Types of UXO

In the past century, all shapes, sizes, and types of explosive ordnance have been used in the U.S. for weapons system testing and troop training activities.

The following types of UXO are those that could be encountered on the former BBR:

· Small arms munitions
· Rockets
· Guided missiles
· Projectiles
· Mortars
· Projected and Rifle grenades
· Submunitions
· Bombs

Ordnance is color-coded during manufacturing for identification purposes. However, color markings cannot be relied upon to identify UXO markings can be altered or removed by weather or exposure to the environment. Instead, other features should be used to identify UXO. The following sections describe the basic features and characteristics associated with each general type of UXO.

Small Arms Munitions

Small arms munitions contain projectiles that are 0.5 inches or less in caliber and no longer than approximately 4 inches. They are fired from various sizes of weapons, such as pistols, carbines, rifles, automatic rifles, shotguns, and machine guns. Generally, the shell casings of small arms munitions are made from brass or steel. Although the hazards associated with these UXO are much less than for other munitions, unexploded small arms munitions may explode if thrown into a fire or struck with a sharp object such as a nail. Typical items on the former BBR include 50 caliber and for the purposes of this procedure, the 20 mm round is included in this category. These items have been found on the former BBR as single components, complete shells, belted rounds, and fragmented components.

20 mm projectiles

Belted 20 mm

Rockets

A rocket uses gas pressure from rapidly burning material (propellant) to transport a payload (warhead) to a desired location. Rockets can range from 11/2 to more than 15 inches in diameter, and they can vary from 1 foot to over 9 feet in length. All rockets consist of a warhead section, a motor section, and a fuze. They are unguided after launch and are stabilized during flight by canted nozzles at the base of the motor or fins attached to the motor.

2.75 FFAR Warhead

Parts of a Rocket.

The warhead section of the rocket is the portion that produces the intended effect; it can be filled with explosives, toxic chemicals, white phosphorus, submunitions, riot-control agent, or illumination flares. Fuzes may be located in the nose of the rocket or internally between the warhead and motor. The fuzing on rockets can be impact, time-delay, or proximity fuzing. Impact fuzes function when they hit the target. Delay fuzes contain an element that delays explosion for a fixed time after impact. Proximity fuzes are intended to function when the rockets reach a predetermined distance from the target.

Caution: Do not approach--proximity fuzing may activate, causing the rocket warhead to explode. Also, fired rockets may still contain residual propellant that could ignite and burn violently.

Guided Missiles

Guided missiles are similar to rockets; however, they are guided to their target by various systems. Some are wired-guided, and others are guided by internal or external radar or video. Guided missles are usually stabilized by fins controlled by internal electronics. Internal proximity fuzes are used in guided missles, which makes approaching them extremely dangerous. Also, fired guided missles may still contain residual propellant that could ignite and burn violently.

Projectiles

Projectiles can range from approximately1 inch to 16 inches in diameter and from 2 inches to 4 feet in length. Projectile fuzes can be located in the nose or in the base, as shown in Figure 5. Like rockets, projectiles may be stabilized during flight by fins or bands fixed around the circumference of the projectile.

Mortars

Mortars range from approximately 1 inch to 11 inches in diameter and can be filled with explosives, toxic chemicals, white phosphorus, or illumination flares. Mortars generally have thinner metal casing than projectiles, but use the same types of fuzing and stabilization.

Projected Grenades

The most commonly used projected grenade is the 40 millimeter (40mm) grenade. This grenade is also among the most commonly found UXO items. The 40mm grenade is about the same size and shape as a chicken egg. It contains high explosives and uses a variety of fuzes, including some of the most sensitive internal impact fuzing systems. Because of their relatively small size, 40mm grenades are easily concealed by vegetation. They are extremely dangerous and can explode if moved or handled.

Rifle Grenades

Rifle grenades look like mortars and range from about 9 to 17 inches in length. They may be filled with high explosives, white phosphorus, riot-control agent, illumination flares, or chemicals that produce colored screening smoke. Rifle grenades are fired from standard infantry rifles. They have an opening at the far end of a tube near the fin assembly that allows the rifle grenade to be placed on the barrel of a rifle. Rifle grenades rely on impact fuzing, which is located on the nose or internally behind the warhead.

Submunitions

Submunitions include bomblets, grenades, and mines filled with explosives or chemical agents. They may be antipersonnel, antimateriel, antitank, dual-purpose, incendiary, or chemical submunitions. Submunitions are typically spread over a large area by dispensers, missiles, rockets, or projectiles. Each of these delivery systems disperses the submunitions while still in flight, scattering the submunitions over an area.

Submunitions are activated in a variety of ways, depending on their intended use. Some are activated by pressure, impact, or movement or disturbance. Others are activated in flight or when they come near metallic objects. Some submunitions contain a self-destruct fuze as a backup. The self-destruct time can vary from a couple of hours to several days.

Warning: Submunitions are extremely hazardous because even very slight disturbances can cause them to explode.

Some types of submunitions require stabilization to hit the target straight on. Stabilization can be provided through an arming ribbon, parachute, or fin assembly.

Bombs

Bombs range in weight from 1 to 3,000 pounds and in length from 3 to 10 feet. Generally, all bombs have the same components - a metal container, a fuze, and a stabilizing device. The metal container, or bomb body, holds the explosive or chemical filler and may consist of one piece or multiple pieces.

Bombs use either mechanical or electrical fuzes, typically located in the nose or tail section, either internally or externally. Mechanical fuzes are generally armed by some type of arming vane. The arming vane operates like a propeller to line up all the fuze parts and thus arm the fuze. The fuzes may be configured as impact, proximity, or delay fuzes.

Bombs are stabilized during flight by fin or parachute assemblies attached to the rear section of the bomb. These assemblies often detach from the bomb after impact.