

UNITED STATES MARINE CORPS  
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Training Command  
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ICS0404  
06 JUNE 03

STUDENT OUTLINE

MINE AND BOOBY-TRAP AWARENESS

LEARNING OBJECTIVES

TERMINAL LEARNING OBJECTIVES

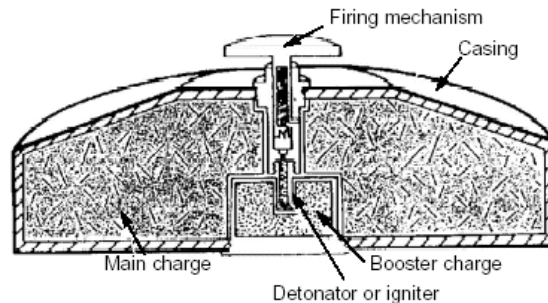
1. Given an individual weapon, a non-metallic probe, and an emplaced anti-personnel or anti-tank mine, while wearing a fighting load, probe for a mine in accordance with FM 21-75. (11TR.02.01)

ENABLING LEARNING OBJECTIVES

1. Given an individual weapon, a non-metallic probe, and an emplaced anti-personnel or anti-tank mine, while wearing a fighting load, detect a booby trap in accordance with FM 21-75. (11TR.02.01a)

2. Given an individual weapon, a non-metallic probe, and an emplaced anti-personnel or anti-tank mine, while wearing a fighting load, mark a mine in accordance with FM 21-75. (11TR.02.01b)

1. General Characteristics of Mines. A land mine is an explosive device that is designed to destroy or damage equipment or personnel. A mine is detonated by the action of its target, the passage of time, or controlled means. There are two types of land-based mines, anti-personnel and anti-tank.



a. Mines generally consist of the following parts:

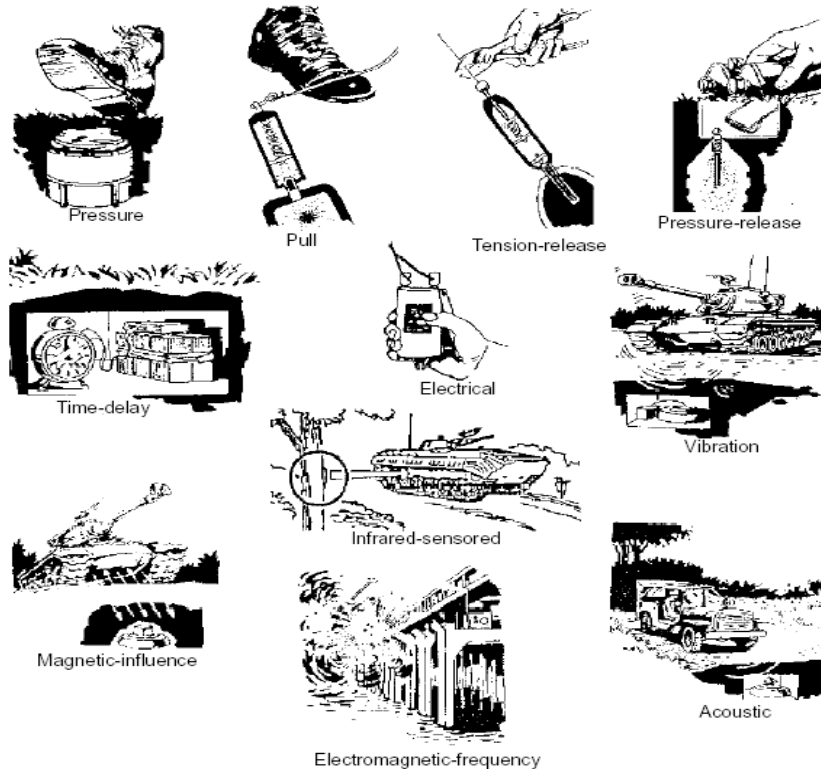
- (1) Firing mechanism or other device used to set off the detonator or igniter charge.
- (2) Detonator or igniter used to set off the booster charge.

(3) Booster charge that may be attached to the fuse or the igniter or be part of the main charge.

(4) Main charge that is housed in a container; usually forms the body of the mine.

(5) Casing that contains all the above parts.

b. A firing mechanism prevents the mine from exploding until it makes contact with, or is influenced by, its target. Once a mine has been armed, the firing mechanism may be actuated by the following methods:



- (1) Applying pressure.
- (2) Pulling a trip wire.
- (3) Releasing tension or breaking a trip wire.
- (4) Releasing pressure.
- (5) Passage of time/time-delay mechanism.
- (6) Impulses.
  - (a) Electrical.
  - (b) Vibration.
  - (c) Magnetic-influence.
  - (d) Electromagnetic-frequency.

