

CHAPTER 11

REACTIONS TO SCATTERABLE MINES

NEW THREAT

The tactical employment of scatterable mines is a relatively new battlefield threat that US forces have not yet encountered. Consequently, an enemy's use of scatterable mines may constitute a significant advantage. Our forces must be trained and prepared to breach and clear routes through scatterable minefield. They must also be able to conduct extraction from scatterable minefield. Scatterable mines can be encountered at **any** conflict level in **any** theater of operations (TO).

Combat units must maintain a high tempo of mobility in spite of scatterable mine presence. Combat support (CS) and CSS units are especially vulnerable to scatterable mines because countermine doctrine and equipment have traditionally focused on close combat breaching operations. CS and CSS units must have

freedom of mobility through a limited organic, self-protection capability. Any unit that cannot self-extract from scatterable minefield risks being fixed in place and destroyed by other enemy fires. Engineer units provide breaching and clearing capability but are unable to cope with the quantity of scatterable mines expected.

In addition to scatterable mines, our forces can expect to encounter a variety of submunitions (for example, cluster bombs). These submunitions, while not technically mines, have a similar effect. They have several fuzing methods including trip wires, time delays, and magnetic influence. Submunition littered areas are minefield. The same countermine tactics, techniques, and procedures are employed against submunitions.

WORLDWIDE THREAT

A nation does not have to possess the technical infrastructure to build scatterable mines. Scatterable mines and delivery modes are readily available in the retail arms market. The following armies have known scatterable mine capability:

- Argentina
- Austria
- Belgium
- Brazil
- China
- Egypt
- France
- Germany
- Greece
- Iraq
- Israel
- Italy
- Japan
- Poland
- Portugal
- Singapore
- Spain
- Sweden
- Switzerland
- Russia
- United Kingdom
- United States
- Yugoslavia

Intelligence estimates credit additional nations with having or developing scatterable mine manufacturing capabilities. Some nations produce mines for an export market. US forces can expect to encounter scatterable mines in a low-intensity operation. Scatterable mines are ideally suited to the needs of military forces who import their weapon systems because scatterable mines can be rapidly employed and present a low risk to the user. Artillery, helicopter, and ground-vehicle delivery systems are readily available. Sophisticated delivery systems are not required because some scatterable mines may be employed by hand. Insurgent and guerrilla forces may employ scatterable mines to counter the high mobility of civil and military security forces.

DELIVERY MEANS

The enemy may use a variety of systems to employ scatterable mines—artillery, multiple rocket launcher (MRL), helicopter, fixed-wing

aircraft, and ground vehicle delivery. As already mentioned, scatterable mines may also be employed by hand.

EXPECTED DENSITY OF SCATTERABLE MINES

The density of scatterable minefield depends mainly on the delivery means. Short-range, vehicle-launched scatterable mine systems may have densities comparable to conventional minefield. Artillery-, rocket-, or aerial-

launched scatterable minefield cover a larger area and have less density; although concentration on a specific target increases density.

LOCATION OF SCATTERABLE MINES

All scatterable mines lie on the ground surface. Depending on soil conditions, mines are visible on roads, hard surfaces, and level ground; but they are difficult to locate in broken ground or undergrowth. A detailed ground reconnaissance is time-consuming. The enemy can emplace scatterable mines with precision in the close combat area, in our rear areas, or in his own rear areas to protect his facilities from our deep operations. An enemy's use of scatterable mines can seriously jeopardize the early stages of an airborne, air assault, or amphibious operation when the initial assaulting force and the lodging areas are small. The enemy can project a scatterable minefield in front of, behind, to either side of, or on top of a unit. The ability to employ scatterable mines on top of a unit represents a new war-fighting situation. Once a unit's position has been mined, movement within the area is restricted. The unit must self-extract from the minefield site to resume its operations. Enemy scatterable minefield, depending on their location, are covered by indirect fire and may be covered by direct fire. If units remain in the minefield until it is cleared, casualties may occur due to direct fire, indirect fire, or mine self-destruct sequence. US forces may encounter scatterable mines under the following circumstances:

- Enemy scatterable mines (delivered by indirect fire or aircraft) used to *reseed* previously breached obstacles.
- Entire or remnant *hasty* obstacle enemy scatterable minefield that have been bypassed or incompletely cleared by friendly combat forces as they advance. (The mines have not yet self-destructed.)
- Enemy scatterable minefield delivered as counterbattery fire to destroy friendly artillery or to fix friendly artillery in place for destruction by other fires.
- Entire or remnant scatterable minefield emplaced by friendly forces, intended for countermobility operations against the enemy, and subsequently uncovered by friendly forces. (The mines have not yet self-destructed or self-neutralized.)
- Scatterable minefield used as an area denial obstacle.
- Friendly and enemy scatterable mines that have fallen outside of their intended target area.

DETECTION

Detection is the first step in countering scatterable mines during combat. At night or during periods of limited visibility (due to smoke or dust), small, surface-laid mines are very hard to see. Combat vehicle crewmen traveling cross-country in a buttoned-up vehicle are unable to see scatterable mines or to avoid running over them. The IPB indicates if scatterable mines are expected to be employed against US forces. The unit detecting a mine or minefield, scatterable or convention-

al, is responsible for marking it, reporting its location to higher headquarters, and clearing or breaching it (if so directed by higher headquarters). All units mark encountered enemy minefield, and they remain marked until they are cleared. Rear area units are trained and equipped to mark minefield in their operating areas. Scatterable mines in rear areas are an element of area damage control (ADC) and are reported to the rear area operations center (RAOC).

BREACHING AND CLEARING LANES

The combined arms breach of a scatterable minefield is executed according to FM 90-13-1. The first option is to bypass the minefield.

Heavy Force Breaching Techniques

The preferred breaching technique for scatterable mines is using a MICLIC, CEV with full-width mine rake, or mine plow. Breaching techniques are the same as those used for conventional minefield. After using the MICLIC, proof with a CEV with full-width mine rake. If scatterable mines are magnetic- or seismic-influence AT mines, the roller or plow will not eliminate mines in the center between the roller and plow unless an improved dog bone assembly is used. When proofing with a roller or plow, straddle the cleared centerline of the MICLIC path. Multiple MICLICs may be required.

The CEV, ACE, and dozer blades were not designed for breaching minefield and should only be employed as a last resort to clear a path through AT scatterable mines. This is extremely dangerous to the crew and equipment. However, the CEV or ACE can effectively clear a lane through AP scatterable minefield, since they sustain little or no damage and offer protection to the crew. When using a dozer to clear a path through AT or AP scatterable mines, the operator is exposed to mine effects. Before clearing begins, the

operator's cabin should be sandbagged, and the lane cleared of trip wires with grapnel hooks. When using an engineer blade for clearing a path through a scatterable minefield, use the skim technique (see Figure 11-1, page 11-4).

Light /Dismounted Force Breaching Techniques

Breaching with hand-emplaced explosives is the preferred dismounted breaching technique for scatterable minefield. Mine detection in the desired lane is critical in the breaching drill. Even though scatterable mines lie on the surface, vegetated areas make detection difficult. Use grapnel hooks to clear trip wires before moving forward to emplace demolition charges by hand. Do not disturb the mine when emplacing demolition charges.

Destruction Using Direct Fire

Scatterable mines and small submunitions can be destroyed or disabled using aimed, single shots from a standard service weapon with issue ammunition. The goal of the technique is to rapidly produce a disabling munition reaction that reduces or eliminates the designed effect of the mine or submunition. Bullet penetration of an HE-filled munition frequently results in a low-order detonation. Other disabling reactions include mechanical breakup, burnout, and a high-order detonation. Service

