
Part One
INTRODUCTION AND FUNDAMENTALS OF
MORTAR GUNNERY

CHAPTER 1
Introduction

The mission of the mortar platoon is to provide close and immediate indirect fire support for the maneuver battalion and companies.

1-1. MORTAR TRAINING STRATEGY

The mortar training strategy is a concept that synchronizes the training documents, doctrine, institutional training programs, unit training programs, and training resources. It achieves and sustains the goal of training soldiers and leaders to win on the battlefield. The mortar training strategy is implemented in TRADOC institutional training (IET, NCOES, OES) and in units. It is supported by training devices, training ammunition, and training support products.

a. In institutional courses, soldiers and leaders are provided initial training on critical individual tasks. In the unit, the initial tasks are sustained, additional individual tasks are trained, and collective training is conducted.

b. Devices, simulations/simulators, training ammunition, and ranges provide soldiers and leaders the opportunity to conduct performance-oriented training under realistic conditions. The main devices that support mortar training are the sabot training round, the M880 SRTR, the M879 LRTR, and subcaliber inserts for the 4.2-inch and 120-mm mortars.

c. Training is also supported by TRADOC-developed publications that outline conditions and performance standards for individual and collective tasks (FMs, TECs, ACCPs, ARTEPs, SMs, MQSs).

(1) This manual discusses the technical aspects of training mortar FDCs.

(2) FM 23-90 discusses the technical aspects of training mortar squads.

(3) FM 7-90 discusses the tactical employment of the mortar platoon and section.

(4) ARTEP 7-90-MTP outlines the critical tasks, conditions, and standards for the mortar platoon, section, and squad; and methods for conducting training and evaluations of these elements.

(5) ARTEP 7-90-DRILL outlines the standard battle, crew, and combat drills for mortar platoons, sections, and squads.

(6) Artillery publications are the primary sources for FO, FIST and FSE procedures. FO procedures are common tasks in soldier's manuals.

(7) TMs contain the technical aspects of operating and maintaining mortar equipment.

1-2. ORGANIZATION

Mortars are organized as part of a company and battalion. They are either sections or platoons in airborne, ranger, air assault, light infantry companies, and cavalry troops. They are organized as platoons in all tank and infantry battalions. Regardless of the organization to which they belong, mortars have the battlefield role of providing the maneuver commander with immediate indirect fires. They can fulfill that mission when all of the elements responsible for placing effective mortar fire on the enemy are properly trained.

1-3. INSTITUTIONAL TRAINING PROGRAM INTEGRATION

Most individual and all collective and tactical gunnery/FDC training takes place in the unit. However, institutional courses taught at USAIS are an important part of the total process of training soldiers and leaders. This training enables soldiers and leaders to reach the objective of mortar platoons and sections prepared to perform in combat. Institutional leader courses are taught at all the infantry, armor, and field artillery schools.

a. The training strategy (Appendix A) for mortars begins in 11C OSUT. The soldier is taught critical common skill level 1 tasks and critical 11C MOS tasks. As with all MOS-specific IET training, the objective is to provide the unit with a soldier who can immediately perform the most basic position in the unit. He must also be prepared to move to positions requiring greater skill and task mastery. In OSUT, the 11C soldier is fully trained to be a gunner, assistant gunner, and ammunition bearer. When assigned to a permanent duty station, he should be assigned as an ammunition bearer until he is more experienced and has demonstrated the potential to function as an assistant gunner or gunner. His training includes the 60-mm, 81-mm, 4.2-inch, and 120-mm mortar systems in ground-mounted configurations as well as the 4.2-inch and 120-mm mortar vehicle-mounted configurations. The 11C soldier also receives 40 hours of FDC procedures in which he learns the basic functions of the mortar fire team.

b. Soldier training up to squad leader level (skill level 2) and squad training (crew) takes place in the unit. Additional driver and gunner tasks are taught to allow soldiers to perform as a crew member. Gunners and each crew member must pass a gunner's examination (FM 23-90) semiannually (AC) or annually (RC). Also, mortar squads conduct crew drill training. This training develops the skills required for the mortar squads to effectively engage targets.

c. FDC training also takes place in the unit. An FDC qualification examination is a key element in this training. FDC personnel must be trained to qualification standards.

d. Section training is critical. Most individual and squad training is conducted by the section leader. Also, within the mortar platoon, the section is the basic mortar fighting organization. At BNCOC, NCOs who are or will be section leaders receive two

weeks of common core training. This is followed by four weeks of critical mortar combat and training tasks instruction. Most of this training consists of FDC procedures. This prepares the NCO to train individual, squad, crew, and FDC tasks required to perform the unit's wartime mission.

e. Platoons, sections, squads, and crews practice battle and combat drills and train MTP tasks. As part of the platoon training, the FDC and FO must train with gun crews to ensure the entire mortar team can function as one. Platoon-level training consists of tactical STXs, FTXs, and LFXs that are designed using T&EOs extracted from the ARTEP mission training plans and drill books.

f. For qualification, a mortar platoon/section must successfully conduct a live-fire exercise designed by the commander from the ARTEP. This should include the FIST as well as the mortar platoon/section. The final outcome of the qualification should be successfully putting fires on the target within MTP standards. The platoon/section must be externally evaluated, in conjunction with a higher-level FTX, to demonstrate proficiency at maneuvering with and supporting the commander's concept for defeating the enemy.

g. Mortar platoon training in units is supported by 11C ANCO, which trains and certifies platoon sergeants on battle competencies, and IMPC that trains officers and NCOs to set up and conduct mortar training in units. While the lieutenant at IOBC is not trained to serve in mortar organizations, an orientation on mortars is provided. In IOBC, the officer is first trained to be a rifle platoon leader in an infantry organization. Any officer being assigned to a mortar element can attend the IMPC after IOBC. Also, exportable courses for the mortar section leader, platoon sergeant, and platoon leader are available through the ACCP.

h. Training leaders to use mortars is another critical aspect of the mortar training strategy. Mortars must be used within their capabilities and limitations to best contribute to defeating the enemy. They must be effectively commanded controlled and supported. At officer basic, advanced, and precommand courses at the armor, infantry, and field artillery schools, leaders and commanders are trained to tactically employ mortars and their fires and to provide CSS.

1-4. GENERAL DOCTRINE

Doctrine demands the timely and accurate delivery of indirect fire to meet the needs of supported units. All members of the indirect fire team must be thoroughly indoctrinated with a sense of urgency. They must strive to reduce, by all possible measures, the time required to execute an effective fire mission.

a. For mortar fire to be effective, it must be dense enough and must hit the target at the right time with the right projectile and fuze. Good observation is required for effective mortar fire. Limited observation results in a greater expenditure of ammunition and less effective fire. Some type of observation is desirable for every target to ensure that fire is placed on the target. Observation of close battle areas is usually visual. When targets are hidden by terrain features or when great distance or limited visibility is involved, observation may be radar or by sound. When observation is possible, corrections can be made to place mortar fire on the target by adjustment procedures; however, lack of observation must not preclude firing on targets that can be located by other means.

b. Mortar fire must be delivered by the most accurate means that time and the tactical situation permit. When possible, survey data will be used to accurately locate the mortar position and target. Under some conditions, only a rapid estimate of the relative location of weapons and targets may be possible.

c. To achieve the most effective massed fires, units should conduct a survey using accurate maps of each mortar position and registration points and targets. The immediate objective is to deliver a large volume of accurate and timely fire to inflict as many casualties as possible on the enemy. The number of casualties inflicted in a target area can usually be increased by surprise fire. If surprise massed fires cannot be achieved, the time required to bring effective fires on the target should be kept to a minimum.

d. The greatest demoralizing effect on the enemy can be achieved by the delivery of a maximum number of rounds from all the mortars in a mortar section or platoon in the shortest possible time.

e. Mortar units must be prepared to handle multiple fire missions. They can provide an immediate, heavy volume of accurate fire for sustained periods. Mortars are area fire weapons; however, units can employ them to neutralize or destroy area or point targets, to screen large areas with smoke for sustained periods, or to provide illumination.

f. In the armor and mechanized infantry battalions, units can normally fire mortars from mortar carriers. However, mortars maintain their ground-mounted capability. Firing from a carrier permits rapid displacement and quick reaction to the tactical situation.

1-5. INDIRECT FIRE TEAM

Indirect fire procedures are a team effort (Figure 1-1). They include locating the target, determining firing data, applying data to the mortar, and preparing the ammunition. Since the mortar is normally fired from the defilade (where the crew cannot see the target), the indirect fire team gathers and applies the required data. The team consists of the FO, the FDC, and the mortar squad.

a. The team mission is to provide accurate, timely response to the unit it supports. Effective communication is vital to the successful coordination of the efforts of the indirect fire team.

b. ADS artillery battery provides the FO as part of the FIST. There are three FOs for each FIST. Their job is to find and report the location of targets and to request and adjust fire. FOs should be habitually assigned to the same unit to know the commanders overall fire support. Also, units that train together understand how each other functions. This avoids confusion that results when FOs use FA adjusting techniques with mortars.

c. The FDC has two computer personnel in each section (except the 60-mm squad, which does not have assigned FDC personnel) who control the mortar firing. They convert the data from the FO in a call for fire into firing data that can be applied to the mortar and ammunition.

d. Mechanized infantry and armor mortar squads consist of one squad leader, one gunner, one assistant gunner, and one ammunition bearer. Airborne, air assault, and light infantry squads have the same number personnel of the heavy squads as well as one more ammunition bearer at the battalion level. At company level these light units have two 3-man sections consisting of one section sergeant,

one squad leader, two gunners, and two assistant gunners. The squad lays the mortar and prepares the ammunition, using the data from the FDC fire command. When the data have been applied, the mortar squad fires the mortar. The squad must also be able to fire without the FDC.

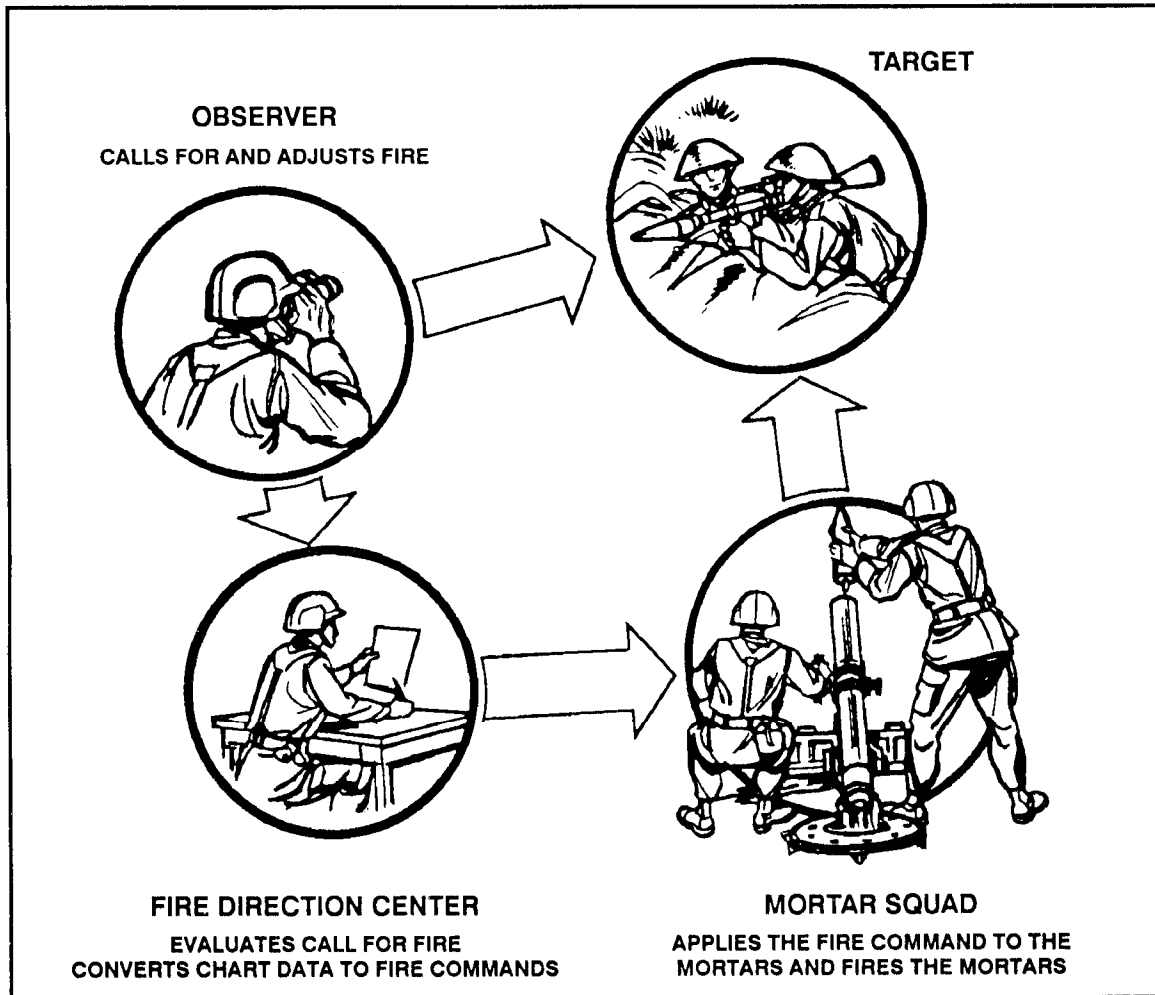


Figure 1-1. The indirect fire team.

1-6. MORTAR POSITIONS

Units should employ mortars in defilade positions to protect mortars from the enemy direct fire and observation. These positions can also take the greatest advantage of the indirect fire role of mortars.

a. The use of defilade precludes sighting the weapons directly at the target (direct lay). This is necessary for survivability.

b. Mortars are indirect fire weapons. Therefore, special procedures ensure that the weapon and ammunition settings used will cause the projectile to burst on or at the proper height above the target. A coordinated effort by the indirect fire team also ensures timely and accurate engagement of targets.

c. The steps used in applying the essential information and engagement of a target from a defilade position areas follows:

- (1) Locate targets and mortar positions.
- (2) Determine chart data (direction, range, and vertical interval (VI) from mortars to targets).
- (3) Convert chart data to firing data.
- (4) Apply firing data to the mortar and to the ammunition.