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Chapter 14
Hand Grenades, Land Mines, Pyrotechnics, and Improvised Explosive Devices

Topics

1.0.0 Hand Grenades
2.0.0 Land Mines
3.0.0 Pyrotechnics
4.0.0 Improvised Explosive Devices (IEDs)

Overview
The reasons Seabees fight and the methods they employ are different from those of other Sailors. The primary job of the Seabee is to build, but you cannot build unless you control the jobsite. Since the jobsite is often in a forward or unfriendly area, the need to conduct a proper defense becomes obvious. For this reason there are certain military requirements imposed on Seabees.

When required, your job is to use the defensive techniques and tactics you have been taught. The objective of this chapter is to make you familiar with the various types of grenades, land mines, flares, and Improvised Explosive Devices (IEDs) you might use or encounter in tactical situations. You will learn how to use these devices, their components and safety features, and effective countermeasure techniques against their use by the enemy.

Objectives
When you have completed this chapter, you will be able to:

1. Identify types of hand grenades and specify their components, principles of operation, uses, and procedures for throwing and handling them safely.
2. Specify the purpose of land mines and the methods of detonating and proper disposal.
3. Specify the uses, construction features, and range of the Claymore mine.
4. Recognize the construction features of and uses for trip flares and the methods of removing them.
5. Identify improvised explosive devices and describe methods of triggering, likely places of concealment, and common material makeup.
6. Specify the methods of detecting mines and Improvised Explosive Devices (IEDs) and personal protection measures.
Prerequisites
There are no prerequisites for completing this manual.

Features of this Manual
This manual has several features which make it easy to use online.

- Figure and table numbers are italicized within the handbook text. Figure and table reference numbers are conveniently located next to (or near) the applicable handbook text.

- Audio and video clips are included in the text, with italicized instructions telling you where to click to activate the appropriate link.

- Review questions are included at the end of this chapter as the chapter assignment. To submit assignments log into https://www.courses.netc.navy.mil, go to “Student Services”, in the drop down click on “Active Courses”, go to "View/Submit Answers" next to the course you wish to submit answers for. Assignments may be submitted to the above Web site as they are completed, and instant scoring is available. Your completion letter is available as soon as you pass all assignments.

- A form at the end of each chapter allows your input for improving the manual or correcting errors to be brought to the attention of CSFE’s Technical Review Committee. Your input is important and will help keep this manual up to date and free of technical errors.
1.0.0 HAND GRENADES

Hand grenades can be used to degrade the enemy’s detection, observation, and engagement capabilities, enhancing the maneuver and firepower capabilities of ground forces conducting dismounted operations inside restrictive terrain. Hand grenades also provide the commander a non-lethal capability that contributes to increased protection.

1.1.0 General characteristics of hand grenades

The range of hand grenades, in relation to other weapons, is very short. This range depends entirely on the throwing ability of each individual. As a well-trained Seabee, you should be able to throw a grenade, such as the M67 fragmentation grenade, about 35 to 40 meters.

The effective casualty radius of a hand grenade is defined as the radius of a circular area around the point of detonation within which at least 50 percent of the exposed personnel become casualties. The radius is about 15 meters. This radius is small compared to the effective casualty radius of the other Seabee weapons. You must remember, however, that casualties can and do occur at distances much greater than the effective casualty radius.

Hand grenades do NOT detonate on impact. All casualty-producing grenades (fragmentation and white phosphorus) have a 4- to 5-second delay fuze. Chemical grenades have a 2-second delay fuze element.

You can compare a hand grenade to an ordinary firecracker. A firecracker consists of a paper body filled with gunpowder that is set off by a fuze. For example, when you light the fuze, it burns until it reaches the powder, which then explodes and shatters the paper body. A hand grenade functions in the same manner and consists of the same principal parts: filler, body, and fuze assembly (Figure 14-1).

The body is the container that holds the filler. It may be made of metal, glass, cardboard, or other suitable material. It may be circular, cylindrical, or lemon-shaped. Regardless of their makeup and shape, all grenade bodies have two things in common: (1) they are hollow to contain filler and (2) they have an opening or threaded hole to receive the fuze.

Filler is placed in the grenade body. The filler may be an explosive, such as TNT, Composition B (a composite explosive more sensitive than TNT), or black powder. It may also be a chemical, such as tear gas, thermite (incendiary), or white phosphorus.

The fuze assembly is a mechanical and chemical device that causes the filler to detonate or burn. Fuzes that burn are used primarily with chemical grenades; fuzes that detonate are used to explode fillers, such as TNT and Composition B.
When you pull the safety pin from the grenade, the safety lever should be held down firmly by your grip. When you loosen or relieve this grip, the safety lever is forced free from the grenade by a spring, allowing the striker to hit the primer (Figure 14-2). The primer sets off the delay element that burns into the detonator and igniter; this chain reaction is ended by bursting or burning of the filler in the grenade body. This entire action requires only a few seconds, so stay alert when you are handling and throwing hand grenades.

⚠️ WARNING ⚠️

Once the safety pin of this grenade is removed, the grenade is armed and **MUST** be thrown. Do **NOT** attempt to replace the safety pin.

1.2.0 Types and Purposes of Grenades

There are several varieties of hand grenades designed for many purposes. Grenades can be classified into one of these three general types:

1. Fragmentation
2. Chemical
3. Practice and training grenades

1.2.1 Fragmentation Grenades

Fragmentation grenades are used to produce casualties as a result of the high-velocity projection of fragments from the grenade case. The M67 fragmentation grenade (*Figure 14-3*) is the standard grenade used by Seabees. It has a smooth, sheet-metal body and is shaped like a ball. Its outer case is lined on the inside with a serrated wire coil. Its characteristics are listed in *Table 14-1*.
Table 14-1 — Components and Characteristics of M67 Fragmentation Grenade

<table>
<thead>
<tr>
<th>COMPONENTS AND CHARACTERISTICS</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Steel sphere with a scored steel spring for fragmentation</td>
</tr>
<tr>
<td>Filler</td>
<td>6.5 ounces of Composition B explosives</td>
</tr>
<tr>
<td>Fuze</td>
<td>M213</td>
</tr>
</tbody>
</table>
| Safety Features               | Safety clip  
|                               | Safety pin and pull ring with confidence clip  
|                               | Safety lever |
| Fuze Delay                    | 4 to 5.5 seconds |
| Total Weight                  | 14 ounces |
| Average Throwing Distance     | 35 meters |
| Effective Casualty-Producing Radius | 15 meters |
| Killing Radius                | 5 meters |
| Colors and Markings           | Olive drab body with yellow markings |

⚠️ WARNING ⚠️

Although the killing radius of the M67 grenade is 5 meters and the casualty-producing radius is 15 meters, fragments can disperse as far as 230 meters.

1.2.2 Chemical Grenades

Chemical grenades are chemical-filled munitions designed to be thrown by the individual or the M203. Chemical grenades are used for incendiary, screening, signaling, training, and riot control purposes as well as booby traps.

