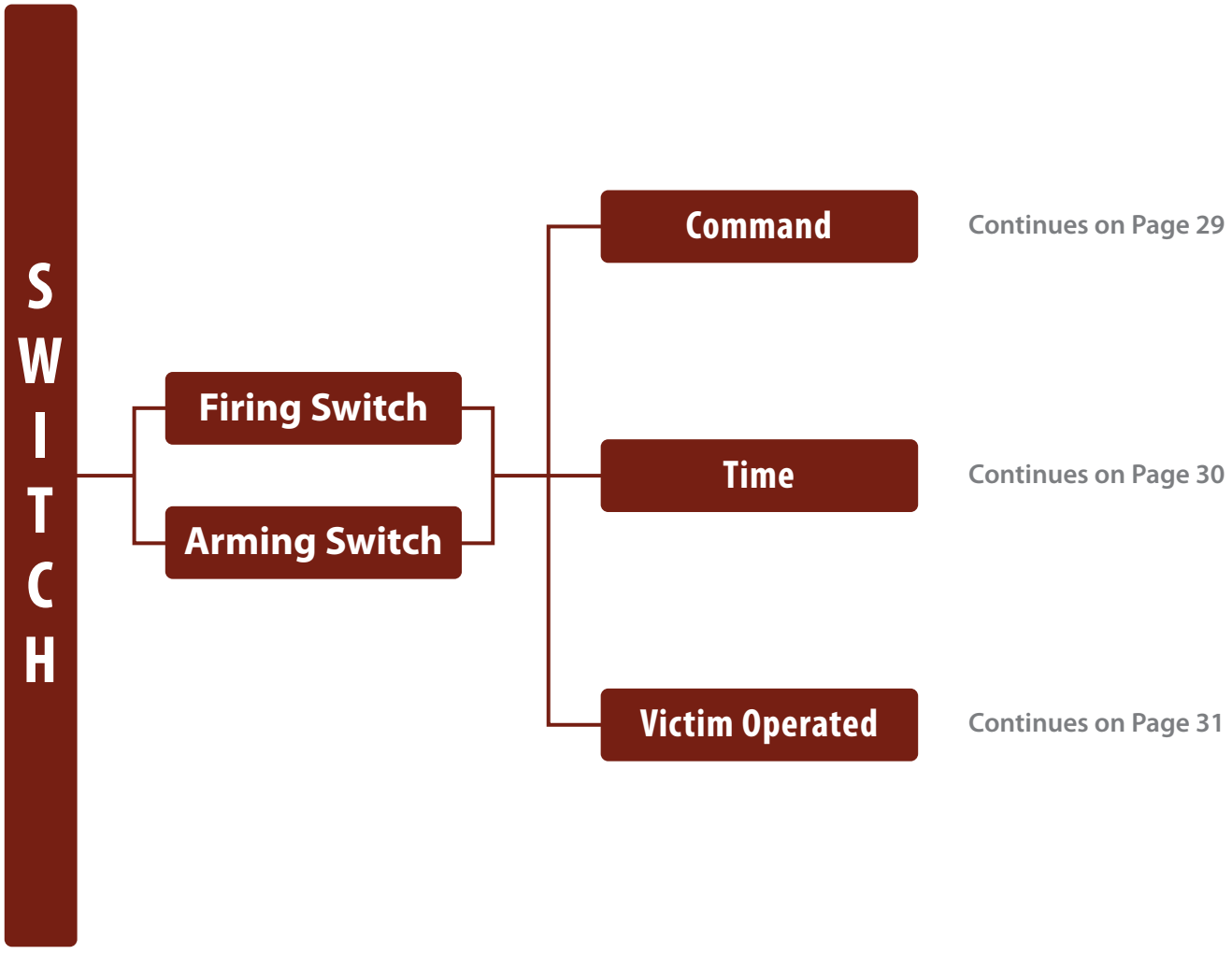
SWITCH

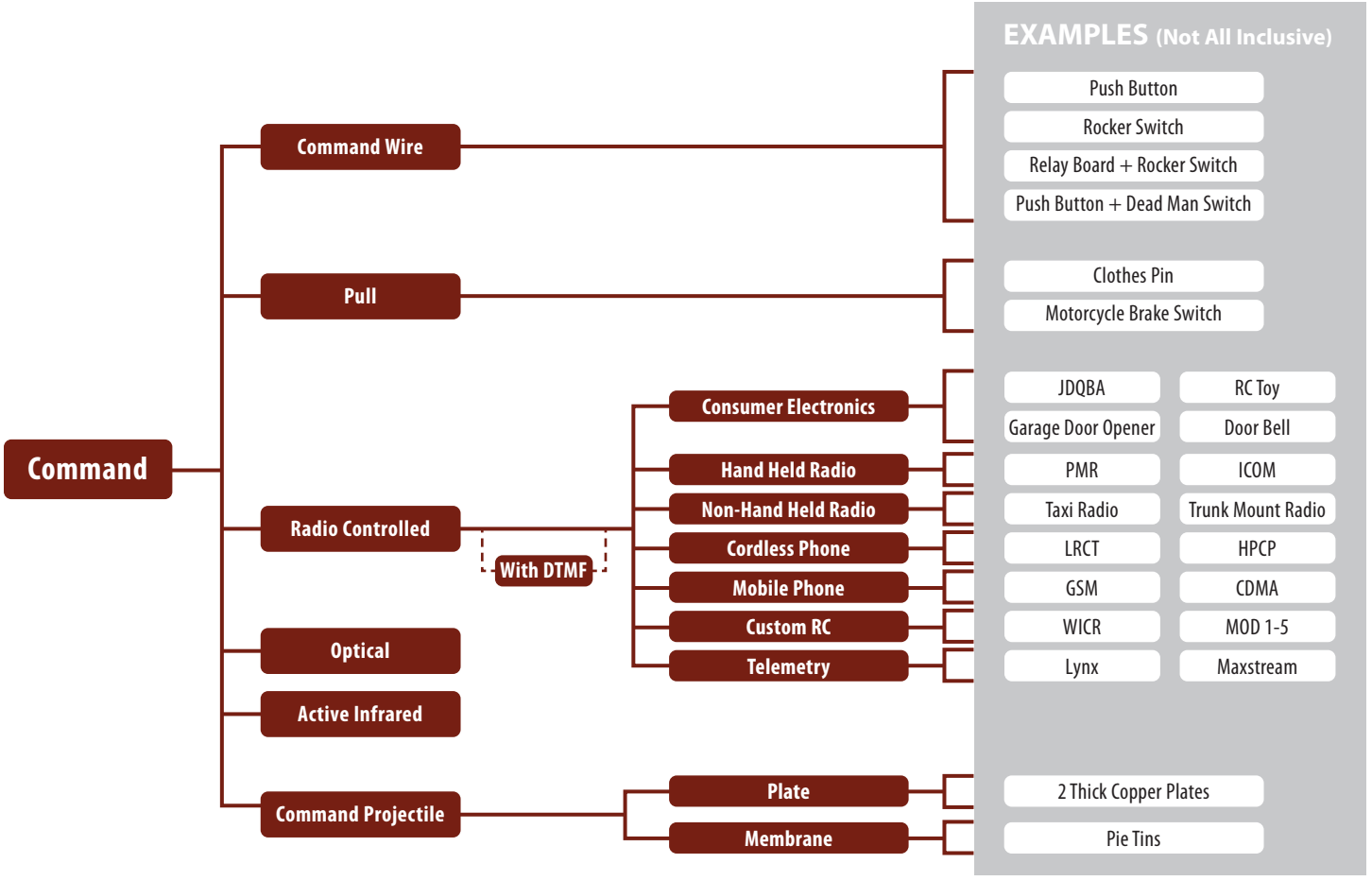
A device for making, breaking, or changing a connection in an IED. A single switch can have multiple functions (i.e., arming and firing).

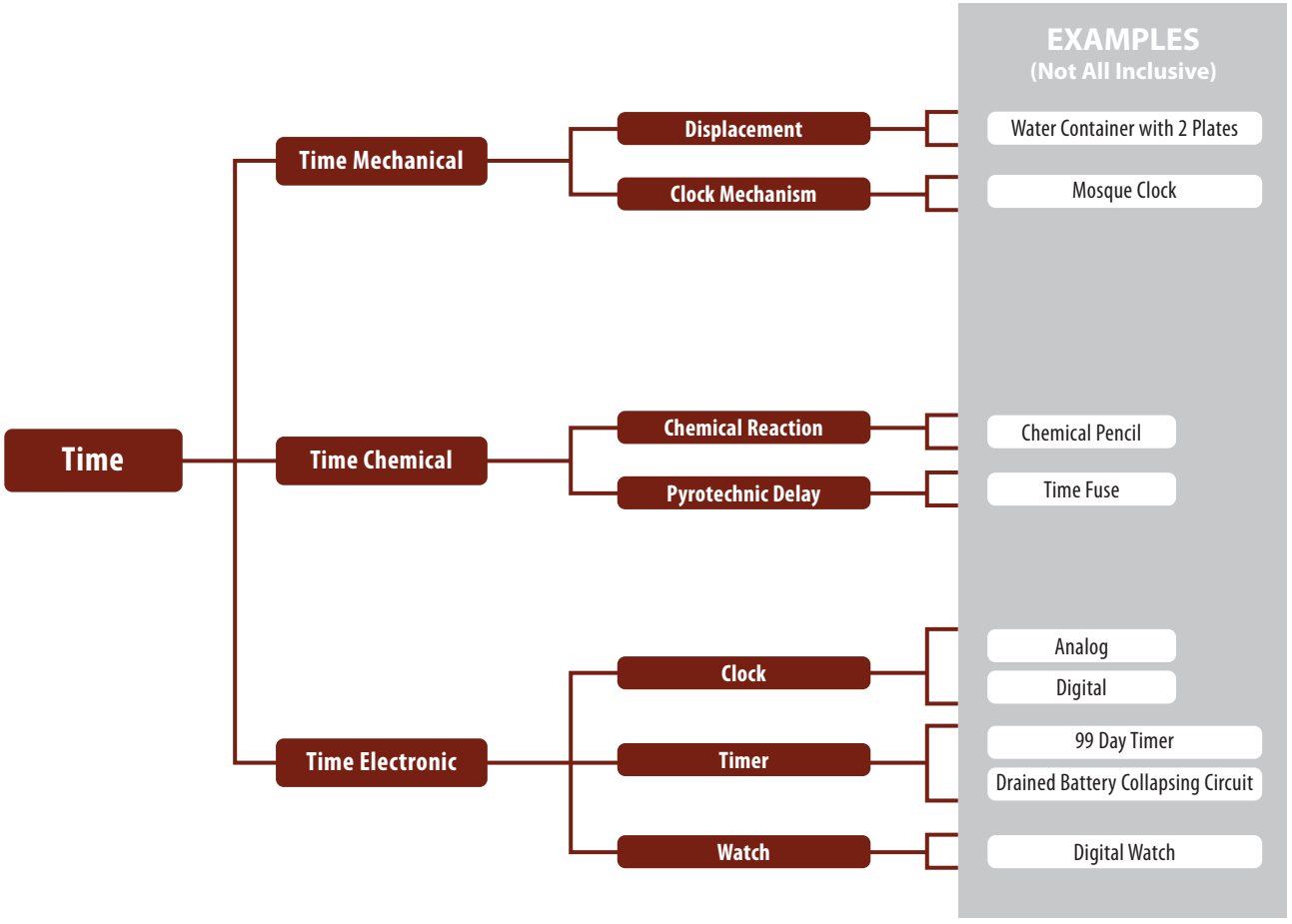
The firing switch that initiates the IED determines the device type by category (command / time / victim operated). If present, the arming switch should also be categorized.