(e) Infrared-sensored.

(f) Acoustic.

## 2. Common Threat Mines

a. PMN: The PMN is made in the Former Soviet Union and is classified as an Anti-personnel Blast mine. The PMN is made of a circular bakelite body with a rubber plate on the top. The rubber plate is secured to the mine body by a thin metal band. The detonator/booster well is placed on the side of the mine body, opposite of the fuse assembly well. The booster housing is made of plastic and the detonator is fitted into the booster. A plastic plug is screwed into the detonator/booster well to close it. Some PMN's, are found with the Gyata booster/detonator cap instead of the original well cap with the separate booster/detonator. The fuse assembly is screwed into the well on the opposite side of the detonator/booster well. The fuse is secured with a safety pin to prevent the striker to move forwards. The fuse is delay armed. A thin metal wire is attached to the back part of the striker and is enclosing a lead strip. The delay arming time is from 15 to 37 min. depending on the temperature.

(1) Height	56 mm
(2) Diameter	112 mm
(3) Mine weight	600 gr.
(4) Explosive weight	240 gr. TNT
(5) Casing material and color	Brown body with black rubber plate or olive green body with green rubber plate.
(6) Fuse type	Integral cocked striker with delay arming.
(7) Sensitivity	8-25 kg. Pressure
(8) Detectability	Yes.
(9) Anti-handling	No



b. PRB M35: The PRB M35 is a small anti-personnel blast mine manufactured in Belgium. It is commonly found in Iraq and Bosnia. The PRB M35 is a small

circular plastic AP blast mine. A large recessed threaded fuse well is located centrally on the top of the mine. The fuse well accommodates the M5 fuse. The fuse has a protruding pressure cap on the top. A plastic safety pin is inserted through a hole in the pressure button and plastic ring is attached to the end of the safety pin. The fuse has two spring loaded steel strikers separated by a cylindrical bolt with two apertures. The bolt holds the strikers apart and covers the percussion caps. The detonator is placed centrally at the base of the fuse. The only metal components are two steel spring strikers and the two percussion caps.

(1)	Height	58 mm (with fuse)
(2)	Diameter	64 mm
(2)	Mine weight	158 gr.
(3)	Explosive weight	100 gr. TNT
(4)	Casing material and color	Plastic green/brown
(5)	Fuse type	Integral double percussion type, pressure
(6)	Sensitivity	8-14 kg pressure
(7)	Detectability	Yes
(8)	Anti-handling	No



c. PROM-1: The PROM-1 is a circular AP bounding fragmentation mine with a body made of forged steel. There is a threaded fuse well in the center on the top of the mine, in which the UPROM-1 external fuse is screwed into. The base of the mine is secured to the bottom of the mine body with five screws. The mine body is pre-fragmented inside. The main explosive charge is made of cast Trotil in earlier models and Hexolite in later models. The propelling charge is made of 3 g. of black powder and is filled into a metal tube located through the center of the main charge. An internal fuse is located offset inside the mine body. It is initiated by a wire, which is attached to the lower side of the fuse and secured to the base of the mine. The fuse is built into the mine at the factory and is not to be removed. The

external UPROM-1 fuse is similar to the UPMR-3. The difference is that the UPMR-3 doesn't have a built in initiation capsule while the UPROM-1 has. The PROM-1 is delivered with two rolls of trip wire, which are 16 m long and covered with polyvinyl-chloride plastic. A hook is fastened in each end of the trip wires for attachment to the fuse and anchor. Although the PROM-1 only comes with two trip wires, it can be set up with up to six trip wires. On the upper side of the UPROM-1 is a carrier on which the pressure star is located. On the top of the carrier is a split ring for connection to trip wires. Under the pressure star is a fuse carrier on which the safety clip is attached by means of a puller. When the puller is down the safety clip is locked and cannot be removed. When the puller is in the horizontal position the safety clip is free to be pulled out. The pressure star carrier is shaped like a rod and has a hole through the end to attach the trip wire split ring. The pressure star has four arms, which are directed upwards. In the middle is a hole to insert the pressure star carrier. The mine is normally buried with only the pressure star and the star carrier exposed above the ground.