Amongst the most commonly used chemical grenade is the M47 chloracetophenone (CS) riot control hand grenade (Figure 14-4). This is a special purpose bursting type of munition used for control of riots and for training purposes. The grenades are filled with CS, a type of tear gas that causes irritation and watering of the eyes, resulting in temporary, partial, or total blindness. The body of the grenade is spherical and is made of plastic. It contains about 3.5 ounces of CS and weighs about 7.5 ounces.

Figure 14-4 — M47 CS chemical grenade.
This grenade does not have a safety lever as do other grenades. To prevent the grenade from activating after the safety pin is removed, maintain pressure on the top of the arming sleeve with the thumb of your throwing hand.

The radius of the burst is approximately 6 meters, but fragments of the plastic body occasionally fly as far as 27 meters. Effective portions of the agent may be carried as far as 75 to 100 meters downwind. Personnel using these grenades should wear protective gas masks.

1.2.2.1 Illumination Grenades

The MK1 illuminating grenade’s (Figure 14-5) main use is illumination of terrain during night operations. This grenade provides about 55,000 candlepower for a period of 25 seconds. The MK1 grenade may also be used as an incendiary grenade to start fires in dry grass, leaves, or brush. When the two halves of the body are separated by the burning of an illuminating charge, they project with considerable velocity. Friendly forces should take cover until the illumination can be seen.

1.2.2.2 Incendiary Grenades

The AN-M14 incendiary (thermite) hand grenade is cylindrical in shape and has a sheet-metal body with emission holes in the top (Figure 14-6). It weighs 32 ounces and contains a filler of 26.5 ounces of TH3 thermite mixture. An igniting fuze sets fire to the thermite filler after the normal delay (0.7 to 2.0 seconds). The thermite filler burns for approximately 40 seconds at a temperature of about 4300°F. A portion of the thermite filler changes into molten iron that flows out of the grenade and produces intense heat over a small area. The molten iron ignites or fuses whatever it touches. It is used to ignite combustible materials and to destroy all types of equipment. The characteristics of the AN-M14 TH3 incendiary hand grenade are listed in Table 14-3.
Table 14-3 — Characteristics of AN-M14 TH3 Incendiary Hand Grenade

<table>
<thead>
<tr>
<th>COMPONENTS AND CHARACTERISTICS</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Sheet metal</td>
</tr>
<tr>
<td>Filler</td>
<td>26.5 ounces of thermite (TH3) mixture</td>
</tr>
<tr>
<td>Fuze</td>
<td>M201A1</td>
</tr>
<tr>
<td>Safety Features</td>
<td>Safety clip (may be issued with or without a safety clip)</td>
</tr>
<tr>
<td></td>
<td>Safety pin and pull ring with confidence clip</td>
</tr>
<tr>
<td></td>
<td>Safety lever</td>
</tr>
<tr>
<td>Fuze Delay</td>
<td>0.7 to 2.0 seconds</td>
</tr>
<tr>
<td>Total Weight</td>
<td>32 ounces</td>
</tr>
<tr>
<td>Average Throwing Distance</td>
<td>25 meters</td>
</tr>
<tr>
<td>Effects</td>
<td>A portion of thermite mixture is converted to molten iron, which burns at 4,330 °F. The mixture fuzes together the metallic parts of any object that it contacts. The thermite filler can burn through a 1/2-inch homogenous steel plate. It produces its own oxygen and burns under water.</td>
</tr>
<tr>
<td>Colors and Markings</td>
<td>Gray with purple markings, has a single purple band (current grenades)</td>
</tr>
<tr>
<td></td>
<td>Under the standard color-coding system, incendiary grenades are light red with black markings.</td>
</tr>
</tbody>
</table>

⚠️ WARNING ⚠️

Avoid looking directly at the incendiary hand grenade as it burns. The intensity of the light is hazardous to the retina and can cause permanent eye damage.

1.2.2.3 M18 Smoke Grenade

The M18 colored smoke hand grenade (Figure 14-7 shows a yellow smoke grenade) is used as a means of communication. These grenades are self-contained units used to signal aircraft or to convey information through a prearranged signal. Table 14-5 outlines its components and characteristics.

Figure 14-7 — M18 Yellow smoke grenade.
Table 14-5 — Characteristics of the M18 Colored Smoke Hand Grenade

<table>
<thead>
<tr>
<th>COMPONENTS AND CHARACTERISTICS</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Sheet steel cylinder with four emission holes at the top and one at the bottom, which allows smoke to escape when the grenade is ignited</td>
</tr>
<tr>
<td>Filler</td>
<td>11.5 ounces of colored smoke mixture (red, yellow, green, or violet)</td>
</tr>
<tr>
<td>Fuze</td>
<td>M201A1</td>
</tr>
<tr>
<td>Safety Features</td>
<td>Safety clip (may be issued with or without a safety clip) Safety pin and pull ring with confidence clip Safety lever</td>
</tr>
<tr>
<td>Fuze Delay</td>
<td>0.7 to 2.0 seconds</td>
</tr>
<tr>
<td>Total Weight</td>
<td>19 ounces</td>
</tr>
<tr>
<td>Average Throwing Distance</td>
<td>35 meters</td>
</tr>
<tr>
<td>Effects</td>
<td>The grenade burns for 50 to 90 seconds with an average burn time of 60 seconds.</td>
</tr>
<tr>
<td>Colors and Markings</td>
<td>Light green body with black markings NOTE: The top of the grenade indicates the smoke color.</td>
</tr>
</tbody>
</table>

1.2.2.4 AN-M8 HC White Smoke Hand Grenade

The AN-M8 HC white smoke hand grenade (Figure 14-8) produces dense clouds of white smoke for signaling and screening. Table 14-6 outlines its components and characteristics.
Table 14-6 — Characteristics of the AN-M8 HC White Smoke Grenade

<table>
<thead>
<tr>
<th>COMPONENTS AND CHARACTERISTICS</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Sheet steel cylinder</td>
</tr>
<tr>
<td>Filler</td>
<td>19 ounces of Type C, HC smoke mixture</td>
</tr>
<tr>
<td>Fuze</td>
<td>M201A1</td>
</tr>
<tr>
<td>Safety Features</td>
<td>Safety clip (may be issued with or without a safety clip)</td>
</tr>
<tr>
<td></td>
<td>Safety pin and pull ring with confidence clip</td>
</tr>
<tr>
<td></td>
<td>Safety lever</td>
</tr>
<tr>
<td>Fuze Delay</td>
<td>0.7 to 2.0 seconds</td>
</tr>
<tr>
<td>Total Weight</td>
<td>24 ounces</td>
</tr>
<tr>
<td>Average Throwing Distance</td>
<td>30 meters</td>
</tr>
<tr>
<td>Effects</td>
<td>The grenade emits a dense cloud of white smoke for 105 to 150 seconds.</td>
</tr>
<tr>
<td>Colors and Markings</td>
<td>Light green body with black markings and a white top</td>
</tr>
</tbody>
</table>

![WARNING]

The AN-M8 HC hand grenade produces harmful hydrochloric fumes that irritate the eyes, throat, and lungs. It should not be used in enclosed or confined spaces unless personnel are wearing protective masks. Damaged AN-M8 HC grenades that expose the filler are hazardous. Exposure of the filler to moisture and air could result in a chemical reaction that will ignite the grenade.