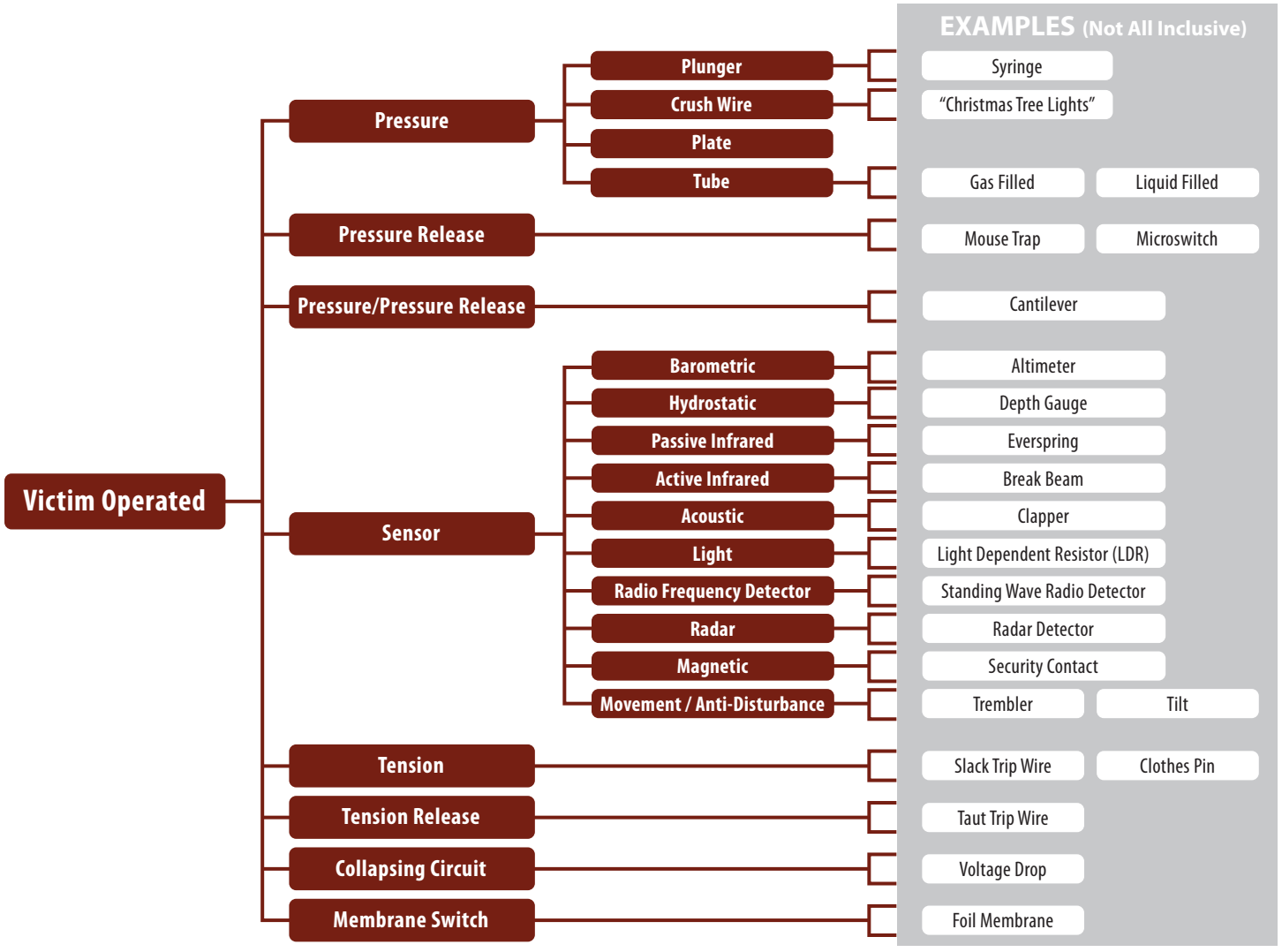
When categorizing switches it is important to understand switches can be configured in a multitude of ways. The observed configuration of the switch should be considered when categorizing the device. Also, the same configuration of components could function in more than one way.

- Firing Switch
- Arming Switch
  - Command
  - Time
  - Victim Operated


SWITCH
Firing Switch
Arming Switch
Command
Time
Victim Operated
Continues on Page 29
Continues on Page 30
Continues on Page 31


Command
Command Wire
Pull
Radio Controlled
With DTMF
Optical
Active Infrared
Command Projectile
Consumer Electronics
Hand Held Radio
Non-Hand Held Radio
Cordless Phone
Mobile Phone
Custom RC
Telemetry
Plate
Membrane
EXAMPLES (Not All Inclusive)
Push Button
Rocker Switch
Relay Board + Rocker Switch
Push Button + Dead Man Switch
Clothes Pin
Motorcycle Brake Switch
JDQBA
RC Toy
Garage Door Opener
Door Bell
PMR
ICOM
Taxi Radio
Trunk Mount Radio
LRCT
HPCP
GSM
CDMA
WICR
MOD 1-5
Lynx
Maxstream
2 Thick Copper Plates
Pie Tins


EXAMPLES
(Not All Inclusive)
Time
Time Mechanical
Time Chemical
Time Electronic
Displacement
Clock Mechanism
Chemical Reaction
Pyrotechnic Delay
Clock
Timer
Watch
Water Container with 2 Plates
Mosque Clock
Chemical Pencil
Time Fuse
Analog
Digital
99 Day Timer
Drained Battery Collapsing Circuit
Digital Watch


EXAMPLES (Not All Inclusive)
Victim Operated
Pressure
Plunger
Syringe
Crush Wire
"Christmas Tree Lights"
Plate
Tube
Gas Filled
Liquid Filled
Pressure Release
Mouse Trap
Microswitch
Pressure/Pressure Release
Cantilever
Sensor
Barometric
Altimeter
Hydrostatic
Depth Gauge
Passive Infrared
Everspring
Active Infrared
Break Beam
Acoustic
Clapper
Light
Light Dependent Resistor (LDR)
Radio Frequency Detector
Standing Wave Radio Detector
Radar
Radar Detector
Magnetic
Security Contact
Movement / Anti-Disturbance
Trembler
Tilt
Tension
Slack Trip Wire
Clothes Pin
Tension Release
Taut Trip Wire
Collapsing Circuit
Voltage Drop
Membrane Switch
Foil Membrane

SWITCH

Acoustic
A sensor that passively detects and utilizes the presence of sound in order to activate an IED.

Active Infrared
A sensor that emits an infrared beam to a matched receiver forming an invisible link that, when broken, releases power to the initiator. These sensors act like an electronic version of a trip wire.

Arming Switch
A switch that prevents an IED from arming until an acceptable set of criteria has occurred and subsequently effects arming and allows functioning.

Barometric
A sensor that acts as a switch by the measurement of atmospheric (air / water) pressure.

Chemical Reaction
A switch using the reaction of chemical compounds to provide a delay before starting the initiation train.

Clock Mechanism
The internal working parts of a clock used in an improvised manner to function an IED.

Photo 5 – Mosque clock timer utilizing clock mechanism switches

Collapsing Circuit
A switch which utilizes a circuit designed to detect a failure in an active circuit by monitoring voltage or amperage levels on the target circuit (wire being cut or battery drain).

Command
A type of switch that is activated by the attacker in order to control the moment of initiation.

Command Projectile
The use of a small arms bullet to close the circuit by penetrating two metal plates. This provides standoff between the firing point and contact point.

Command Wire IED (CWIED)
A switch where the firing point and contact point are separate but joined together by a length of wire. A Command Wire may contain multiple power sources located near both the firing point and the contact point to overcome the resistance in the length of the wire.

Consumer Electronics
Simple radio controlled devices, readily available in the consumer marketplace, (not purpose-built for telecommunication purposes).

Crush Wire
Contact point(s) spanning a length of wire that function an IED when crushed.

Custom Radio Controlled (RC)
A purpose built radio controlled circuit board.

Displacement
A switch that utilizes a jug or other container, with two contacts, one fixed and one floating. As a substance dissipates or fills the container, the contacts meet and complete the circuit.

Dual Tone Multi-Frequency (DTMF)
A pairing of transmitter and receiver utilizing dual tones and multiple frequency hardware that allows for precision arming and firing, thus preventing unintended firing.

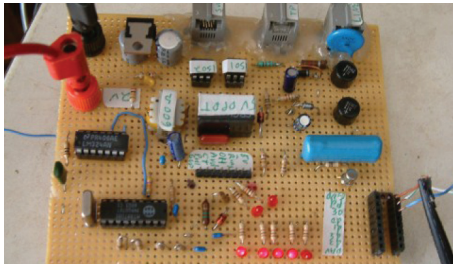


Photo 6 – Homemade DTMF board

Firing Switch
The component that initiates the explosive train.

Hydrostatic
A switch designed to complete a circuit or force a mechanical action with the change of fluid pressure.

Light / Photo-electric
A sensor acting as a switch that is looking for a change in ambient light (either light to dark or dark to light).

Long Range Cordless Telephone (LRCT)
A switch utilizing a cordless telephone that has the capability to transmit signal significantly further than a normal telephone from the base station.

SWITCH (continued)

Magnetic
A proximity switch using a magnetic field to arm or fire an IED. This can sense an active field and close the switch when the field is disturbed; or react upon coming near a magnetic field.

Membrane
A switch incorporating two metal layers, separated by an insulator that functions the IED when perforated or when pressure is applied.

Movement / Anti-Disturbance
A switch that causes two parts to make contact, completing a circuit after a disturbance to the IED (tilt, vibration).

Passive Infrared
A switch that detects movement of a heat source. When the change in ambient temperature is detected, the sensor acts as a trigger to function the IED.

Plunger
A switch utilizing a shaft, like that found in a syringe, where application of pressure on the head of the device will force the shaft downward, functioning the IED.

Pressure
A switch designed to function when pressure is applied in a predetermined direction (plate, tube, plunger, crush wire).

Photo 7 – A typical sawblade pressure switch

Pressure and Pressure Release
A method for activating the device that occurs as a result of either application or reduction of pressure.

Pressure Release
A switch for activating the device that occurs as a result of reductions in pressure.

Pull
A switch that functions when a person applies tension to a firing mechanism – such as pulling a spring. The tension causes an action that releases a firing pin or activates an electrical or electronic switch.

Pyrotechnic Delay
A pyrotechnic device added to a firing system which transmits the ignition flame after a predetermined delay.

Radar
A sensor that passively detects radar signals and power, usually operating within a specific range, in order to function an IED.

Radio Controlled IED (RCIED)
A switch initiated electronically by wireless means consisting of a transmitter / receiver.

Radio Frequency Detector
A sensor that passively detects RF signals and power, usually operating within a specific range, in order to function an IED.

Sensor
A switch used to detect change in heat, light, movement, vibration, electromagnetic frequency, sound or magnetic field.

Telemetry
A switch utilizing paired RF modules that transmit and receive binary data.

Tension
A switch that functions when tension is applied to a firing mechanism – such as pulling a trip wire. The tension causes an action that releases a firing pin or activates an electrical or electronic switch.

Tension Release
A switch that functions when tension is released – such as when a taut wire or cord is cut or broken – releasing a spring-loaded firing pin or closes electrical contacts initiating the device.

Photo 8 – A typical mercury tilt switch

Tilt
A switch that allows current to flow to the output wires after a conductive material (i.e., mercury or a ball bearing) is moved enough (up / down, left / right) to flow onto the switch contacts, completing the circuit.

Time
A type of switch that functions after a set time. Used widely against infrastructure targets.

SWITCH (continued)

Time Chemical
A chemical timing switch using a corrosive chemical with a known decomposition rate that is designed to destroy a physical restraint on a triggering device to start the initiation train.

Time Electronic
A timing switch using a commercial or improvised electric timer or integrated circuit to start the initiation train.

Time Fuse / Safety Fuse
A pyrotechnic burning at a certain rate used to transmit a flame to the non-electric detonator or a low explosive charge with a predetermined delay.

