

**UNITED STATES MARINE CORPS**  
School of Infantry  
Training Command  
PSC Box 20161  
Camp Lejeune, NC 28542-0161

MM1312  
11 Mar 04

**STUDENT OUTLINE**

**FIRE A MORTAR DIRECT LAY**

**TERMINAL LEARNING OBJECTIVE**

Given a mounted, SL-3 complete, M224 60mm mortar, 4 rounds of mortar ammunition, and a target beyond 300 meters, as a mortar squad, engage a target with a mortar using direct lay by achieving an impact on target within the casualty radius of the round. (41TR.04.02)

**ENABLING LEARNING OBJECTIVE**

Given a firing table and a target, utilize a firing table to determine elevation in accordance with a range estimation. (41TR.04.02a)

1. **DIRECT LAY**. In the direct-lay method of employing a mortar, the gunner sees the target through the mortar sight. No directional or aiming posts, FO, or FDC is used. The firing table should be used to try to obtain a first-round hit. If the first-round hit is not achieved, the firing table should be used to obtain a bracket. Depending on the location of friendly troops to the target, the bracket method, modified ladder method, or creeping method of adjustment is applied.

a. **Initial firing data**. The elevation setting and charge selected should be obtained from a firing table. In the absence of a firing table, they can be determined through unit SOP or by other expedient techniques such as memorizing charge and elevation setting closest to the estimated target range. Determine initial range by:

- (1) Estimating.
- (2) Using maps, photographic maps, and terrain.
- (3) Intersecting.

b. Place a 3200-mil deflection on the sight, and bisect on the center of the target. With the appropriate elevation setting on the sight, center all bubbles by adjusting the lay of the barrel. Take appropriate actions to preclude damage to the sight and with established charges, fire the first round. Replace the sight, if needed, and observe the burst of the round.

(1) Referring **the sight**. By turning the deflection control knob, refer the vertical line of the sight reticule on the center of the burst.

(2) Re-lay the gun in center of target, by either traversing for a small or 5 steps of crew drill for a large. Fire the second and observe the blast. Continue these steps until your round has effects on target.

c. Bracketing Method. When the first definite range spotting is obtained, the gunner should make a range correction that is expected to result in a range spotting in the opposite direction, for example, if the first definite range spotting is **SHORT**, the gunner should add enough to get an **OVER** with the next round. The gunner should use the following guide to determine the range change to establish a bracket.

<u>OT DISTANCE</u>	<u>MINIMUM RANGE CHANGE (ADD or DROP)</u>
Up to 999 meters	100 meters
1000 to 1999 meters	200 meters
2000 meters and over	400 meters

(1) Once a bracket has been established, it is successively decreased by splitting it in half until it is appropriate to fire for effect. Fire for effect is usually requested in area fire when a 50-meter bracket is split.

(2) The gunner must use his knowledge of the terrain, knowledge gained from previous firing, general experience, and good judgment in determining the size of the initial and subsequent range changes. For example, if the gunner adds **800** after an initial range spotting of **SHORT** and the second range spotting is **OVER** but the bursts are much closer to the adjusting point than the initial rounds, a range change of **DROP 200** would be appropriate.

d. Creeping Method of Adjustment

(1) When a danger close mission is requested, the creeping method of adjustment is used.

(2) When the gunner requests an adjustment on a target that is within **400** meters of friendly troops, he adds a **200** meter safety factor to insure that the first round does not fall short.

(3) When the initial round is spotted, he estimates the range over in meters. He then makes the correction for range by dropping half of the estimated overage.

(4) Once he has given a correction of **DROP FIVE ZERO (50)**, he continues a **DROP FIVE ZERO (50)** until he has either a **RANGE CORRECT** or **TARGET** or **SHORT** spotting. If, during the adjustment, a round falls short of the target, the gunner continues the adjustment using the bracket method of adjustment.

**REFERENCES:**

FM 23-90 Mortars; pages 8-12 through 8-19.

**EXAM ID:** MM1312P

**EXAM TITLE:** Fire a Mortar Direct Lay Performance Examination

**TLO/ELO:** 41TR.04.02a

**STUDENT INSTRUCTIONS:**

1. You are a mortar squad and must engage targets with a mortar direct lay.
2. There is no time limit for this task.
3. To achieve mastery, the mortar squad must perform each of the performance steps correctly and achieve an impact on target within the fire for effect radius of the round.

**PERFORMANCE STEPS AND/OR PERFORMANCE STANDARDS:**

Performance Steps	Master	Non-Master	Remarks
1. Squad leader announces the fire command.			
2. The squad leader estimates the range to the target.			
3. Using the correct firing table, the squad leader converts range estimate into elevation and charge.			
4. The gunner places the initial deflection of 3200 on the sight.			
5. The gunner places the elevation on the sight.			
6. The gunner bisects the target.			
7. The gunner levels the gun with the correct sight picture.			
8. The gunner braces the bipod/mount.			
9. The ammunition man sets the charge and fuse setting on a round in accordance with the fire command.			
10. The assistant gunner, on command, half loads and fires the mortar.			
11. The gunner re-levels the gun.			
12. The gunner re-bisects the target.			
13. The gunner refers the sight to the blast.			
14. The gunner traverses and minor adjusts back to the target.			
15. The squad leader makes range corrections.			
16. The gunner repeats steps 5 through 15 until the impact of the round has effect on target.			