1.2.3 Practice and Training Grenades

Practice and training grenades (Figure 14-9) are used for training personnel in the care, handling, and use of hand grenades before using service grenades. The M69 practice grenade simulates the functioning of service grenades to provide realism in training. Training grenades are completely inert and do not function in any way. The characteristics of the M69 practice grenade are listed in Table 14-7.
Figure 14-9 — M69 practice and training grenade.

Table 14-7 — Characteristics of M69 Practice Grenade

<table>
<thead>
<tr>
<th>COMPONENTS AND CHARACTERISTICS</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Hollow steel sphere</td>
</tr>
<tr>
<td>Filler</td>
<td>None</td>
</tr>
<tr>
<td>Fuze</td>
<td>M228, which is inserted into the grenade body</td>
</tr>
<tr>
<td>Safety Features</td>
<td>Safety clip</td>
</tr>
<tr>
<td></td>
<td>Safety pin and pull ring with confidence clip</td>
</tr>
<tr>
<td></td>
<td>Safety lever</td>
</tr>
<tr>
<td>Fuze Delay</td>
<td>4 to 5.5 seconds</td>
</tr>
<tr>
<td>Total Weight</td>
<td>14 ounces</td>
</tr>
<tr>
<td>Average Throwing Distance</td>
<td>40 meters</td>
</tr>
<tr>
<td>Effects</td>
<td>Small puff of white smoke and a loud popping noise</td>
</tr>
<tr>
<td>Colors and Markings</td>
<td>Light blue with white markings; the safety lever of the fuze is light blue with black markings and a brown tip</td>
</tr>
</tbody>
</table>

1.3.0 Grenade-Throwing Procedures

The two primary objectives of a hand grenade training program are to develop your proficiency in grenade throwing and to overcome any fear that you may have of handling explosives.

Consider safety first when you are determining the proper method of holding the grenade. For maximum safety and throwing comfort, cradle the grenade in your throwing hand with the safety lever held in place by that part of your thumb between the first and second joints.
For right-handed personnel, hold the grenade upright (*Figure 14-10*). This positions the pull ring so you can remove it easily with the index finger of your free hand. For left-handed personnel, invert the grenade (*Figure 14-11*) in your hand with the fingers and thumb of the throwing hand in the same position as right-handed personnel.

![Figure 14-10 — Right-hand grip.](#)  
**Figure 14-10 — Right-hand grip.**

![Figure 14-11 — Left-hand grip.](#)  
**Figure 14-11 — Left-hand grip.**

Not everyone throws in the same manner; it is difficult to establish firm throwing rules or techniques. However, there is a recommended method of throwing a grenade that can be mastered easily. By practicing the steps given below, you can develop your throwing proficiency to a point where your reaction to a target becomes immediate.

1. First, observe the target and establish the distance between your throwing position and the target area.

2. Hold the grenade at shoulder level with the grenade in your throwing hand and the index finger of your opposite hand grasping the pull ring (*Figure 14-12*). Remove the safety pin with a pulling, twisting motion. If the situation permits, you  

![Figure 14-12 — Removing the grenade pin.](#)  
**Figure 14-12 — Removing the grenade pin.**
should observe removal of the safety pin.

NOTE
When the safety pin cannot be pulled out, squeeze the legs of the safety pin together to aid in its removal. However, if the grenade is not used, spread the legs of the safety pin for safety in carrying.

3. As you remove the safety pin, immediately look toward your target (Figure 14-13, View A).
4. Throw the grenade with an overhand throwing motion, keeping your eyes trained at all times on the target. Release the grenade somewhere forward of your body and in your general field of vision (Figure 14-13, Views B and C). In this way, you take advantage of your inherent hand-eye coordination.

![Figure 14-13 — Throwing the grenade.](image-url)
5. Follow through on your throwing motion beyond the point where you released the grenade (*Figure 14-13, View D*). This follow-through improves distance and accuracy and relieves the strain on your throwing arm.

6. When available, duck behind cover to avoid being hit by fragments of the grenade. When no cover is available, drop to the prone position with your helmet facing in the direction of detonation (*Figure 14-13, View E*). Although proper positioning techniques of throwing hand grenades are usually stressed during military training exercises, your position during a combat situation is dictated by the amount of available cover and the location of the target. The positions given below point out the use and limitations of each position.

1.3.1 Standing Position

The standing position is the most desirable and natural position from which to throw grenades. It allows personnel to obtain the greatest possible throwing distance. However, this position should only be used when cover and concealment is readily available. To throw grenades from the standing position follow the following procedures:

1. Observe the target to estimate the distance between the throwing position and the target area.
2. Assume a natural stance, with your weight balanced equally on both feet.
3. Prepare the grenade.
4. Hold the grenade shoulder high and the nonthrowing hand at a 45-degree angle with the fingers and thumb extended, joined, and pointing toward the intended target.
5. Throw the grenade overhand so that the grenade arcs, landing on or near the target.
6. Allow the motion of the throwing arm to continue naturally once the grenade is released.
7. Seek cover to avoid being hit by fragments or direct enemy fire. If no cover is available, drop to the prone position facing the direction of the grenade’s detonation.

1.3.2 Prone-to-Standing Position

When exposure time is more important than accuracy and cover and concealment is not readily available, the prone-to-standing position can be used to immediately suppress an area. To throw a grenade from the prone-to-standing position, observe the following:

1. Lie down on your stomach with your body parallel to the grenade’s intended line of flight (*Figure 14-14, View A*).
2. Hold the grenade at chest level.
3. Place the hands in a push-up position, and stand up while holding the grenade in the throwing hand (Figure 14-14, View B).

4. Assume a good standing position, if the situation permits.

5. Prepare the grenade.

6. Hold the grenade shoulder high and the non-throwing hand at a 45-degree angle with the fingers and thumb extended, joined, and pointing toward the intended target (Figure 14-14, Views C and D).

7. Throw the grenade overhand so that the grenade arcs, landing on or near the target (Figure 14-14, View E).

Figure 14-14 — The prone-to-standing position for throwing a grenade.
8. Allow the motion of the throwing arm to continue naturally once the grenade is released (Figure 14-14, View F).

9. After throwing the grenade, drop to the ground on the stomach and press flat against the ground (Figure 14-14, View G).

1.3.3 Kneeling Position
The kneeling position reduces the distance a Seabee can throw a grenade. It is used primarily from behind low-level ground cover. To throw a grenade from the kneeling position, observe the following:

1. Observe the target to mentally estimate the throwing distance.

2. Prepare the grenade while behind cover.

3. Bend the non-throwing knee at a 90-degree angle, placing that knee on the ground. Keep the throwing leg straight and locked, with the side of the boot firmly on the ground (Figure 14-15, View A).