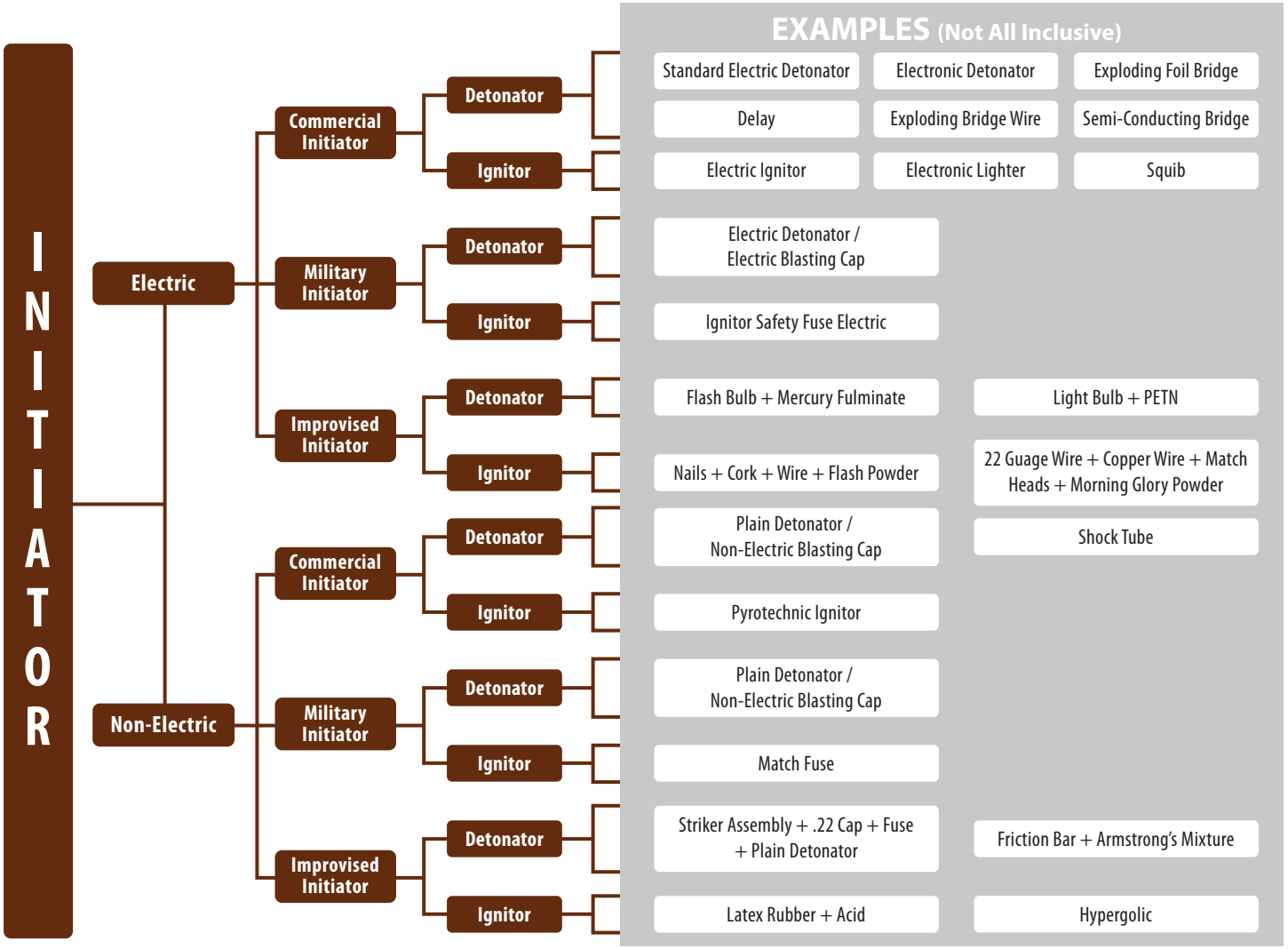
Time Mechanical
A timing switch constructed or modified so that physical contact between two parts of the timing mechanism complete an electrical circuit.

Victim Operated IED (VOIED)
A type of switch that is activated by the actions of an unsuspecting individual. These instruments rely on the intended target to carry out some form of action that will cause it to function.

INITIATOR

Any component that may be used to start a detonation or deflagration. An initiator will be categorized as either a detonator or an igniter.

- Electric
- Non-Electric


INITIATOR
Electric
Non-Electric
Commercial Initiator
Military Initiator
Improvised Initiator
Commercial Initiator
Military Initiator
Improvised Initiator
Detonator
Ignitor
EXAMPLES (Not All Inclusive)
Standard Electric Detonator
Electronic Detonator
Exploding Foil Bridge
Delay
Exploding Bridge Wire
Semi-Conducting Bridge
Electric Ignitor
Electronic Lighter
Squib
Electric Detonator / Electric Blasting Cap
Ignitor Safety Fuse Electric
Flash Bulb + Mercury Fulminate
Light Bulb + PETN
Nails + Cork + Wire + Flash Powder
22 Guage Wire + Copper Wire + Match Heads + Morning Glory Powder
Plain Detonator / Non-Electric Blasting Cap
Shock Tube
Pyrotechnic Ignitor
Plain Detonator / Non-Electric Blasting Cap
Match Fuse
Striker Assembly + .22 Cap + Fuse + Plain Detonator
Friction Bar + Armstrong's Mixture
Latex Rubber + Acid
Hypergolic

INITIATOR

Blasting Cap / Detonator
A device containing a sensitive explosive intended to produce a detonation wave. Can be either electric or nonelectric (plain).

Electric
An initiator who's function is initiated by an electrical impulse that creates heat or a spark.

Electronic
An initiator controlled or operated by the controlled flow of electrons.

Exploding Bridge Wire (EBW)
An initiator or system in which a very high-energy electrical impulse is passed through a bridge wire, literally exploding the bridge wire and releasing thermal and shock energy capable of initiating a relatively insensitive explosive in contact with the bridge wire.

Heat
A type of initiator that serves as an igniting element through the application of heat. This may include direct heat to a sensitive explosive.

Ignitor
A device designed to produce a flame or a spark to initiate an explosive train.

Light Bulb / Flash Bulb
Devices used as electric initiators that incorporate an improvised use of the bulb filament to initiate primary or low explosives.

Non-electric
An initiator that functions by other than electric means (friction, chemical, impact).

Percussion
An initiator that serves as an igniting element when mechanically struck.

Shock Tube
A thin, plastic tube of extruded polymer with a layer of powdered high explosive deposited on its interior surface that propagates a detonation wave to the blasting cap.

INITIATOR (continued)

Time Fuse / Safety Fuse
A pyrotechnic burning at a certain rate used to transmit a flame to the non-electric detonator or a low explosive charge with a predetermined delay.

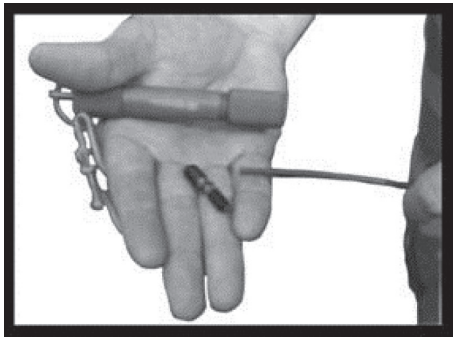


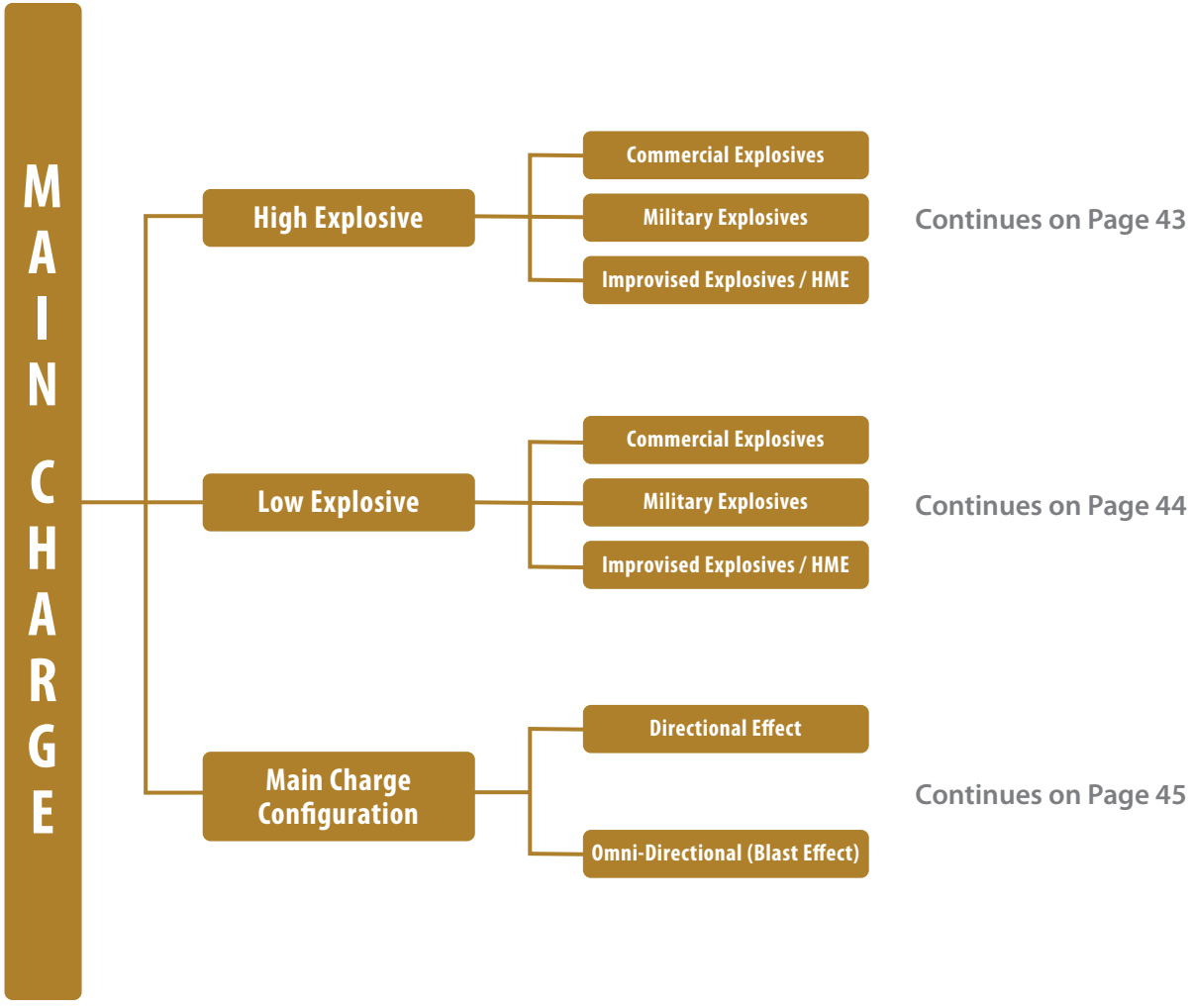
Photo 9 – Time Fuse

MAIN CHARGE

The explosive charge which is provided to accomplish the end result in a munition.

Examples for end results are: bursting a casing to provide blast and fragmentation; splitting a canister to dispense sub-munitions; or producing other effects for which it may be designed.