(1) Height	260 mm with fuse
(2) Diameter	78 mm
(3) Mine weight	3.0 kg
(4) Explosive weight	425 gr. Cast Trotil or Hexolite
(5) Casing material and color	Body of cast steel and fuse of brass, green
(6) Fuse type	UPROM-1, pull or pressure
(7) Sensitivity	3 kg pull. 9 kg pressure
(8) Detectability	Yes
(9) Anti-handling	No



**3. Detection of Mines.** Detection is the actual confirmation and location of mines. It may be accomplished through reconnaissance, or it may be unintentional, such as a vehicle running into a mine. Mine detection is used in conjunction with intelligence-gathering operations, minefield bypass reconnaissance, and breaching and clearing operations. There are four types of detection methods--visual, physical or probing, electronic, and mechanical.

a. Visual. Visual detection is part of all combat operations. Personnel visually inspect the terrain for the following indications of the existence of mines or booby-traps:

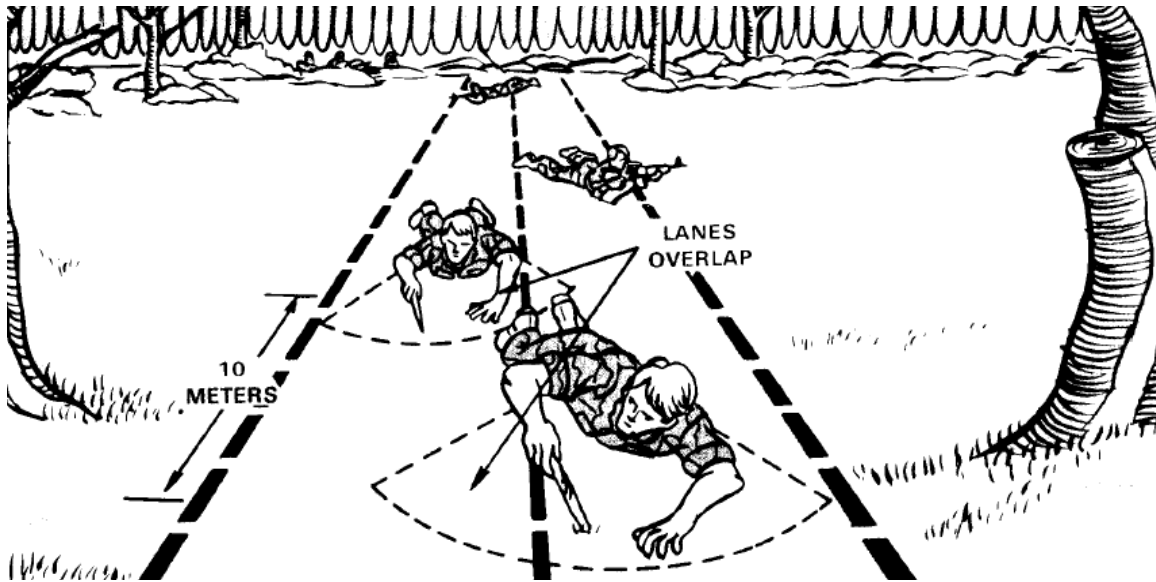
- (1) Trip wires.
- (2) Signs of road repair, such as new fill or paving, road patches, ditching, culvert work.
- (3) Signs placed on trees, posts, or stakes. Threat forces mark their minefields to protect their own forces.
- (4) Dead animals.
- (5) Damaged vehicles.
- (6) Disturbances in previous tire tracks or tracks that stop unexplainably.
- (7) Wires leading away from the side of the road. They may be firing wires that are partially buried.
- (8) Odd features in the ground or patterns that are not present in nature. Plant growth may wilt or change color, rain may wash away some of the cover, the cover may sink or crack around the edges, or the material covering the mines may look like mounds of dirt.
- (9) Civilians. They may know where mines or booby traps are located in the residential area. Civilians staying away from certain places or out of certain buildings are good indications of the presence of mines or booby traps. Question civilians to determine the exact locations.
- (10) Pieces of wood or other debris on a road. They may be indicative of pressure or pressure-release firing devices. These devices may be on the surface or partially buried.
- (11) Patterns of objects that could be used as a sighting line. The enemy can use mines that are fired by command, so road shoulders and areas close to the objects should be searched.

b. Physical or probing. Physical detection (probing) is very time-consuming and is used primarily for clearing operations, self-extraction, and covert breaching operations. Detection of mines by visual or electronic methods should be confirmed by probing.

c. Electronic. Although the use of electronic mine detector is an effective means of locating mines, it is time consuming and exposes personnel to enemy fire. The detector is effective only if operated by a trained and experienced operator. Additionally, the suspected mines must be confirmed by probing.