4. Move the body to face sideways, toward the target position.

5. Hold the grenade shoulder high and the non-throwing hand at a 45-degree angle with the fingers and thumb extended, joined, and pointing toward the intended target (Figure 14-15, View B).

6. Throw the grenade overhand so that the grenade arcs, landing on or near the target. Push off with the throwing foot to give added force to the throw.

Figure 14-15 — Throwing a grenade from the kneeling position.
7. Allow the motion of the throwing arm to continue naturally once the grenade is released (*Figure 14-15, View C*).

8. Drop to the prone position or behind available cover to reduce exposure to fragmentation and direct enemy fire (*Figure 14-15, View D*).

### 1.3.4 Prone-to-Kneeling Position

The prone-to-kneeling position enables the Seabee to throw the grenade farther and is performed for the same reason as the prone-to-standing position; time to throw is more important than accuracy. To throw a grenade from the prone-to-kneeling position, observe the following:

1. Lie on your stomach with your body parallel to the grenade’s intended line of flight.

2. Hold the grenade at chest level (*Figure 14-16, View A*).

3. Place the hands in a push-up position, and assume the kneeling position while holding the grenade in the throwing hand. Assume a good kneeling position, if the situation permits (*Figure 14-16, View B*).

4. Prepare the grenade.

5. Hold the grenade shoulder high and the non-throwing hand at a 45-degree angle with the fingers and thumb extended, joined, and pointing toward the intended target (*Figure 14-16, View C*).

6. Throw the grenade overhand so that the grenade arcs, landing on or near the target (*Figure 14-16, View D*).

7. Allow the motion of the throwing arm to continue naturally once the grenade is released (*Figure 14-16, View E*).

8. After throwing the grenade, drop to the ground on your stomach and press flat against the ground (*Figure 14-16, View F*).
1.3.5 Alternate Prone Position

The alternate prone position reduces both distance and accuracy and is used when rising to engage a target is not safe. To throw a grenade from the alternate prone position, observe the following:

1. Lie down on your back, with your body parallel to the grenade’s intended line of flight (Figure 14-17, View A).
2. Hold the grenade at chin/chest level.
3. Prepare the grenade.
4. Cock the throwing leg at a 45-degree angle, maintaining knee-to-knee contact and bracing the side of the boot firmly on the ground (Figure 14-17, View B).

Figure 14-16 – The prone-to-kneeling position for throwing a grenade.
5. Hold the grenade 4 to 6 inches behind the ear with the arm cocked for throwing.

6. With the free hand, grasp any object that will provide additional leverage to increase the throwing distance (*Figure 14-17, View C*).

7. Throw the grenade, and push off with the rearward foot to give added force to the throw.

⚠️ **CAUTION** ⚠️

Do not lift the head or body when attempting to throw the grenade as this may cause exposure to direct enemy fire.

8. After throwing the grenade, roll over onto your stomach and press flat against the ground (*Figure 14-17, View D*).

### 1.4.0 Hand Grenade Safety

This section deals with safety precautions that must be observed by the handlers and throwers of all hand grenades and by other persons who may be located within the danger area of the grenade.

Any handler or thrower of a casualty-producing hand grenade or person who is within the danger area (approximately 50 meters) of the grenade must wear a helmet.
No hand grenades, other than fused practice grenades, should be defuzed by any person EXCEPT qualified and authorized ordnance maintenance personnel.

When handling grenades armed with an impact detonating fuze, you should NOT release the safety lever before throwing NOR observe the impact of the grenade. Wait at least 5 minutes before approaching a dud. If a grenade armed with an impact detonating fuze is accidentally dropped after the safety pin has been removed, the grenade MUST be picked up and thrown to a safe area. Under NO circumstances should the grenade be kicked or tossed into a sump or ditch, since any sudden jarring of the grenade after the arming delay is expended causes detonation.

Do NOT remove the safety pin on a grenade until you are ready to throw it. In training, once you remove the safety pin, it must NOT be placed back into the grenade; the grenade must be thrown.

Only someone experienced in ordnance disposal should attempt to recover, handle, or otherwise tamper with a dud grenade.

If you should accidentally drop a casualty-producing hand grenade after pulling the safety pin, shout GRENADE to alert other personnel in the area and ensure that the grenade is picked up and thrown in a low arc into a safe area.

Under no circumstances should you attach grenades to clothing or equipment by the PULL RING. Attaching grenades to clothing or equipment by the pull ring can easily result in the safety pin being accidentally removed from the grenade.

When handling a noncasualty-producing hand grenade, such as the chemical type, you should not be closer than 10 meters to the grenade while it burns. You should not look directly into the thermite mixture since it may cause temporary blindness or even permanent eye damage.

The safety lever of a chemical hand grenade should not be released before the grenade is thrown because of its extremely short time-delay period.

Riot control hand grenades should not be thrown into a closed area nor should they be detonated within 5 meters of personnel.

Smoke hand grenades should not be used in a closed area.

At least a 30-minute waiting period should elapse before a chemical grenade dud is approached—and ONLY by authorized ordnance disposal personnel.
2.0.0 LAND MINES

2.1.0 Characteristics and Functioning

A land mine is an explosive device that is designed to destroy or damage equipment or personnel. Equipment targets include ground vehicles, boats, and aircraft. 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—Antitank (AT) and Antipersonnel (AP). Mines generally consist of the following parts *Figure 14-18*:

- Firing mechanism or other device (sets off the detonator or igniter charge)
- Detonator or igniter (sets off the booster charge)
- Booster charge (may be attached to the fuse or the igniter or be part of the main charge)
- Main charge (in a container; usually forms the body of the mine)
- Casing (contains all the above parts)

![Figure 14-18 — Land mine and its components.](image)

2.2.0 Components and Initiating Actions

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:

- Applying pressure (including tilt rod)
- Pulling a trip wire
- Releasing tension or breaking a trip wire
- Releasing pressure
- Passage of time (time-delay mechanism)
To arm some mines, you must position the igniter, set the mechanism properly, and disengage the safety device (usually by removing a safety pin). The fuse is the initial component in the firing chain; it has a Low-Explosive (LE) powder but is highly sensitive. The fuse is actuated by an initiating action. Although mines are issued with a standard fuse, alternate fuses are issued separately for some mines.

**CAUTION**
Except for the M18A1 Claymore antipersonnel mine described below, mines are **NOT** authorized for use by the Naval Construction Force (NCF). Personnel who encounter other types of mines should not attempt to disarm or use them or handle them in any manner. When located in the field, you should mark the mines clearly and furnish their locations to the battalion security officer or authorized ordnance disposal personnel.

### 2.3.0 M18A1 Claymore Mine

The M18A1 Claymore antipersonnel mine, currently the only mine authorized for use by the Seabees, is used only as an electrically-controlled, one-shot weapon. It is used for support of other weapons during the final protective fire of the unit.

The M18A1 Claymore antipersonnel mine (*Figure 14-19*) was standardized in 1960. It is a directional, fixed fragmentation mine and is designed primarily for use against massed infantry attacks. The Claymore mine is equipped with a fixed plastic, slit-type sight, adjustable legs, and two detonator wells.