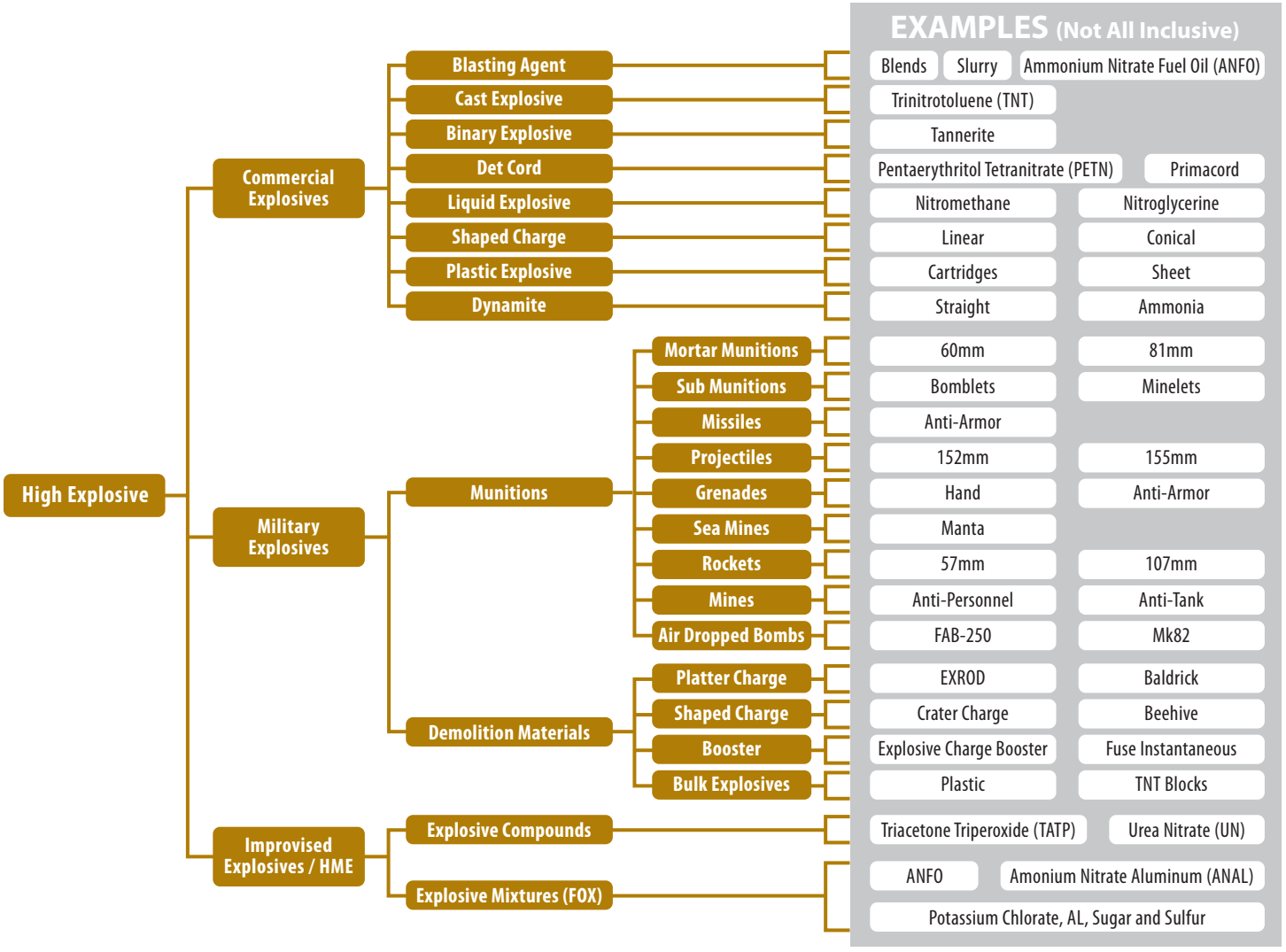
- High Explosives
- Low Explosives
- Main Charge Configuration

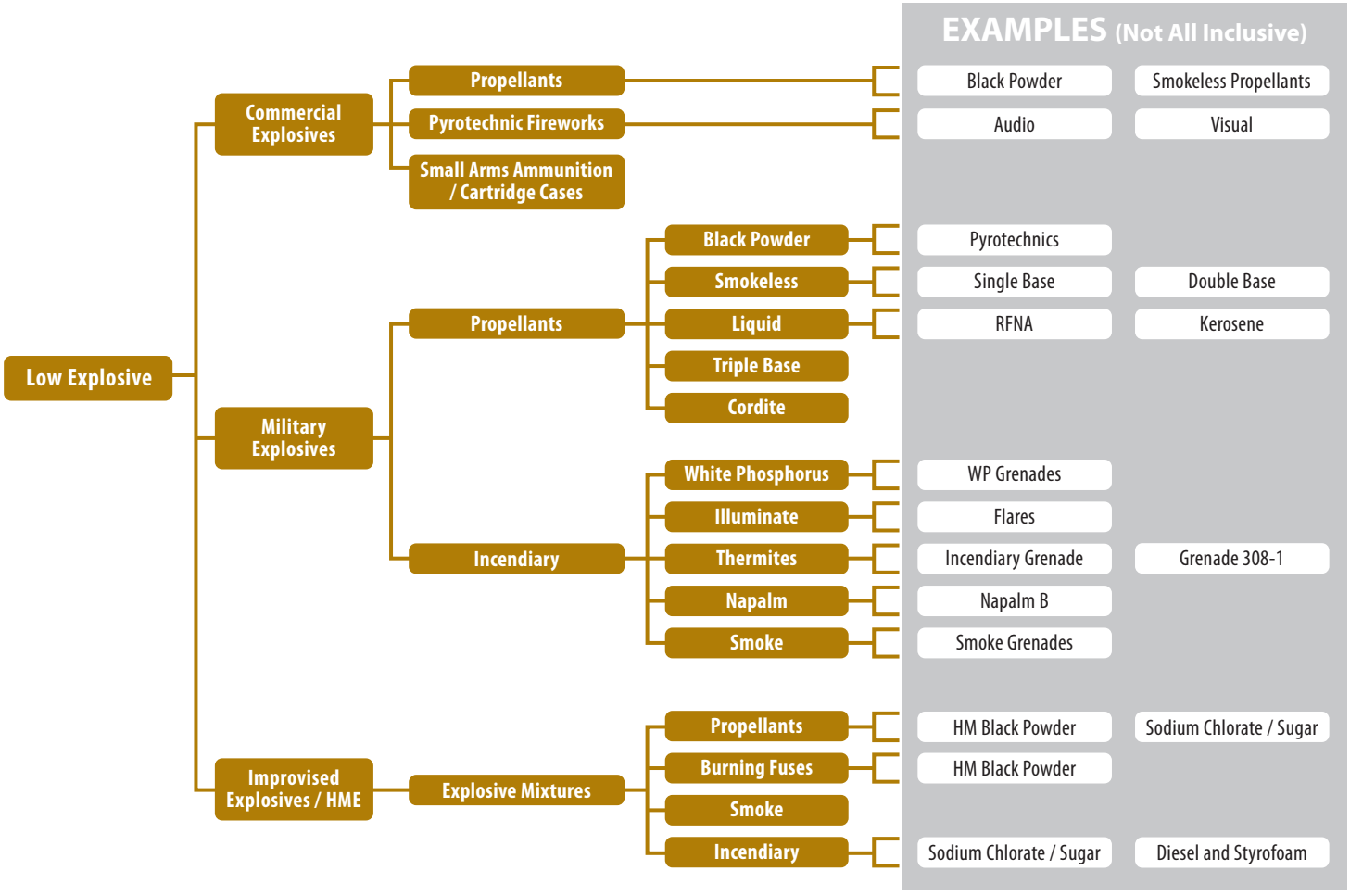


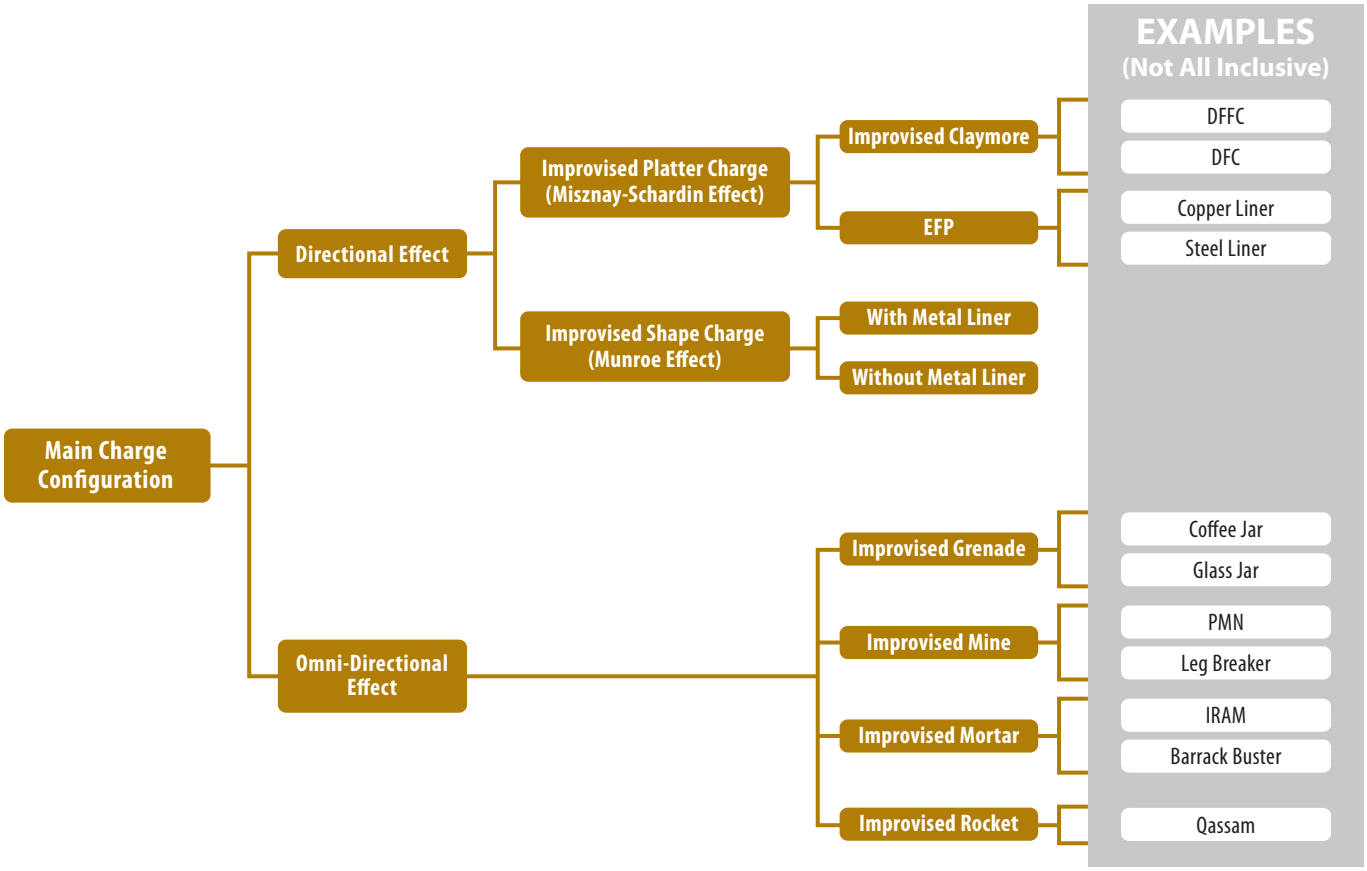
Continues on Page 43

Continues on Page 44

Continues on Page 45


High Explosive
Commercial Explosives
Military Explosives
Improvised Explosives / HME
Blasting Agent
Cast Explosive
Binary Explosive
Det Cord
Liquid Explosive
Shaped Charge
Plastic Explosive
Dynamite
Munitions
Demolition Materials
Explosive Compounds
Explosive Mixtures (FOX)
Mortar Munitions
Sub Munitions
Missiles
Projectiles
Grenades
Sea Mines
Rockets
Mines
Air Dropped Bombs
Platter Charge
Shaped Charge
Booster
Bulk Explosives
EXAMPLES (Not All Inclusive)
Blends
Slurry
Ammonium Nitrate Fuel Oil (ANFO)
Trinitrotoluene (TNT)
Tannerite
Pentaerythritol Tetranitrate (PETN)
Primacord
Nitromethane
Nitroglycerine
Linear
Conical
Cartridges
Sheet
Straight
Ammonia
60mm
81mm
Bomblets
Minelets
Anti-Armor
152mm
155mm
Hand
Anti-Armor
Manta
57mm
107mm
Anti-Personnel
Anti-Tank
FAB-250
Mk82
EXROD
Baldrick
Crater Charge
Beehive
Explosive Charge Booster
Fuse Instantaneous
Plastic
TNT Blocks
Triacetone Triperoxide (TATP)
Urea Nitrate (UN)
ANFO
Amonium Nitrate Aluminum (ANAL)
Potassium Chlorate, AL, Sugar and Sulfur


EXAMPLES (Not All Inclusive)
Low Explosive
Commercial Explosives
Propellants
Black Powder
Smokeless Propellants
Pyrotechnic Fireworks
Audio
Visual
Small Arms Ammunition / Cartridge Cases
Military Explosives
Propellants
Black Powder
Pyrotechnics
Smokeless
Single Base
Double Base
Liquid
RFNA
Kerosene
Triple Base
Cordite
Incendiary
White Phosphorus
WP Grenades
Illuminate
Flares
Thermites
Incendiary Grenade
Grenade 308-1
Napalm
Napalm B
Smoke
Smoke Grenades
Improvised Explosives / HME
Explosive Mixtures
Propellants
HM Black Powder
Sodium Chlorate / Sugar
Burning Fuses
HM Black Powder
Smoke
Incendiary
Sodium Chlorate / Sugar
Diesel and Styrofoam


Main Charge Configuration
Directional Effect
Omni-Directional Effect
Improvised Platter Charge (Misznay-Schardin Effect)
Improvised Shape Charge (Munroe Effect)
Improvised Claymore
EFP
With Metal Liner
Without Metal Liner
Improvised Grenade
Improvised Mine
Improvised Mortar
Improvised Rocket
EXAMPLES
(Not All Inclusive)
DFFC
DFC
Copper Liner
Steel Liner
Coffee Jar
Glass Jar
PMN
Leg Breaker
IRAM
Barrack Buster
Qassam

MAIN CHARGE

Air-Dropped Bomb
Explosive article dropped from an aircraft. It may contain a flammable liquid with a bursting charge, a photo-flash composition or a bursting charge.