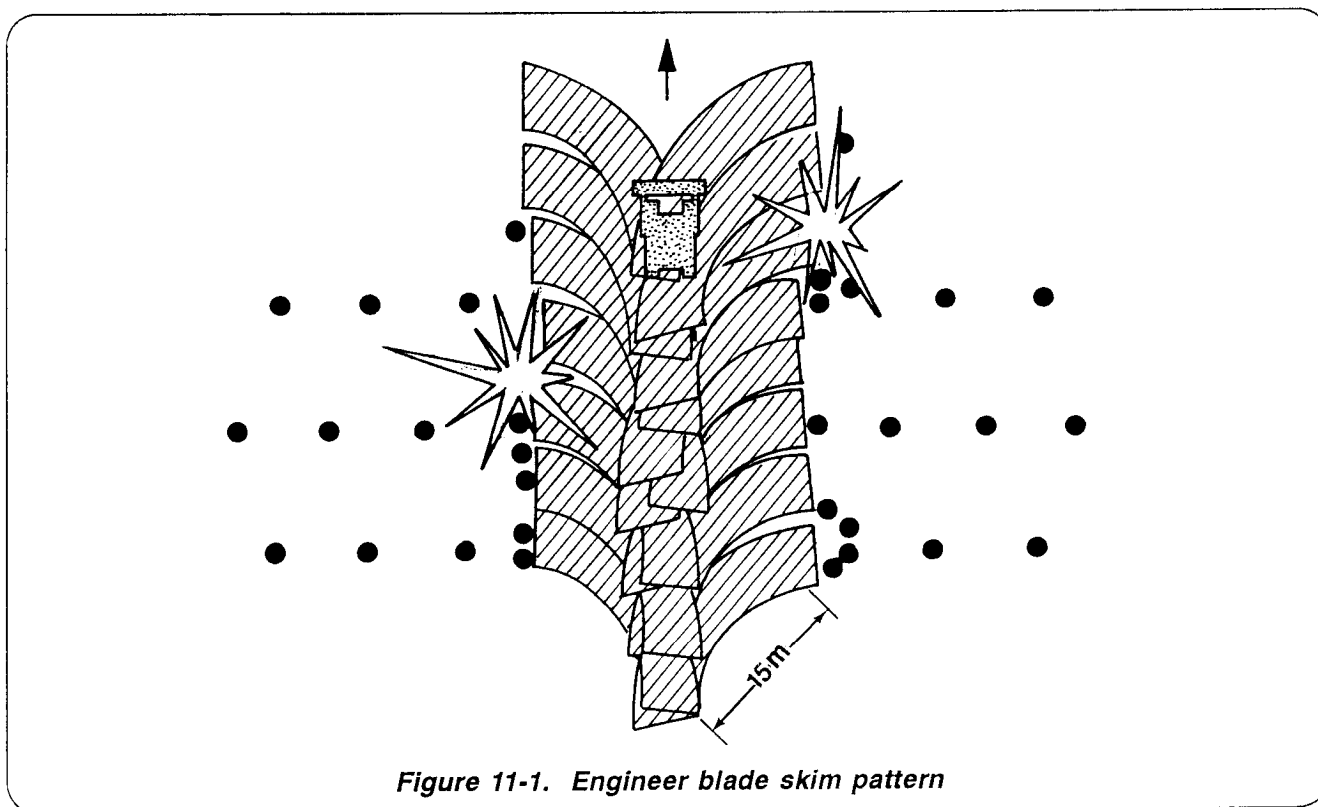


Figure 11-1. Engineer blade skim pattern

weapons (5.56 mm, 7.62 mm, .50 caliber, and 25 mm) will likely produce a desired effect on a scatterable mine or submunition. The marksman should approach no closer than 25 meters to a scatterable mine or submunition and aim for center of mass. The technique has risks. Table 11-1 shows the reasonable expectations of effects.

Table 11-1. Munition reaction

No apparent reaction	Disabling munition reaction			
	Mechanical breakup	Burnout	Low-order detonation	High-order detonation
21%	15%	13%	49%	2%

EXTRACTION FROM SCATTERABLE MINEFIELDS

Combat, CS, and CSS units use the following procedures and techniques when they receive a scatterable mine attack on their position.

Minimize Confusion

When an operating area becomes the center of a minefield, a certain amount of confusion is understandable. Therefore, a recognized and rehearsed system of alerting personnel to danger and orders on how to evacuate the area are essential. Alerting systems may include loudspeakers, radios, or runners. Loudspeakers minimize exposure but may be

precluded by other noises. Radios are efficient, but they are not available at every location. Runners are likely to become casualties when moving about. A combination of systems may be the most effective. The unit field SOP includes procedures to evacuate an area and reestablish operations.

No Standard Solution

No single device or technique neutralizes every scatterable mine in every possible situation. The differences in AP and AT mines, fuzing, self-neutralization, terrain, unit mission, and

other variables mean clearing must be approached with multiple systems and techniques. Mines are bypassed whenever possible. When bypass is impossible, mines are explosively, electromagnetically, or mechanically neutralized; or they are contained.

Rehearsed Reaction Drills

Operations require special techniques adapted from drills to react to enemy artillery and from drills designed to breach minefield. An enemy may employ scatterable mines for two reasons—to fix a unit in place for destruction with other fires or to deny fiendly maneuver in a particular area.

The first reason presumes enemy reconnaissance, surveillance, and target acquisition have overcome our operations security (OPSEC) and deliberately targeted the unit. However, a unit that receives scatterable mine fire may not know it has been pinpointed. It may be in an area that the enemy seeks to deny to our maneuver. The unit must presume that more fires are coming. The drill is to evacuate, move through the area to resume operations, or continue the maneuver. Normal-

ly, a scatterable mine reaction drill resembles an in-stride breach described in Chapter 8 and FM 90-13-1. Units conducting movement operations use route clearance procedures to force a cleared lane through a minefield.

Combat Units

Marching combat unit elements that have assets to conduct an in-stride breach reduce the obstacle for the remainder of the force and continue in the original direction of the march.

Combat Support and Combat Service Support Units

The OPORD designates alternate support areas. The unit submits a scatterable mine report. Their parent unit coordinates alternate support areas to be occupied by the rear command post (CP). The unit employs its organic mine detection and clearing teams (may be limited to the use of grapnel and marking lanes) to create cleared lanes to the nearest roads in the direction of the alternate support area. If in march order, the unit continues in the original direction of the march.

COUNTERMEASURES

Preventive Measures

Preventive measures are designed to minimize the risk of casualties, although maintenance of momentum will be more important on occasion. Preventive measures include—

- Reducing the risk of attack through survivability techniques such as camouflage, concealment, local dispersion, and deception.
- Reducing the risk of casualties in the event of an attack by using man-made or natural features (roads, tracks, or level ground) and buildings as protection.
- Immediately reporting, rapidly disseminating, marking, and recording a minefield to

prevent other friendly forces from entering an area known to contain explosive devices.

Immediate Action Drills

The priorities for immediate action normally conform to the unit SOP. For specific operations, priorities vary and are covered in OPORDs. In general, immediate action drills follow the sequence given below:

- Warn other vehicle crewmen and dismounted personnel in the vicinity by the fastest possible means.
- Report the attack to the next higher headquarters.
- Locate and mark individual scatterable mines in the immediate area.

Assessment

Assessment action depends on the operational situation and the following tactical factors:

- Effect of delay on the mission.
- Threat from direct and indirect fire. The risk of casualties from direct or indirect fire may be greater than that from scatterable mines.
- Type of terrain (plowed fields, standing crops, woods, built-up areas, hard surfaces, low vegetation, rocks, or deep snow) determines the effectiveness of scatterable mines, their visibility, and consequently, the ease in which they can be avoided.
- Alternate routes or positions available.
- Degree of protection available.
- Availability of special support, such as engineer heavy equipment teams and EOD teams.

Subsequent Action

The options are—

- Accept the risk of casualties and continue the mission.

- Adopt preplanned procedures, such as column movement along paved roads or hard tracks.
- Adopt tactical breaching measures, such as deploying MCB, MCR, or MICLIC.
- Adopt preplanned alternate tactical plans.

Adopt Deliberate Countermeasures

In most situations, the following extraction techniques are considered; but in some situations, a deliberate hand-breaching operation may be necessary.

- Reconnoiter and mark a cleared route.
- Destruct using hand-emplaced charges.
- Remove/neutralize using engineer equipment.
- Destruct using direct fire.
- Contain.
- Activate fuzes using grapnel.

EXTRACTION

Destruct Using Hand-Emplaced Charges

Using hand-emplaced charges may be the only available effective method of clearance.

Advantages.

- Ensures complete destruction of scatterable mines.
- Can be used in most situations, and no special EOD skills are required. It is within

the skills of combat arms units.

Disadvantages.

- Is labor-intensive and hazardous to those involved, particularly if dealing with magnetic- or delay -fuzed mines.
- Is very slow. Starting with identifying and marking, destruction of 15 mines can take 45 minutes.
- Cannot be used if detonation will cause unacceptable damage.

Remove/Neutralize Using Engineer Equipment

Consider using engineer equipment if scatterable mines must be cleared quickly and if engineer forces are available. Suitable equipment may include a dozer, CEV, ACE, or grader. If a dozer or grader is used, provide protection for the operator. It may be possible to sandbag the operating area.

Advantages.

- A large area can be cleared quickly.
- No special EOD skills are required. Equipment and operators can be provided by most engineer units.

Disadvantages.

- Equipment and operators may sustain damage or injury. If equipment is badly damaged, another item of equipment may have to remove it to allow continuation of the clearance operation.
- Equipment is likely to set off magnetic-fuzed mines.
- Equipment may only partially clear the area, requiring further reconnaissance and clearance.
- Equipment is unsuitable for working over soft, uneven ground.

Destruct Using Direct Fire

All units can destruct scatterable mines with direct fire for extraction from mined areas as previously outlined.

Contain

Scatterable mines contain a small explosive charge, so it is possible to protect the surrounding area against blast and fragmentation effects by using suitable materials. The conventional method is to build a sandbag wall (2 sandbags thick and 4 sandbags high) 1 foot from the scatterable mine. This is very labor-

intensive, and it places a large number of soldiers at risk while the wall is constructed. Engineer dozers can also place a mound of loose spoil over the scatterable mine. A lot of spoil is required to give adequate cover; and the operator and equipment are at risk, particularly from magnetic-fuzed and AHD mines.

Advantages.

- Can be used by soldiers with little or no training.
- Scatterable mines can be left to detonate harmlessly, once the containment system is in place, without interrupting operations.

Disadvantages.

- Several containment systems are needed.
- Construction is slow and laborious.
- If a scatterable mine is located in the way of operations, containment may be impossible.

Moving Scatterable Mines

If a scatterable mine will self-destruct and is on or immediately adjacent to vital equipment or installations which cannot be protected, the mine may have to be moved before it can be dealt with. The risk of detonation due to movement must be considered. Ensure the mine is not picked up and moved by hand. The normal grapnel method may be employed as discussed in Chapter 9. Observe the following precautions:

- Do not move the mine while placing grapnel.
- Move the scatterable mine in one operation. The distance moved should allow detonation or neutralization by another method.
- Observe normal safety distances.
- Use EOD robotic equipment to pick up a mine and move it elsewhere. (This procedure is likely to be too slow for use in a tactical situation.)

Advantages.

- Used only if the device cannot be detonated in place or contained.

Disadvantages.

- Detonation occurs if an AHD is employed.
- Placing the grapnel is a hazardous operation.

ESTABLISHING DRILLS FOR EXTRACTION FROM SCATTERABLE MINES

An established and drilled evacuation plan reduces personnel and vehicle losses. The plan depends on the particular environmental scenario (trees, roads, and water). In some cases, it may be advantageous for the unit to be situated in a wooded area. If delivered mines are attached to parachutes to soften the impact, many of them are caught in tree branches. When laying out work sites and facilities, you must consider the scatterable mine threat. Roads are critical for evacuation of scatterable minefield because mines are easily detected and cleared on them. An evacuation plan may consider a procedure for unit elements to clear and mark a safe path.

It may also include a plan to link safe paths from other unit positions to their position and to the nearest road. Several techniques are considered for safe evacuation from scatterable minefield. Vehicles are parked in a march order that minimizes post-attack movement. Vehicles equipped with scatterable mine breaching devices are parked at the head of a column. The breaching vehicle establishes a cleared lane. Driving should be carefully aligned when driving on a cleared lane because the breaching vehicle may have pushed mines aside and created a windrow that increases the likelihood of misaligned vehicles contacting a mine.