The mine weighs about 3 1/2 pounds and is 8 1/2 inches long, 1 3/8 inches wide, and 3 1/4 inches high. The outer surface is a curved rectangular, olive drab colored, molded plastic case. The front portion of the case has a fragmentation face containing steel spheres embedded in a plastic matrix (enclosure). The back portion of the case contains 1 1/2 pounds of Composition C4 (composite explosive).
When detonated, the M18A1 Claymore antipersonnel mine projects steel fragments over a 60-degree fan-shaped pattern approximately 2 meters high and 50 meters wide at a range of 50 meters (Figure 14-20). These fragments are moderately effective up to a range of approximately 100 meters and can travel up to 250 meters. The optimum effective range—the range at which the most desirable balance is achieved between lethality and area coverage—is 50 meters.
2.4.0 M57 Firing Device

One M57 firing device (Figure 14-21) is issued with each M18A1 Claymore antipersonnel mine. The device is a hand-held pulse generator. A squeeze of the handle produces a double 3-volt electrical pulse of sufficient energy to fire the electric blasting cap through the 100 feet of firing wire issued with the mine. On one end of the firing device is a rubber connecting plug with a dust cover.

Figure 14-20 — Range and effects of the M18A1 Claymore antipersonnel mine.

Figure 14-21 — The M57 firing device.
The safety bail on the firing device has two positions. In the upper SAFE position, it acts as a block between the firing handle and the generator. In the lower FIRE position, the generator can be activated.

2.5.0 Installation and Firing

Complete instructions for installing, arming, testing, and firing the M18A1 Claymore antipersonnel mine are on the back of the packing bag (Figure 14-22), and should be carefully followed.

Figure 14-22 — The M18A1 Claymore antipersonnel mine setup instructions on bag.
2.6.0 Coverage and Methods of Fire

As the M18A1 Claymore antipersonnel mine can only be fired once, fire discipline is of major importance. The mine should not be used against single personnel targets; rather, it should be used for its intended purpose—massed personnel. It should be detonated when lead elements of an enemy formation approach within approximately 20 to 30 meters of the mine.

Effective coverage of the entire front of a position by mines can be accomplished by placing them in a line no closer together than 5 meters and no farther apart than 45 meters. A preferred lateral and rearward separation distance is approximately 25 meters.

⚠️ WARNING ⚠️

It is NOT authorized for Seabees to detonate the M18A1 Claymore antipersonnel mine without the use of the M57 firing device.

3.0.0 PYROTECHNICS

Pyrotechnic signals can be used as a means of communication and signals, obscuration, warning of an intruder, and for simulating enemy fires. There are two classifications of pyrotechnic communication signals: handheld signals and ground smoke signals. Both types of signals come in varied color patterns. Personnel can use these patterns to coordinate troop movements and, in the case of an emergency, designate pick-up points.

3.1.0 Trip Flares

A trip flare is used primarily to illuminate and to give warning of attacking or infiltrating enemy troops. Normally, it is placed in the path of, and activated by, an advancing enemy. Trip flares are usually available to an individual or small unit and can provide temporary close-in illumination. Trip flares are not suitable for producing continuous illumination and have little, if any, application in other than defensive operations. Other uses for trip flares include:

- Provide early warning of infiltration of enemy troops or signaling.
- Illuminate an immediate area.
- Ignite fires.
- Identify firing ports.
- Force the enemy to withdraw.
- Destroy small, sensitive pieces of equipment (in the same manner as an incendiary grenade).

The M49A1 trip flare (Figure 14-23) resembles a hand grenade in size and shape, except that it is provided with a bracket for attachment to a tree or post and a trigger mechanism for firing. The components and characteristics of the M49A1 trip flare is contained in Table 14-8.
Figure 14-23 — M49A1 trip flare.

Table 14-8 — Characteristics of the M49A1 Surface Trip Flare

<table>
<thead>
<tr>
<th>COMPONENTS AND CHARACTERISTICS</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Weight</td>
<td>0.75 pounds</td>
</tr>
<tr>
<td>Length</td>
<td>4.85 inches</td>
</tr>
<tr>
<td>Diameter</td>
<td>3.10 inches</td>
</tr>
<tr>
<td>Method of Activation</td>
<td>Trip wire (50 feet)</td>
</tr>
<tr>
<td>Filler</td>
<td>Illumination composition</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion M42</td>
</tr>
<tr>
<td>Safety Features</td>
<td>The trigger is attached to the exterior of the mounting bracket. The lever is hinged to the cover and is held in position by the safety clip when unarmed. A pull on the trip wire causes either the trigger tongue or pull pin to release the lever, which in turn permits the firing pin to strike the primer. The primer sets off the intermediate charge, and the intermediate charge ignites the first-fire composition on the ignition increment of the flare.</td>
</tr>
<tr>
<td>Fuze Delay</td>
<td>0 seconds</td>
</tr>
<tr>
<td>Effects</td>
<td>The trip flare produces 35,000 candlepower illumination for 55 seconds (minimum). The area of illumination is an approximately 300-meter radius.</td>
</tr>
<tr>
<td>Colors and Markings</td>
<td>Olive drab body with black markings</td>
</tr>
</tbody>
</table>
WARNING

Surface trip flares can cause fires when thrown on dry tinder. The minimum safe distance from an ignited surface trip flare is 2 meters because of sparks and the popping of burning magnesium. Never look directly at a burning surface trip flare. The intense flame can injure your eyes. At close ranges, surface trip flares may damage night vision devices and sights. Do **NOT** attempt to cook off a trip flare. The fuze does **NOT** have a time delay.

The location chosen for the flare should be to the right (looking toward the enemy) of the field to be illuminated, so the trip wire, when attached, runs to the right of the flare when facing the trigger. Using two of the nails supplied, nail the holder plate with ends of the two tabs upward to a stake, post, or suitable support at the height desired for the trip wire (usually 15 to 18 inches above the ground). Mount the flare by sliding the two square holes of the anchor clip over the mating tabs on the holder and press the flare down until it is locked in position. If desired, a third nail may be driven through the hole in the lower end of the anchor clip.

Fasten one end of the trip wire to the post, stake, or other rigid object at the desired distance from the flare (usually about 12.2 meters) and at the right of the flare when facing the flare trigger.

Press the fuze safety lever down with one hand and rotate the trigger one-quarter turn counterclockwise against the spring pressure with the other hand to the vertical position, so the lower end of the safety lever is behind the upper end of the trigger.

Pull the loose end of the trip wire taut and fasten it to the hole in the lower end of the trigger.

Check to see that the trip wire is taut and fastened at both ends and the trigger is vertical with the fuze safety lever behind the upper end of the trigger so when the pull ring and safety pin are withdrawn, the safety lever is still held by the trigger.

Hold the lever with one hand while carefully withdrawing the pull ring and safety pin from the flare.

Carefully release the hold on the safety lever, while making sure the lever is held in place by the upper end of the trigger.

To remove a trip flare, carefully depress the safety lever to align the holes in the lever and the fuze and insert the safety pin. Detach the trip wire from the trigger while holding the safety lever against the flare and rotate the trigger to its original position. Remove the nails from the holding plate and the anchor clip. Return the flare to its original position and packing.

### 3.2.0 Handheld Signals

Star clusters, star parachutes, and smoke parachutes are issued in an expendable launcher that consists of a launching tube and firing cap *(Figure 14-24).*
When in bulk, communication signals are secured in shipping containers (Figure 14-25). Personnel should inspect the shipping container upon receipt. Shipping containers that are damaged should not be opened; they should be returned to the Ammunition Supply Point (ASP), or disposed of, using the methods outlined in the unit Standard Operating Procedures (SOPs).
There are two types of communication signal shipping containers.

**M548 metal container** — contains 24 -handheld signals, individually secured in plastic containers (*Figure 14-25*).

**Wood Ammunition Box Container** — contains 36 -handheld signals, sealed in plastic barrier bags (*Figure 14-26*). Each barrier bag contains 18 -hermetically sealed metal containers. Each sealed container contains one handheld signal.

Upon removing the sealed barrier bags from the shipping container (*Figure 14-26*), personnel should inspect each barrier bag and identify any of the following discrepancies:

- The barrier bag has been damaged.
- The seal on the barrier bag show signs of tampering.

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*Figure 14-26 — Handheld signal barrier bag.*

⚠️ CAUTION ⚠️

Do not open hermetically sealed (air tight) containers until ready for use. A signal exposed to moisture may not function.
3.2.1 Removing Handheld Signal From Container

3.2.1.1 Handheld Signal Sealed Steel Container

Open the handheld signal from a hermetically sealed steel container by using the key attached to the container (Figure 14-27).

1. Remove the sealing strip.
2. Remove the top of the container.
3. Remove any padding pieces from the container.
4. Remove the signal.

3.2.1.2 Handheld Signal Plastic Sealed Container

To open the handheld signal plastic sealed container (Figure 14-28), use the steps shown below.

Figure 14-27 — Handheld signal sealed container.

Figure 14-28 — Handheld signal plastic sealed container.
1. Hold the container in one hand.
2. Twist the end cap counterclockwise with the other hand.
3. Remove the signal.

3.2.2 Inspecting Handheld Signal

Once the signal has been removed from the container (Figure 14-29), personnel should inspect the signal and identify any of the following discrepancies:

- Corrosion is on the launcher tube.
- Holes are visible in the launcher tube.
- The forward-end seal is broken or damaged.
- The firing pin is not present.
- The primer is not intact (is dented).
- The color-coded forward-end seal does not match the color listed on the data plate.

NOTE

If any of the discrepancies are found upon receipt of newly issued handheld signals, personnel should return the signal and individual container to the issuing person or dispose of it IAW the unit SOP.

Before securing handheld communication signals, personnel should take the following safety precautions:

- Ensure the launcher tube is not bent or punctured.
- Check the launcher tube for corrosion or dirt.
- Ensure the forward-end seal is not broken or damaged.
- Ensure the firing pin is present and the primer is intact (not dented).
Personnel should check handheld communication signals daily to ensure they are free of foreign material and they are not damaged.

Personnel should carry handheld communication signals IAW the unit SOP. When carrying handheld communication signals, personnel should adhere to the following guidelines:

- Ensure the communication signal is placed in a secure, dry area.

⚠️ CAUTION ⚠️
Duds or improper functioning could occur if exposed to moisture for long periods of time. Open just before use.

- Do not put adhesive tape around any portion of the handheld communication signal.

⚠️ WARNING ⚠️
Do not bend, tamper, modify, or otherwise alter a handheld communication signal. Do not tape any portion of the launcher or firing mechanism.

3.2.3 Using Handheld Signal

To safely use a handheld signal, personnel must properly determine the type and color of the pyrotechnic signal to be used, and safely launch the signal. When choosing a pyrotechnic signal, personnel must consider the signal’s intensity and color.

Intensity — Handheld colored pyrotechnic signal flares burn at different intensities.

Color — Determining specific colors at night is not difficult. However, personnel should avoid using red and green star clusters near aircraft.

⚠️ CAUTION ⚠️
Avoid signaling aircraft at night with star clusters. Red and green star clusters can be mistaken for tracers causing the aircraft to open fire on the friendly ground element or to withdraw.

In daylight, personnel should adhere to the following considerations; it can be difficult to differentiate between white and green, depending on lighting conditions.

- Green is very pale in daylight and is especially difficult to detect in fog, haze, or smoke-filled skies. In fact, white flares are easier to detect in daylight than green.
- White flares can be mistaken for illumination flares.
- Red may be difficult to detect when launched in a position that forces the observer to see it near a vivid sunrise or sunset.
To fire handheld signals follow the steps below.

1. Observe the surrounding area to ensure that you have overhead clearance.

2. Grasp the signal firmly with your nonfiring hand—red-knurled band down—with your little finger above the red band (Figure 14-30, View A).

3. With your firing hand, withdraw the firing cap from the upper end of the signal (Figure 14-30, View B).

4. Point the ejection end of the signal up and away from your body, and push the firing cap onto the signal until the open end of the cap is aligned with the red band (Figure 14-30, View C).

5. Hold the signal away from your body and at the desired trajectory angle.

⚠️ **CAUTION** ⚠️

When firing handheld signals by hand, avoid contact with the bones of the hand. This can result in injury to the hand. Instead, use the meaty portion of the hand.

⚠️ **WARNING** ⚠️

Turn your head away from the signal to avoid injury to your face and eyes from particles ejected by the small rockets.

![Figure 14-30 — Firing a handheld signal.](image)
6. Strike the bottom of the cap using a sharp blow with the palm of your firing hand (Figure 14-31, View A) or strike it on a hard surface (Figure 14-31, View B), keeping your nonfiring arm rigid.

### 3.2.4 Misfire

In the event of a misfire, follow the steps below.

1. While keeping the signal aimed, pull the cap back to the red knurled band, and rotate 90 degrees.
2. Make two more attempts to fire.
3. If it still does not fire, wait 30 seconds, keeping the arm rigid and the signal aimed overhead.
4. Return the cap to the ejection end of the signal and dispose of the signal IAW unit SOP.

### 3.2.5 Maintenance

When exposed to the environment, handheld signals require Preventive Maintenance Checks and Services (PMCS). The color-coded forward-end seal can deteriorate if exposed to moisture for long periods of time or submerged in water. If not removed, dirt or sand can cause the handheld signal to malfunction.

### 3.2.6 Cleaning

To clean the handheld signal, you should:

1. Wipe the dirt off the launcher tube and the firing cap using a clean, dry, lint-free cloth.
2. Remove any foreign matter or debris by using a fine-bristled camel hair brush.
3.3.0 M260 Illumination Ground Signal Kit

The M260 illumination ground signal/pen gun flare supports the small-unit leader in fire control, maneuver, and initiating operations such as ambushes. These signals are also a component of air crewmen’s survival vest and are used for distress signaling or to identify ground locations for aircraft (Figure 14-32).

⚠️ WARNING ⚠️

At close range, these signals can injure or kill if they strike a person.

When signaling an aircraft, do not aim directly at the aircraft; the signals, regardless of color, may appear to be small arms fire. Although the flares are small and usually burn out before reaching the ground, they can ignite fires.

Figure 14-32 — M260 illumination ground signal kit.

3.3.1 Inspection

Inspection of the M260 illumination ground signal kit at the unit level consists of a visual check of packaging materials. Do not open any moisture-proof container or barrier bag because the item must be protected from moisture just prior to use.

The most commonly encountered packaging defects are listed below.

- Outer containers (boxes) damaged, weathered, or rotted to the extent that contents are not protected
• Inner container damaged to the extent that contents are not protected or cannot be readily removed
• Container cap or closure not secured to the extent that contents are not protected
• Inner containers wet (except metal), rusted, molded, or mildewed
• Hardware or banding loose, missing, broken, or ineffective
• Handle or cleat missing or broken
• Contents loose to the extent that item may be damaged in handling

3.3.2 Storage
When storing the illumination ground signal kit you should take the following precautions.

• Select a level, well-drained site that is free from ignitable and flammable materials.
• Provide nonflammable or fire-resistant overhead covers (e.g., tarpaulin) for all items. Keep cover at least 6 inches (15.5 centimeters) from pile on the ends and at sides to permit circulation of air.
• Temporarily store unserviceable items in a segregated area.

3.3.3 Use
To operate an illumination ground signal kit, follow the procedures listed below.

1. Select the signal to be fired by color (if using the M186 pen flare kit). If the bandoleer contains more than one signal of the chosen color, use the one farthest from the lanyard.
2. Remove and discard the plastic cap (M185 and M186 only).
3. Cock the projector by moving the trigger to the safety slot (M185 and M186 only).
4. Carefully thread the projector onto the signal. Take care not to dislodge the trigger from the safety slot (M185 and M186 only).
5. Aim in the chosen direction.
6. Fire by moving the trigger to the bottom of the slot and releasing it with a snap.
7. If the expended signal is on the end of the bandoleer or if the signals between the expended signal and the end have been used, cut the bandoleer and discard the waste.
8. Return the partly used kit to the carrier bag, and seal with tape.

4.0.0 IMPROVISED EXPLOSIVE DEVICES (IEDs)
IEDs may be constructed out of any available material and contain various fillers, to include explosive, chemical, biological, or hazardous materials. IEDs may range in size from a cigarette pack or carton to a large vehicle.

The only limitations an enemy bomber faces are the availability of resources, personal ingenuity, and the degree or extent of “know how” required to facilitate construction—and in some cases application—of an IED.
IEDs are nonstandard, and usually fabricated from common materials. The mass quantities of cached, Captured Enemy Ammunition (CEA), and stockpiled munitions provide the explosive materials to “would be” enemy bombers.

The following are general mitigation measures in relation to the IED threat.

1. Trust your instincts. If something does not seem right—it probably isn’t. Be aware of your surroundings (situational awareness).
2. Watch the locals in your area of operation; are the familiar locals in the area? Are people moving away from you or your element, or are they acting or appearing nervous? Most bombers don’t blow up their own neighborhoods.
3. Be aware of news crews in the area for no apparent reason. Most bombers like their work filmed, but do not like any pictures taken of them.
4. Before each and every convoy or patrol, brief your personnel on the latest IED threat intelligence. Brief your personnel each and every time.
   a.Ascertain what types of items are currently in use.
   b. What are the known techniques, patterns, and likely locations of emplacement?
   c. Where in the area have items previously been placed?
   d. What intelligence do you have on your current route of march (primary and alternates)?
5. Rehearse actions (battle drill) for reacting to a possible Improvised Explosive Device.
6. Wear personal protective equipment (vests, helmets, and eye protection). They save lives!
7. Maintain speed and movement, whenever possible.
8. Maintain dispersion while conducting either mounted or dismounted operations.
9. Be cautious of choke points, vehicle breakdowns, bridges, one-way roads, traffic jams, sharp turns, etc.
10. If something stops movement, either mounted or dismounted, survey your immediate area for possible IEDs.

4.1.0 Reaction Upon Encountering a Possible IED

Stop all movement toward the possible IED and immediately evaluate your surrounding area for possible secondary IEDs.

- Do not approach the possible IED.
- Do not attempt to move the possible IED.
- If possible, avoid using any communication/electronic equipment within any previously established and secure exclusion area.

Establish security:

- Establish an area around the possible IED. Adjust the exclusion area based on Mission, Enemy, Terrain and Weather, Troops and Support Available, and Civil
considerations (METT-TC); local command policy/guidance, tactics, techniques and procedures, and SOPs.

- Search initial secure area for possible secondary explosive device(s) and hazards, while maintaining security.
- Identify potential enemy force observation/vantage points.
- Seek all available man-made or natural frontal and overhead cover.
- Avoid establishing a “reaction” pattern.
- Continue mission IAW HHQ guidance.

4.2.0 Identifying IEDs

Ever-changing recognition features for IEDs are based on the enemy’s capabilities and available resources. IEDs can be produced in varying sizes and can have different types of containers, function, and delivery methods. IEDs become more difficult to detect and protect against as the enemy becomes more sophisticated.

IEDs can be command-detonated; victim-activated, or timed to detonate. Car alarms, battery-powered remote doorbell devices, remote-controlled light switches, and cordless and cellular telephones are common means of detonation. Insulated wire or detonation cord is used to connect the detonator to the explosive.

IEDs can be dropped from or attached to the underside of overpasses. Drivers should watch for suspicious activity on overpasses and never stop under one. Enemy hiding positions will usually have line of sight to the IED and an easy escape route. IEDs can be emplaced along the side of the road, the shoulder, the median strip, or in numerous other areas (Figure 14-33, Figure 14-34, and Figure 14-35).

Figure 14-33 — Roadside IEDs.
Figure 14-34 — Projectile concealed by rocks on roadside.

Figure 14-35 — Modified mortar with trip wire attached to grenade fuze.
4.3.0 Reactions to a “Possible Improvised Explosive Device (IED)”

If you encounter a possible IED during military operations, you should properly establish an initial exclusion area and security, and report “Possible IED” to HHQ with 100% accuracy.

- Do not attempt to move the possible IED.
- Do not approach the possible IED.
- If possible, avoid using any communication/electronic equipment within any established exclusion area.

Upon encountering a possible IED, the following step should be followed:

1. Ensure all movements toward possible IED are stopped.
2. Establish minimum initial exclusion area of 300 meters around possible IED.
3. Establish security:
   a. Search secure area for possible secondary explosive device(s)/hazards, while maintaining security.
   b. Identify potential enemy force observation/vantage points.
   c. Seek all available man-made or natural frontal and overhead cover.
   d. Avoid establishing a “reaction” pattern.
5. Continue mission IAW HHQ guidance.
Summary

In this chapter, you were introduced to hand grenades, land mines, flares, improvised explosive devices, and what you should do when you encounter them. This chapter described the functions of the different types of grenades, how to arm grenades, and throw them properly. The discussion pointed out how they are detonated, what to look for when identifying them, and how to proceed on patrol to protect yourself. IEDs have taken many lives over the past decade, and will continue to do so. It is imperative for you to learn how to identify them and what to do when you encounter them.
Assignment 14

Objectives

1. Identify types of hand grenades and specify their components, principles of operation, uses, and procedures for throwing and handling them safely.
2. Specify the purpose of land mines and the methods of detonating and proper disposal.
3. Specify the uses, construction features, and range of the Claymore mine.
4. Recognize the construction features of and uses for trip flares and the methods of removing them.
5. Identify improvised explosive devices and describe methods of triggering, likely places of concealment, and common material makeup.
6. Specify the methods of detecting mines and Improvised Explosive Devices (IEDs) and personal protection measures.

Questions

1. Fragmentation and chemical hand grenades are used primarily against what type of targets?
   1. Material
   2. Vehicles
   3. Structures
   4. Personnel

2. The MK1 illumination grenade provides 55,000 candlepower of light for a maximum of how many seconds?
   1. 15
   2. 25
   3. 30
   4. 40

3. When, if ever, can the safety pin of the MK1 illuminating grenade, be replaced?
   1. During the training phase of hand grenade throwing
   2. As long as the safety lever has not been released
   3. Only during combat conditions
   4. Never

4. Practice and training grenades are used for what purpose?
   1. Train personnel in sending smoke signals
   2. Expose personnel to the effects of tear gas
   3. Familiarize personnel in the care and handling of service grenades
   4. Demonstrate the power of grenades
5. The fuzes for casualty-producing hand grenades have a delay time of how many seconds?
   1. 1 to 2
   2. 2 to 3
   3. 3 to 4
   4. 4 to 5

6. A fragmentation type of hand grenade uses which, if any, of the following fuze assemblies?
   1. Ignition
   2. Impact
   3. Flammable
   4. None of the answers are correct.

7. The arming sleeve is held in place before the grenade is thrown in what type of grenade?
   1. Fragmentation
   2. Riot control
   3. Illuminating
   4. Practice

8. If a grenade armed with the impacting detonating fuze is accidentally dropped after the safety pin has been removed, what action must you take to ensure the safety of friendly personnel?
   1. Pick it up and replace the safety pin
   2. Pick it up and throw it to a safe area
   3. Leave it where it is, shout "grenade," and seek cover
   4. Kick it or toss it into a nearby sump or ditch

9. The safety lever of a chemical hand grenade is released as it is thrown because of what reason?
   1. There is an extremely short time-delay fuze.
   2. There is danger of the lever hitting friendly personnel.
   3. The time delay fuze is too long to do otherwise safely.
   4. The fuze may not become activated.

10. Land mines are used to inflict casualties or damage against __________.
    1. heavy equipment only
    2. enemy personnel only
    3. enemy personnel and vehicles
    4. light tanks only
11. As a Seabee, what types of mine are you authorized to use?
   1. Pull action
   2. Pressure-actuated
   3. Antivehicle
   4. Antipersonnel

12. The Claymore mine used by Seabees is detonated by what means?
   1. Pressure release
   2. Trip wire
   3. Pull or jerk
   4. Electrical control

13. What type of explosive charge is used in the Claymore mine?
   1. Dynamite
   2. TNT
   3. Composition C4
   4. Black powder

14. What type of firing device is used with the Claymore mine?
   1. Pulse generator
   2. Electric battery
   3. Trip wire
   4. Pressure fuze

15. What amount of wire is issued with the Claymore mine?
   1. 100 feet
   2. 200 feet
   3. 100 yards
   4. 200 yards

16. On a Claymore mine, in what location can complete instructions be found?
   1. Bandoleer flap
   2. Firing device
   3. Back
   4. Front

17. What is the most effective range of a Claymore mine, in meters?
   1. 10 to 20
   2. 20 to 30
   3. 30 to 40
   4. 40 to 50
18. As a Seabee, you should use trip flares for what function?
   1. Providing continuous illumination
   2. Giving warning of attack or infiltration of the enemy
   3. Illuminating large areas
   4. Signaling other units

19. The mounting bracket and trigger mechanism of the trip flare are attached to what other part?
   1. Upper cap
   2. Fuze
   3. Base cap
   4. Safety lever

20. You are changing defensive positions, and you wish to use the same trip flares in the new position. Before moving them to the new position, what should you do first?
   1. Detach the trip wires from the triggers
   2. Rotate the trigger mechanisms to their original positions
   3. Depress the safety levers and replace the safety pins
   4. Remove the fuzes from the trip flares

21. IEDs are nonstandard, and usually fabricated from what materials?
   1. common
   2. special
   3. radioactive
   4. adhesive

22. What reaction should be taken upon first encountering a possible IED?
   1. Continue movement around the possible IED and report the location to Higher Headquarters.
   2. Stop all movement toward the possible IED and immediately evaluate your surrounding area for possible secondary IEDs.
   3. Identify the type and mark the location.
   4. Identify the enemy force that is in the immediate area.

23. Which of the following can be used to detonate IEDs?
   1. Insulated wire rope and battery operated bulbs.
   2. Battery-powered remote doorbell devices, and remote controlled light switches.
   3. Bridges and overpasses.
   4. Dropped from the underside of overpasses.
24. Enemy hiding positions will usually have ________ to the IED and an easy escape route.

1. safety switches
2. trip flares
3. cameras
4. line of sight

25. What minimum initial exclusion area is established when encountering a possible IED?

1. 100 meters around possible IED.
2. 300 meters around possible IED.
3. 800 meters from man-made frontal cover
4. 900 meters from man-made frontal and overhead cover
ASSIGNMENT 14

Hand Grenades, Land Mines, Pyrotechnics, and Improvised Explosive Devices

Directions: Select the correct answer from the list of alternates below each question in the end of chapter assignment. Write in the answer next to the corresponding question number below. Use this answer sheet as a reference to completing the online assignment related to this assignment.

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Additional Resources and References

This chapter is intended to present thorough resources for task training. The following reference works are suggested for further study. This is optional material for continued education rather than for task training.

Grenades and Pyrotechnic Signals, Department of the Army Field Manual (FM) 3-23.30

Mine/Countermine Operations, Department of the Army, PCN 32002016000 Field Manual (FM) 20-32

Improvised Explosive Device (IED) Awareness Guide, TC 9-21-01(093-89D-01)
Trainee Feedback

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Course Date: ________  Chapter Number: ______  Page: ______
Paragraph: _____  Sentence: _____  Figure: _____  Frame/View: ______

Description: ____________________________________________________
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(optional) Corrective action: ___________________
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(optional) Supporting reference(s): __________________________________
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Your email address, if a response is requested: ________________________