Binary Explosive
An explosive formed by combining two non-explosive materials (an oxidizer and a fuel).

Blasting Accessory
Devices and materials used in blasting. Examples are: cap crimpers, tamping bags, blasting machines, and blasting galvanometers.

Blasting Agent
An explosive material which meets prescribed criteria for insensitivity to initiation. Generally a non-detonator sensitive explosive that must be initiated by a booster to detonate. May be configured in cartridge form or as a mass of explosive material prepared for use on site without packaging.

Booster
A high explosive element sufficiently sensitive so as to be actuated by small explosive elements and powerful enough to cause detonation of the main charge filling (initiator » booster » maincharge).

Bulk Explosives
Manufactured explosive charges in their original packaging or that have been removed from weapons or munitions.

Cast Explosive
Any explosive poured in liquid form and allowed to harden.

Commercial Explosives
Explosives produced and used for commercial, industrial, or recreational applications.

Detonating Cord
A waterproof, flexible fabric tube containing a high explosive designed to transmit the detonation wave.

Directional Effect
Type of main charge configuration where the explosive effect is channeled to an intended area.

Dynamite
A high explosive used for blasting, consisting essentially of a mixture of, but not limited to, nitroglycerin, nitrocellulose, ammonium nitrate, sodium nitrate, and carbonaceous materials.

Explosive Compounds
Explosive compounds are homogeneous substances whose molecules contain within themselves the oxygen, carbon, and hydrogen necessary for combustion.

Explosively Formed Projectile (EFP)
Specially designed main charge configuration incorporating an explosive charge with a concave metal liner which by the force of the charge reshapes the plate into a high velocity metal slug capable of penetrating armor.

Fuel Oxidizer eXplosive (FOX) Mixture
An explosive mixture of fuel and oxidizer that deflagrates (very rapid burning) or detonates creating a blast wave.

High Explosive
A chemical compound or mixture that is capable of supporting or sustaining a detonation wave. High explosives do not require confinement as they combust instantaneously producing heat, gas, a rapid expansion of matter, and a detonation / shock wave.

Improvised Claymore
An improvised weapon, military or homemade, designed to explosively propel a pattern of ball bearings or other fragmentation in an aimed direction.

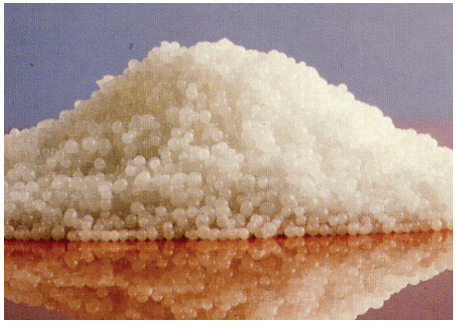


Photo 10 – Homemade Ammonium Nitrate Prills

Improvised Explosive (IE) / Homemade Explosive (HME)
Non-standard explosive mixtures / compounds which have been formulated / synthesized from available ingredients. Most often utilized in the absence of commercial / military explosives.

MAIN CHARGE (continued)

Improvised Grenade
An improvised weapon, using military or homemade components, designed to explode when a restraint is removed (usually hand held, but can be projected).

Improvised Mortar
An improvised weapon, using military or homemade components, designed to launch an explosive charge to the target.

Improvised Rocket
An improvised weapon, using military or homemade components, designed to propel an explosive charge to the target.

Incendiary
Chemical mixtures and flammable liquids that cause fire.

Liquid Explosive
An explosive material in a liquid state. Examples include nitric acid esters (e.g. nitroglycerin, nitroglycol) and EDGN.

Low Explosive
A chemical compound or mixture that is designed to deflagrate (rapid burn) and generally require confinement to explode.

Main Charge Configuration
The arrangement or design of the main charge and other materials (usually metal) to create an effective weapon to attack personnel, vehicles, or structures.

Military Explosives
Explosives manufactured for military use.

Mine
In land mine warfare, an explosive munition designed to be placed under, on or near the ground or other surface area and to be actuated by the presence, proximity or contact of a person, land vehicle, aircraft or boat, including landing craft.

Missile
A self-propelled munition whose trajectory or course is controlled while in flight.

Misznay-Schardin Effect
A characteristic of the detonation of a broad sheet of explosive. The explosive blast expands directly away from (perpendicular to) the surface of an explosive.

Photo 11 – Munitions to convert to IEDs in Iraq

Mortar Munition
The complete munition, comprised of projectile and propellant system, to be fired from the mortar. The projectile normally comprises fuze, body filled with high explosives (HE) or other filling, obturator, and tail assembly.

Munition
A complete device charged with explosives, propellants, pyrotechnics, initiating composition or chemical, biological, radiological or nuclear material, for use in military operations, including demolitions.

Munroe Effect
A focusing of blast energy caused by a hollow or void cut into the surface of an explosive.

Omni-directional Effect
An aspect of main charge configuration where the explosion expands in all directions.

Plastic Explosive
A malleable or flexible explosive at room temperature.

Platter Charge
The use of an explosive to propel a metal plate toward a target in a manner where the plate remains intact.

Projectile
An object, projected by an applied exterior force and continuing in motion by virtue of its own inertia. Projectiles can have a variety of fillers including explosives or chemicals.

Propellant
An explosive material that normally functions by burning to produce a controlled release of gasses used for propulsion purposes.

Rocket
Self-propelled ordnance that uses gas pressure from rapidly burning propellant to transport a payload (warhead) to a desired target.

MAIN CHARGE (continued)

Sea Mine
An explosive device laid in the water with the intention of damaging or sinking ships or of deterring shipping from entering an area. The term sea mine does not include devices attached to the bottom of ships or to harbor installations by personnel operating underwater.

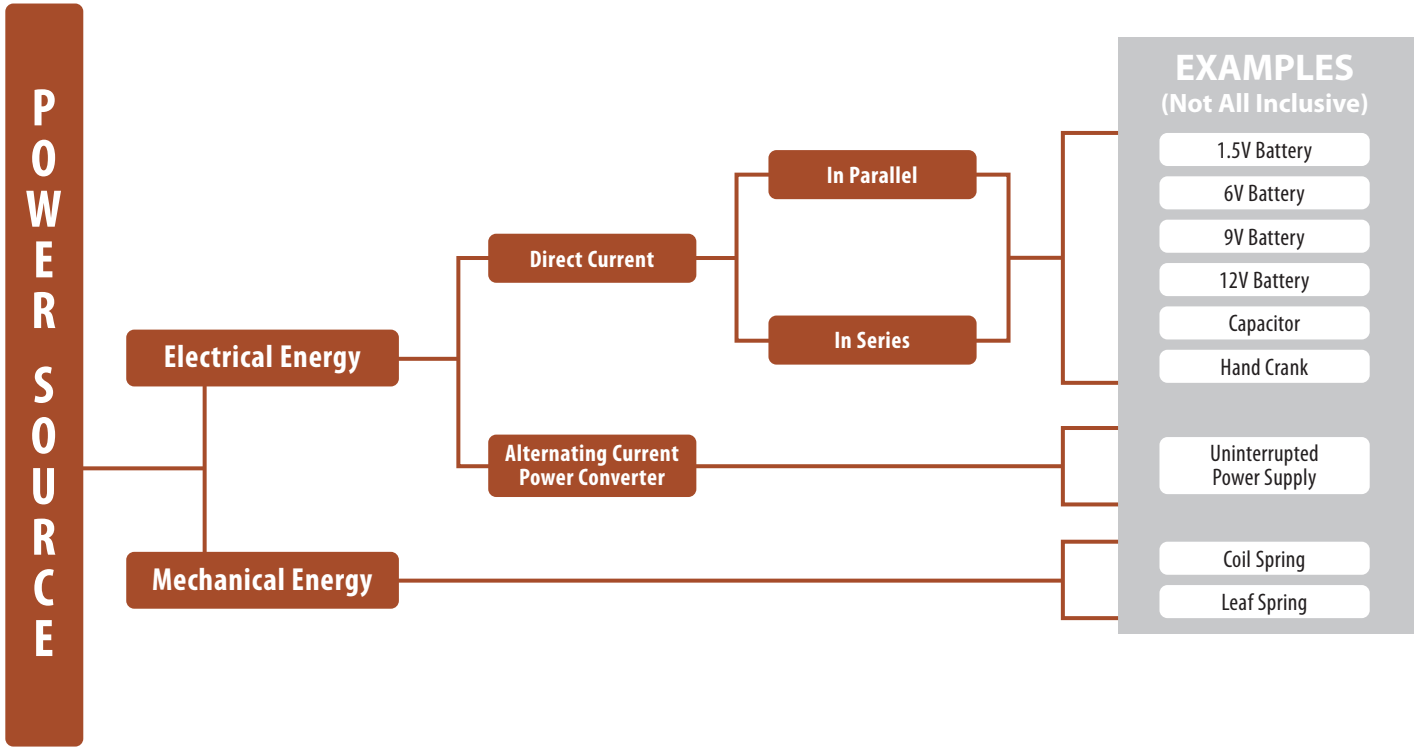
Shaped Charge
A main charge configuration incorporating explosives shaped so as to concentrate explosive force utilizing the Munroe Effect in a particular direction in order to cut or penetrate.

Submunition
Any munition that, to perform its task, separates from a parent munition. Submunitions are classified as bomblets, grenades, or mines.

POWER SOURCE

A device that stores or releases electrical or mechanical energy. The key elements of information about a power source are its type and source, number of batteries and their configuration (series or parallel), its voltage (if electrical) and how it is connected to close an IED switch.

- Electrical Energy
- Mechanical Energy


POWER SOURCE
Electrical Energy
Mechanical Energy
Direct Current
Alternating Current Power Converter
In Parallel
In Series
EXAMPLES
(Not All Inclusive)
1.5V Battery
6V Battery
9V Battery
12V Battery
Capacitor
Hand Crank
Uninterrupted Power Supply
Coil Spring
Leaf Spring

POWER SOURCE

Alternating Current (AC)
Electric current that flows through a circuit in both directions with the change in direction occurring with a well-defined and specified frequency.

Direct Current (DC)
Electric current that flows through a circuit in just one direction.

In Parallel
Multiple batteries or other power sources which have their positive terminals connected to one another and their negative terminals connected to one another which results in an increase in the available current.

In Series
Multiple batteries or other power sources which have one positive terminal connected to the negative terminal of the next power source which results in an increase in the available voltage.

Photo 12 – Battery Pack recovered in Afghanistan

Mechanical Energy
Stored or applied energy that results in physical movement of an IED component.

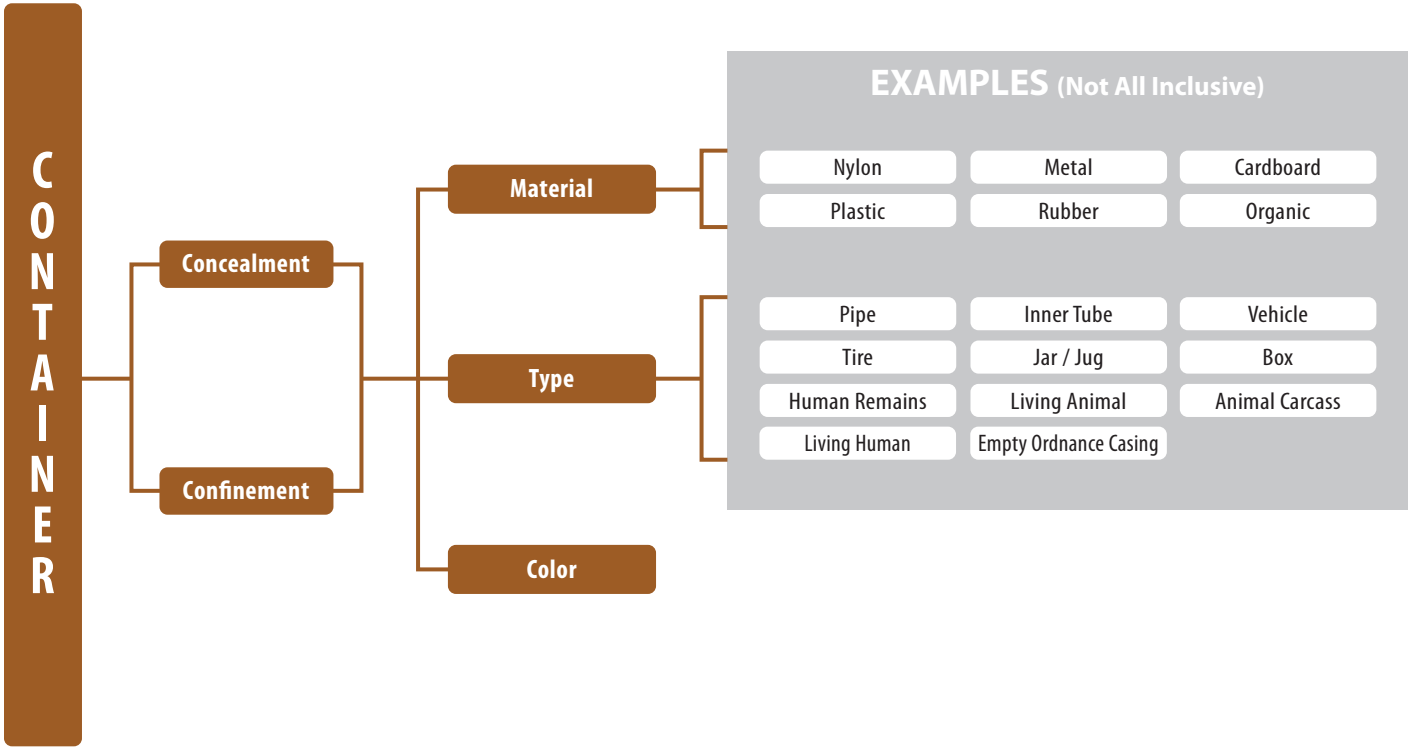
Series-Parallel Circuit
A combination of one or more series circuits and parallel circuits.

CONTAINER

Concealment
A vessel commonly used to prevent the discovery of an IED by visual inspection. May also be used to add fragmentation.

Confinement
A vessel commonly used to hold the main charge together. May also be used to add fragmentation.

- Concealment
- Confinement

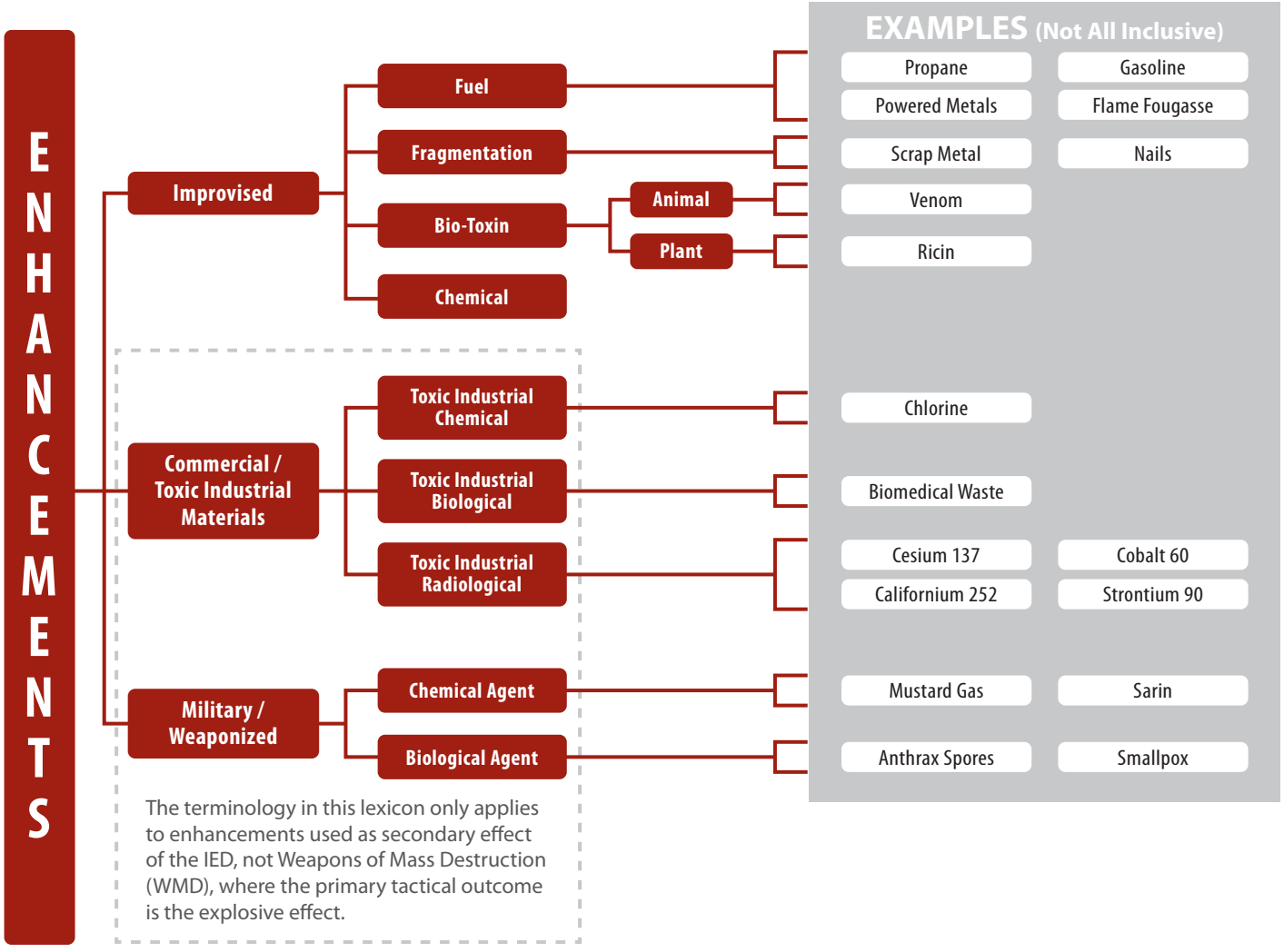

CONTAINER
Concealment
Confinement
Material
Type
Color
EXAMPLES (Not All Inclusive)
Nylon
Metal
Cardboard
Plastic
Rubber
Organic
Pipe
Inner Tube
Vehicle
Tire
Jar / Jug
Box
Human Remains
Living Animal
Animal Carcass
Living Human
Empty Ordnance Casing

ENHANCEMENTS

An optional, deliberately added component as opposed to a secondary hazard which modifies the effects of the IED. The IED would be effective, yet produce a different measurable result if this material were not added. The effect can be additional physical destruction, proliferation of dangerous substances (radiation, chemicals, etc.), or other results to enhance the effect of the IED.

- Improvised
- Commercial / Toxic Industrial Materials
- Military / Weaponized

The terminology in this lexicon only applies to enhancements used as secondary effect of the IED, not Weapons of Mass Destruction (WMD), where the primary tactical outcome is the explosive effect.


ENHANCEMENTS
Improvised
Fuel
Fragmentation
Bio-Toxin
Animal
Plant
Chemical
Commercial / Toxic Industrial Materials
Toxic Industrial Chemical
Toxic Industrial Biological
Toxic Industrial Radiological
Military / Weaponized
Chemical Agent
Biological Agent
EXAMPLES (Not All Inclusive)
Propane
Gasoline
Powered Metals
Flame Fougasse
Scrap Metal
Nails
Venom
Ricin
Chlorine
Biomedical Waste
Cesium 137
Cobalt 60
Californium 252
Strontium 90
Mustard Gas
Sarin
Anthrax Spores
Smallpox
The terminology in this lexicon only applies to enhancements used as secondary effect of the IED, not Weapons of Mass Destruction (WMD), where the primary tactical outcome is the explosive effect.

ENHANCEMENTS

Bio-Toxin
A toxic substance produced by and derived from plants and animals.

Biological Agent
A microorganism that causes disease in personnel, plants, or animals or causes the deterioration of materiel.

Chemical Agent
A chemical substance which is intended for use in military operations to kill, seriously injure, or incapacitate mainly through its physiological effects. The term excludes riot control agents when used for law enforcement purposes, herbicides, smoke, and flames.

Flame Fougasse
Typically a mixture of petrol (gasoline) and oil in a 40/60 ratio (also known as Improvised Napalm).

Fragmentation
Small objects designed to be accelerated by explosive forces.

Fuel
An incendiary material designed to enhance the burning and visual effect of the device.

Radiological Dispersal Device (RDD)
An improvised assembly or process, other than a nuclear explosive device, designed to disseminate radioactive material in order to cause destruction, damage, or injury.

Toxic Industrial Biological (TIB)
Any biological material manufactured, used, transported, or stored by industrial, medical, or commercial processes which could pose an infectious or toxic threat.

Toxic Industrial Chemical (TIC)
A chemical developed or manufactured for use in industrial operations or research by industry, government, or academia. For example: pesticides, petrochemicals, fertilizers, corrosives, poisons, etc. These chemicals are not primarily manufactured for the specific purpose of producing human casualties or rendering equipment, facilities, or areas dangerous for human use. Hydrogen cyanide, cyanogen chloride, phosgene, and chloropicrin are industrial chemicals that can also be military chemical agents.

ENHANCEMENTS (continued)

Toxic Industrial Material (TIM)
A generic term for toxic or radioactive substances in solid, liquid, aerosolized, or gaseous form that may be used, or stored for use, for industrial, commercial, medical, military, or domestic purposes. Toxic industrial material may be chemical, biological, or radioactive and described as toxic industrial chemical, toxic industrial biological, or toxic industrial radiological.

Toxic Industrial Radiological (TIR)
Any radiological material manufactured, used, transported, or stored by industrial, medical, or commercial processes. For example: spent fuel rods, medical sources, etc.

GLOSSARY

Term	Acronym	Definition	Page #
Acoustic		A sensor that passively detects and utilizes the presence of sound in order to activate an IED.	32
Active Infrared		A sensor that emits an infrared beam to a matched receiver forming an invisible link that, when broken, releases power to the initiator. These sensors act like an electronic version of a trip wire.	32
Air Borne IED	**ABIED**	An IED delivered by or concealed in an air-based vehicle.	16
Air-Dropped Bomb		Explosive article dropped from an aircraft. It may contain a flammable liquid with a bursting charge, a photo-flash composition or a bursting charge.	46
Alternating Current	**AC**	Electric current that flows through a circuit in both directions with the change in direction occurring with a well-defined and specified frequency.	53
Animal Borne IED		An IED delivered to a target by means of an animal.	16
Anti-Aircraft		An IED primarily intended to damage or destroy aircraft and/or their payload.	21
Anti-Armor		An IED that utilizes a directional explosive effect primarily intended to penetrate armored vehicles.	21
Anti-EOD		An IED primarily intended to kill or wound EOD personnel or to counter Render Safe Procedures.	21
Anti-First Responder		An IED primarily intended to kill or wound first responders such as police/law enforcement, medics, and firefighters.	21

GLOSSARY (continued)

Term	Acronym	Definition	Page #
Anti-Infrastructure		An IED primarily intended to damage or destroy physical infrastructure such as pipelines, communications towers, bridges, buildings, utility lines and/or facilities such as electrical transformers or water pump houses.	21
Anti-Maritime		An IED primarily intended to damage or destroy maritime vessels and/or their payload.	21
Anti-Personnel		An IED primarily intended to kill or wound people.	21
Anti-Vehicle		An IED primarily intended to damage or destroy vehicles – is not intended to penetrate a vehicle's armor.	21
Arming Switch		A switch that prevents an IED from arming until an acceptable set of criteria has occurred and subsequently effects arming and allows functioning.	32
Associated Components		Components that are: 1) part of an IED or improvised weapon system; 2) the tools required to produce the components; or 3) precursors to the manufacture of IED components to include explosives.	5
Attack Geography		A description of the road segment, buildings, foliage, etc. Understanding the geography indicates enemy use of landscape to channel tactical response, slow friendly movement, or prevent pursuit of enemy forces.	16
Barometric		A sensor that acts as a switch by the measurement of atmospheric (air /water) pressure.	32
Binary Explosive		An explosive formed by combining two non-explosive materials (an oxidizer and a fuel).	46
Biological Agent		A microorganism that causes disease in personnel, plants, or animals or causes the deterioration of materiel.	59
Bio-Toxin		A toxic substance produced by and derived from plants and animals.	59

Term	Acronym	Definition	Page #
Blasting Accessory		Devices and materials used in blasting. Examples are: cap crimpers, tamping bags, blasting machines, and blasting galvanometers.	46
Blasting Agent		An explosive material which meets prescribed criteria for insensitivity to initiation. Generally a non-detonator sensitive explosive that must be initiated by a booster to detonate. May be configured in cartridge form or as a mass of explosive material prepared for use on site without packaging.	46
Blasting Cap / Detonator		A device containing a sensitive explosive intended to produce a detonation wave. Can be either electric or nonelectric (plain).	39
Booster		A high explosive element sufficiently sensitive so as to be actuated by small explosive elements and powerful enough to cause detonation of the main charge filling (initiator » booster » maincharge).	46
Bulk Explosives		Manufactured explosive charges in their original packaging or that have been removed from weapons or munitions.	46
Cast Explosive		Any explosive poured in liquid form and allowed to harden.	46
Chemical Agent		A chemical substance which is intended for use in military operations to kill, seriously injure, or incapacitate mainly through its physiological effects. The term excludes riot control agents when used for law enforcement purposes, herbicides, smoke, and flames.	59
Chemical Reaction		A switch using the reaction of chemical compounds to provide a delay before starting the initiation train.	32
Clock Mechanism		The internal working parts of a clock used in an improvised manner to function an IED.	32
Collapsing Circuit		A switch which utilizes a circuit designed to detect a failure in an active circuit by monitoring voltage or amperage levels on the target circuit (wire being cut or battery drain).	32

GLOSSARY (continued)

Term	Acronym	Definition	Page #
Command		A type of switch that is activated by the attacker in order to control the moment of initiation.	32
Command Projectile		The use of a small arms bullet to close the circuit by penetrating two metal plates. This provides standoff between the firing point and contact point.	32
Command Wire IED	**CWIED**	A switch where the firing point and contact point are separate but joined together by a length of wire. A Command Wire may contain multiple power sources located near both the firing point and the contact point to overcome the resistance in the length of the wire.	33
Commercial Explosives		Explosives produced and used for commercial, industrial, or recreational applications.	46
Concealment		A vessel commonly used to prevent the discovery of an IED by visual inspection. May also be used to add fragmentation.	55
Confinement		A vessel commonly used to hold the main charge together. May also be used to add fragmentation.	55
Consumer Electronics		Simple radio controlled devices, readily available in the consumer marketplace, (not purpose-built for telecommunication purposes).	33
Crush Wire		Contact point(s) spanning a length of wire that function an IED when crushed.	33
Custom Radio Controlled	**RC**	A purpose built radio controlled circuit board.	33
Detonating Cord		A waterproof, flexible fabric tube containing a high explosive designed to transmit the detonation wave.	46
Direct Current	**DC**	Electric current that flows through a circuit in just one direction.	53
Directional Effect		Type of main charge configuration where the explosive effect is channeled to an intended area.	46

Term	Acronym	Definition	Page #
Displacement		A switch that utilizes a jug or other container, with two contacts, one fixed and one floating. As a substance dissipates or fills the container, the contacts meet and complete the circuit.	33
Dual Tone Multi-Frequency	**DTMF**	A pairing of transmitter and receiver utilizing dual tones and multiple frequency hardware that allows for precision arming and firing, thus preventing unintended firing.	33
Dynamite		A high explosive used for blasting, consisting essentially of a mixture of, but not limited to, nitroglycerin, nitrocellulose, ammonium nitrate, sodium nitrate, and carbonaceous materials.	46
Electric		An initiator who's function is initiated by an electrical impulse that creates heat or a spark.	39
Electronic		An initiator controlled or operated by the controlled flow of electrons.	39
Elevated		IED emplaced above the surface: hanging from an overpass, on a roof, etc.	16
Emplacement		A description of where a device was placed to attack the intended target.	16
Enhancements		An optional, deliberately added component as opposed to a secondary hazard which modifies the effects of the IED. The IED would be effective, yet produce a different measurable result if this material were not added. The effect can be additional physical destruction, proliferation of dangerous substances (radiation, chemicals, etc.), or other results to enhance the effect of the IED.	57
Estimated Net Explosive Weight		A reference to the estimated weight of the main charge derived from observations of the blast effects and crater characteristics.	16
Event Signature Development / Device Profiling		The process of analyzing the tactical and technical identifiers of an IED incident to support force protection, targeting, prosecution, and sourcing.	5

GLOSSARY (continued)

Term	Acronym	Definition	Page #
Exploding Bridge Wire	**EBW**	An initiator or system in which a very high-energy electrical impulse is passed through a bridge wire, literally exploding the bridge wire and releasing thermal and shock energy capable of initiating a relatively insensitive explosive in contact with the bridge wire.	39
Explosion		A nuclear, chemical or physical process leading to the sudden release of energy.	5
Explosive Compounds		Explosive compounds are homogeneous substances whose molecules contain within themselves the oxygen, carbon, and hydrogen necessary for combustion.	47
Explosive Train		A succession of initiating and igniting elements arranged to cause a charge to function.	5
Explosively Formed Projectile	**EFP**	Specially designed main charge configuration incorporating an explosive charge with a concave metal liner which by the force of the charge reshapes the plate into a high velocity metal slug capable of penetrating armor.	47
False		An IED related incident that is incorrectly identified though reported in good faith as an IED, which is subsequently categorized as a false alarm after positive Explosive Ordnance Disposal (EOD) action.	5
Find / Cache		An IED related incident that involves the discovery and/or recovery of an IED not yet emplaced or employed, IED components, and/or IED paraphernalia.	5
Firing Switch		The component that initiates the explosive train.	33
Flame Fougasse		Typically a mixture of petrol (gasoline) and oil in a 40/60 ratio (also known as Improvised Napalm).	59
Force Protection		Preventive measures taken to mitigate hostile actions against Department of Defense personnel (to include family members), resources, facilities, and critical information.	6
Fragmentation		Small objects designed to be accelerated by explosive forces.	59

Term	Acronym	Definition	Page #
Fuel		An incendiary material designed to enhance the burning and visual effect of the device.	59
Fuel Oxidizer eXplosive (FOX) Mixture		An explosive mixture of fuel and oxidizer that deflagrates (very rapid burning) or detonates creating a blast wave.	47
Heat		A type of initiator that serves as an igniting element through the application of heat. This may include direct heat to a sensitive explosive.	39
High Explosive		A chemical compound or mixture that is capable of supporting or sustaining a detonation wave. High explosives do not require confinement as they combust instantaneously producing heat, gas, a rapid expansion of matter, and a detonation / shock wave.	47
Hoax		An IED related incident that involves a device fabricated to look like an IED and that is intended to simulate one in order to elicit a response.	6
Human Tip		Information provided in an advance and/or confidential manner regarding an IED, IED related materials, or associated personnel. This information can be received from, but not limited to, the local populace or government, intelligence agency, or an inside source.	16
Hydrostatic		A switch designed to complete a circuit or force a mechanical action with the change of fluid pressure.	33
IED Related Incidents		An event that involves one or more of the following IED-related actions / activities: IED, Explosion, Find / Cache, Turn-In, Hoax, or False.	6
Ignitor		A device designed to produce a flame or a spark to initiate an explosive train.	39
Improvised Claymore		An improvised weapon, military or homemade, designed to explosively propel a pattern of ball bearings or other fragmentation in an aimed direction.	47

GLOSSARY (continued)

Term	Acronym	Definition	Page #
Improvised Explosive Device	**IED**	A device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic or incendiary chemicals and designed to destroy, incapacitate, harass or distract. It may incorporate military stores, but is normally devised from non-military components. Refers to a type of IED incident that involves a complete functioning device.	5
Improvised Explosive / Homemade Explosive	**IE / HME**	Non-standard explosive mixtures / compounds which have been formulated / synthesized from available ingredients. Most often utilized in the absence of commercial / military explosives.	47
Improvised Grenade		An improvised weapon, using military or homemade components, designed to explode when a restraint is removed (usually hand held, but can be projected).	48
Improvised Mortar		An improvised weapon, using military or homemade components, designed to launch an explosive charge to the target.	48
Improvised Rocket		An improvised weapon, using military or homemade components, designed to propel an explosive charge to the target.	48
Improvised Weapons		Weapons constructed in an improvised manner designed to destroy, incapacitate, harass or distract.	6
In Parallel		Multiple batteries or other power sources which have their positive terminals connected to one another and their negative terminals connected to one another which results in an increase in the available current.	53
In Series		Multiple batteries or other power sources which have one positive terminal connected to the negative terminal of the next power source which results in an increase in the available voltage.	53
Incendiary		Chemical mixtures and flammable liquids that cause fire.	48
Incident Atmospherics		A description of the demeanor of the civilian population at an IED event to include mood, absence or presence, changes in previously experienced interactions, etc.	16

Term	Acronym	Definition	Page #
Incident Environmental Conditions		A description of the ambient surrounding conditions to include weather conditions such as temperature, precipitation, fog, dust, etc.	16
Initiator		Any component that may be used to start a detonation or deflagration. An initiator will be categorized as either a detonator or an igniter	37
Light / Photo-electric		A sensor acting as a switch that is looking for a change in ambient light (either light to dark or dark to light).	33
Light Bulb / Flash Bulb		Devices used as electric initiators that incorporate an improvised use of the bulb filament to initiate primary or low explosives.	39
Liquid Explosive		An explosive material in a liquid state. Examples include nitric acid esters (e.g. nitroglycerin, nitroglycol) and EDGN.	48
Long Range Cordless Telephone	**LRCT**	A switch utilizing a cordless telephone that has the capability to transmit signal significantly further than a normal telephone from the base station.	33
Low Explosive		A chemical compound or mixture that is designed to deflagrate (rapid burn) and generally require confinement to explode.	48
Magnetic		A proximity switch using a magnetic field to arm or fire an IED. This can sense an active field and close the switch when the field is disturbed; or react upon coming near a magnetic field.	34
Main Charge		The explosive charge which is provided to accomplish the end result in a munition. Examples for end results are: bursting a casing to provide blast and fragmentation; splitting a canister to dispense sub-munitions; or producing other effects for which it may be designed.	41
Main Charge Configuration		The arrangement or design of the main charge and other materials (usually metal) to create an effective weapon to attack personnel, vehicles, or structures.	48
Mechanical Energy		Stored or applied energy that results in physical movement of an IED component.	53

GLOSSARY (continued)

Term	Acronym	Definition	Page #
Membrane		A switch incorporating two metal layers, separated by an insulator that functions the IED when perforated or when pressure is applied.	34
Method of Employment		A description of how a device was delivered to the target.	16
Method of Identification		The manner in which a unit located a device, components or improvised weapon via visual observation, working animal, sensor, or human tip.	17
Military Explosives		Explosives manufactured for military use.	48
Mine		In land mine warfare, an explosive munition designed to be placed under, on or near the ground or other surface area and to be actuated by the presence, proximity or contact of a person, land vehicle, aircraft or boat, including landing craft.	48
Missile		A self-propelled munition whose trajectory or course is controlled while in flight.	48
Misznay-Schardin Effect		A characteristic of the detonation of a broad sheet of explosive. The explosive blast expands directly away from (perpendicular to) the surface of an explosive.	48
Mortar Munition		The complete munition, comprised of projectile and propellant system, to be fired from the mortar. The projectile normally comprises fuze, body filled with high explosives (HE) or other filling, obturator, and tail assembly.	49
Movement / Anti-Disturbance		A switch that causes two parts to make contact, completing a circuit after a disturbance to the IED (tilt, vibration).	34
Munition		A complete device charged with explosives, propellants, pyrotechnics, initiating composition or chemical, biological, radiological or nuclear material, for use in military operations, including demolitions.	49
Munroe Effect		A focusing of blast energy caused by a hollow or void cut into the surface of an explosive.	49
Non-electric		An initiator that functions by other than electric means (friction, chemical, impact).	39

Term	Acronym	Definition	Page #
Obstacle Creation		An IED primarily intended to create an obstacle to impede movement or channel movement into a desired location, possibly as part of a complex attack or ambush.	21
Omni-directional Effect		An aspect of main charge configuration where the explosion expands in all directions.	49
Passive Infrared		A switch that detects movement of a heat source. When the change in ambient temperature is detected, the sensor acts as a trigger to function the IED.	34
Percussion		An initiator that serves as an igniting element when mechanically struck.	39
Person Borne IED	**PBIED**	An IED worn, carried, or housed by a person, either willingly or unwillingly.	17
Plastic Explosive		A malleable or flexible explosive at room temperature.	49
Platter Charge		The use of an explosive to propel a metal plate toward a target in a manner where the plate remains intact.	49
Plunger		A switch utilizing a shaft, like that found in a syringe, where application of pressure on the head of the device will force the shaft downward, functioning the IED.	34
Power Source		A device that either stores or releases electrical or mechanical energy. The key elements of information about a power source are its type/ source, number of batteries and their configuration (series or parallel), its voltage (if electrical) and how it is connected to close an IED switch.	51
Pressure		A switch designed to function when pressure is applied in a predetermined direction (plate, tube, plunger, crush wire).	34
Pressure and Pressure Release		A method for activating the device that occurs as a result of either application or reduction of pressure.	34
Pressure Release		A switch for activating the device that occurs as a result of reductions in pressure.	34
Primary Device		The first of two or more IEDs encountered or initiated. Subsequent devices will be marked in the order found.	17

GLOSSARY (continued)

Term	Acronym	Definition	Page #
Projectile		An object, projected by an applied exterior force and continuing in motion by virtue of its own inertia. Projectiles can have a variety of fillers including explosives or chemicals.	49
Propellant		An explosive material that normally functions by burning to produce a controlled release of gasses used for propulsion purposes.	49
Proxy		A person (unwitting or coerced) who acts as a means of delivery of an IED.	17
Pull		A switch that functions when a person applies tension to a firing mechanism – such as pulling a spring. The tension causes an action that releases a firing pin or activates an electrical or electronic switch.	34
Purpose of Device		The immediate or direct tactical effect of the IED.	19
Pyrotechnic Delay		A pyrotechnic device added to a firing system which transmits the ignition flame after a predetermined delay.	34
Radar		A sensor that passively detects radar signals and power, usually operating within a specific range, in order to function an IED.	35
Radio Controlled IED	**RCIED**	A switch initiated electronically by wireless means consisting of a transmitter / receiver.	35
Radio Frequency Detector		A sensor that passively detects RF signals and power, usually operating within a specific range, in order to function an IED.	35
Radiological Dispersal Device	**RDD**	An improvised assembly or process, other than a nuclear explosive device, designed to disseminate radioactive material in order to cause destruction, damage, or injury.	59
Rocket		Self-propelled ordnance that uses gas pressure from rapidly burning propellant to transport a payload (warhead) to a desired target.	49
Role of IED		Identifying enemy use of IEDs as a primary, secondary, or subsequent form of attack.	17

Term	Acronym	Definition	Page #
Sea Mine		An explosive device laid in the water with the intention of damaging or sinking ships or of deterring shipping from entering an area. The term sea mine does not include devices attached to the bottom of ships or to harbor installations by personnel operating underwater.	50
Search and Detect Sensors		Equipment which detects, measures, may indicate and/or record objects and activities by means of energy or particles emitted, reflected, or modified by objects for the purpose of identifying IED activity.	17
Secondary Device		An additional IED used to attack individuals or vehicles after the initial event.	17
Sensor		A switch used to detect change in heat, light, movement, vibration, electromagnetic frequency, sound or magnetic field.	35
Sensor Defeat		Methods and technologies incorporated into the device construction and employment for the purpose of defeating detection or identification methods and friendly TTPs.	17
Series-Parallel Circuit		A combination of one or more series circuits and parallel circuits.	53
Shaped Charge		A main charge configuration incorporating explosives shaped so as to concentrate explosive force utilizing the Munroe Effect in a particular direction in order to cut or penetrate.	50
Shock Tube		A thin, plastic tube of extruded polymer with a layer of powdered high explosive deposited on its interior surface that propagates a detonation wave to the blasting cap.	39
Sourcing		The process of determining the origination point (such as a production facility or person, a geographic location, or a specific country of origin) for IED components.	6
Submunition		Any munition that, to perform its task, separates from a parent munition. Submunitions are classified as bomblets, grenades, or mines.	50

GLOSSARY (continued)

Term	Acronym	Definition	Page #
Suicide		An IED initiated by the attacker at a time of their choosing in which they intentionally kill themself as part of the attack, or possibly to deny capture.	17
Support to Prosecution		The process of associating related people, places, devices, or equipment to an individual for evidentiary purposes in a recognized court of law.	6
Switch		A device for making, breaking, or changing a connection in an IED. A single switch can have multiple functions (i.e., arming and firing).	27
Tactical Characterization		The manner in which an IED incident is planned and conducted (tactical design) and the intent (purpose of device).	6–11
Tactical Design		The specific design of an IED attack – including but not limited to: position of the IED, the type of IED, method of actuation, type of road segment used, concealment technique, use of secondary devices, the time of day, etc. Tactical design addresses the questions of "why here, why now, and why in this way." Terms used to describe a specific type of device or component of a device (e.g., VBIED) are often used to describe all or part of the tactical design.	13
Tactics, Techniques and Procedures Development		Using the lessons learned from an IED attack to refine and improve the tools and methods used during all missions in which an IED may be encountered (e.g. convoys, tactical suppression efforts, ISR, Counter-IED (C-IED) missions, etc.).	6
Targeting		The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities.	6
Technical Categorization		A description of an IED using a hierarchical construct to identify its key components. The components identified in this categorization are the elements from which technical and forensic information is recovered and exploited.	7–25
Telemetry		A switch utilizing paired RF modules that transmit and receive binary data.	35

Term	Acronym	Definition	Page #
Tension		A switch that functions when tension is applied to a firing mechanism – such as pulling a trip wire. The tension causes an action that releasing a firing pin or activates an electrical or electronic switch.	35
Tension Release		A switch that functions when tension is released – such as when a taut wire or cord is cut or broken – releases a spring-loaded firing pin or closes electrical contacts initiating the device.	35
Tilt		A switch that allows current to flow to the output wires after a conductive material (i.e., mercury or a ball bearing) is moved enough (up / down, left / right) to flow onto the switch contacts, completing the circuit.	35
Time		A type of switch that functions after a set time. Used widely against infrastructure targets.	35
Time Chemical		A chemical timing switch using a corrosive chemical with a known decomposition rate that is designed to destroy a physical restraint on a triggering device to start the initiation train.	36
Time Electronic		A timing switch using a commercial or improvised electric timer or integrated circuit to start the initiation train.	36
Time Fuse / Safety Fuse		A pyrotechnic burning at a certain rate used to transmit a flame to the non-electric detonator or a low explosive charge with a predetermined delay.	36
Time Fuse / Safety Fuse		A pyrotechnic mixture contained in a flexible and weather-proof sheath burning at a timed and constant rate; used to transmit a flame to the detonator or a low explosive charge with a predetermined delay.	40
Time Mechanical		A timing switch constructed or modified so that physical contact between two parts of the timing mechanism complete an electrical circuit.	36–40
Toxic Industrial Biological	**TIB**	Any biological material manufactured, used, transported, or stored by industrial, medical, or commercial processes which could pose an infectious or toxic threat.	59

GLOSSARY (continued)

Term	Acronym	Definition	Page #
Toxic Industrial Chemical	**TIC**	A chemical developed or manufactured for use in industrial operations or research by industry, government, or academia. For example: pesticides, petrochemicals, fertilizers, corrosives, poisons, etc. These chemicals are not primarily manufactured for the specific purpose of producing human casualties or rendering equipment, facilities, or areas dangerous for human use. Hydrogen cyanide, cyanogen chloride, phosgene, and chloropicrin are industrial chemicals that can also be military chemical agents.	59
Toxic Industrial Material	**TIM**	A generic term for toxic or radioactive substances in solid, liquid, aerosolized, or gaseous form that may be used, or stored for use, for industrial, commercial, medical, military, or domestic purposes. Toxic industrial material may be chemical, biological, or radioactive and described as toxic industrial chemical, toxic industrial biological, or toxic industrial radiological.	60
Toxic Industrial Radiological	**TIR**	Any radiological material manufactured, used, transported, or stored by industrial, medical, or commercial processes. For example: spent fuel rods, medical sources, etc.	60
Trend and Pattern Analysis		Using prior actions and activities to identify trends in activities or behaviors. Once identified these patterns can be used to predict future enemy actions, and plan intelligence surveillance, reconnaissance (ISR) activities and training.	7
TTP Identification		An IED primarily intended to cause a reaction by forces in an effort to learn and understand employed tactics. This knowledge is then used by the attacker to plan new attacks incorporating the lessons learned to inflict additional casualties or to avoid countermeasures. The IED need not function to serve this purpose. A Hoax IED can have TTP Identification as its intended outcome.	21
Turn-In		An IED related incident where an IED or component is turned over to friendly forces.	7
Underbelly		A type of IED attack in which the device is intended to target the underside of a vehicle.	18
Vehicle Borne IED	**VBIED**	An IED delivered by or concealed in a ground-based vehicle.	18

Term	Acronym	Definition	Page #
Victim Operated IED	**VOIED**	A type of switch that is activated by the actions of an unsuspecting individual. These instruments rely on the intended target to carry out some form of action that will cause it to function.	36
Visual Observation		Attained or maintained by sight, done or executed by sight only and relating to, or employing visual aids.	18
Water Borne IED	**WBIED**	An IED delivered by or concealed in a water-based vehicle.	18
Weapons Technical Intelligence	**WTI**	Intelligence derived from the processes and capabilities that collect, exploit and analyze asymmetric threat weapons systems to enable material sourcing, support to prosecution, force protection and targeting of threat networks.	5

Photo Credits

Cover - Aftermath of an IED attack, Iraq — Source: US Army

Photo 1 (Page 7) - Weapons/Component "Turn-In" in Afghanistan — Source: US Army

Photo 2 (Page 10) - After effects of an IED attack in Mogadishu, Somalia

Photo 3 (Page 17) - Hamas female suicide bomber — Source: Hamas Website

Photo 4 (Page 18) - English language Al Qaeda bomb making manual — Source: Al Qaeda website

Photo 5 (Page 32) - Mosque clock-timer utilizing clock mechanism switches — Source: TEDAC

Photo 6 (Page 33) - Homemade DTMF board — Source: TEDAC

Photo 7 (Page 34) - A typical saw blade pressure switch — Source: TEDAC

Photo 8 (Page 35) - A typical mercury tilt switch — Source: TEDAC

Photo 9 (Page 40) - Time Fuse — Source: TEDAC

Photo 10 (Page 47) - Homemade Ammonium Nitrate Prills — Source: TEDAC

Photo 11 (Page 49) - Munitions to convert to IEDs in Iraq — Source: US Army

Photo 12 (Page 53) - Battery Pack recovered in Afghanistan — Source: TEDAC

References

JP 1-02 – "Department of Defense Dictionary of Military and Associated Terms"

JP 3-11 – "Operations in Chemical, Biological, Radiological, and Nuclear (CBRN) Environments"

NATO STANAG AAP-6 – "Glossary of Terms and Definitions"

NATO STANAG AOP-38 Edition 5 – "Glossary of Terms and Definitions Concerning The Safety And Suitability For Service Of Munitions, Explosives and Related Products"

Automated EOD Publication System (AEODPS) "60 Series" publications

JIEDDO/DIA Weapons Technical Intelligence (WTI) Munitions Lexicon (November 2010 – DRAFT)

JIEDDO/DIA Weapons Technical Intelligence (WTI) Homemade Explosives (HME) Lexicon (November 2010 – DRAFT)

Prepared for the Defense Intelligence Agency and the Joint Improvised Explosive Device Defeat Organization by A-T Solutions, Inc. under contract # GS-10F-0350U.