**4. Procedures for Physical Detection or Probing.** Detection of mines by probing is very time consuming and used primarily for clearing operations or for breaching operations that require stealth. Minefields are commonly used as obstacles to impede or harass maneuver. Minefields are typically covered by enemy direct and/or indirect fire making them extremely dangerous to cross. Every attempt should be made to first go around or circumvent a

minefield using explosives. If it is not possible to avoid the minefield, then it must be crossed. The following procedures and techniques are used when probing for mines in order to clear a path through a minefield for a maneuvering element to pass:

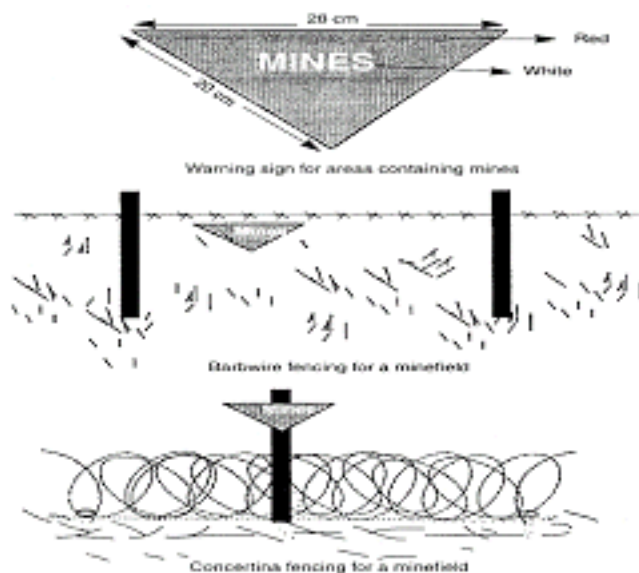


- a. Emplace security for the probing team. Once they begin probing through the minefield, they will not be able to quickly exit the area or easily defend themselves.
- b. The probing team stays close to the ground, moving on hands and knees or from the prone position. Two Marines will be side by side to probe an assault footpath. An assault footpath is breached to pass dismounted troops so they may continue an attack or secure the far side of the minefield.
- c. Use sight and touch to detect tripwires, fuses, or pressure prongs.
- d. Remove your helmet and flak jacket. For all mines, sleeves will be rolled up and watches and rings will be removed to increase sensitivity. Look and feel upward while moving forward.
- e. Use a slender nonmetallic object such as a probe.
- f. Probe every two to six inches across a one-meter frontage. Two Marines side by side can accomplish this task easily. To maintain alertness, probers should be relieved every 15-20 minutes.
- g. Push the probe into the ground at an angle of 45 degrees or less from the horizontal. If you push the probe straight down, it may detonate a pressure fuse.
- h. Allow just enough pressure on the probe to sink it slowly into the ground.
- i. Hard Soil. If the probe encounters resistance and does not go into the ground freely due to hard or frozen soil, the soil should be picked away with the tip of the probe and the loose dirt removed by hand.

j. Solid Object Detected. When a solid object is touched, probing is stopped and the surrounding soil is carefully removed to determine what the object is.

k. Mine Detected. If the object is a mine, enough soil is removed to show the mine type and then mark its location. Detected mines should be destroyed in place using explosives or causing the mines to self detonate by means of a grappling hook and rope. You will only detonate a mine if you have the time and if you are fully covered by adequate security.

5. Marking Mines. Marking defines the location and limits of the cleared lanes and the minefield boundary. How it is marked is not as important as having everyone understand the marking.



a. At a minimum, the entrance and exit of safe lanes must be marked. Use common sense by posting a green flag to start and a red flag to finish. At night, use chem-lights that are the same color as the flags being used to mark the entrance and exit.

b. For individual mines, place the marker on the friendly side of the mine. Use a stick or wooden stake with a white piece of engineer tape or clothe at the top. A blue chem-light will be placed at the top of the stake at night or during periods of low visibility.

c. Using Engineer Tape. For the lane itself, each of the probers will tie a piece of engineer tape to their legs which will spool out as they crawl forward marking the sides of the lane. At the end of the minefield, the engineer tape will be tied on a stake or held in place by a rock.

d. Guides. Two guides, familiar with the location of mines in the marked lane and also familiar with the location of the entry and exit point, should be left in place to guide follow-on Marines through the lane.

6. Immediate Action for a Tripped Mine. If you find yourself in a minefield, stay in place and warn other Marines. If you hear the "pop" of a tripwire or a detonating cap:



- a. Drop to the ground in the prone position with your feet towards the blast.
- b. Yell "Mine," to warn other Marines.
- c. Do not attempt to outrun the explosion. Hit the ground.
- d. Never run in a minefield. If an explosion occurs, probe to the casualty and treat him.
- e. If you are in a minefield and have not stepped on a mine, drop down and immediately begin physical detection measures to get out of the minefield or regress step-by-step the way you entered by crawling or walking.

**References: FM 20-32, Mine and Countermine Operations, pages 9-1 through 10-3 and FM 21-75, Combat Skills of the Soldier, pages C-1 through C-4.**

Student Notes: