

---

## APPENDIX J

### MORTAR OPERATIONS ON URBANIZED TERRAIN

**Mortars are valuable in providing indirect fire support during military operations on urbanized terrain. Indirect fire by FA has often been unavailable to infantrymen and in city combat due to building mask and lack of effective observation. Mortars have some distinct advantages during MOUT. Their high rate of fire, steep angle of fall, and short minimum range give mortar sections the ability to mass considerable fire power on specific enemy positions in the tight confines of city fighting. The use of multioption fuzes and several types of rounds increases mortar fire versatility. Mortars can be used to obscure, neutralize, suppress, or illuminate during MOUT. (For further details on MOUT operations, see FM 90-10 and FM 90-10-1).**

#### J-1 . POSITION SELECTION

The selection of mortar positions depends on the size of buildings, the size of the urban area, and the mission.

- a. The use of existing structures for hide positions is recommended (for example, garages, office buildings, or highway overpasses) to afford maximum protection and minimize the camouflage effort. By proper use of mask, survivability can be enhanced. If the mortar has to fire in excess of 885 mils to clear a frontal mask, the enemy counterbattery threat is reduced. These principles can be used in both the offense and the defense.
- b. Mortars should not be mounted directly on concrete; however, sandbags may be used as a buffer.
  - (1) Use two or three layers.
  - (2) Butt them against a curb or a wall.
  - (3) Extend them at least one sandbag width beyond the baseplate.
- c. Rubble may be used to make a parapet for firing positions.
- d. Mortars are usually not placed on top of buildings because lack of cover and mask makes them vulnerable. They should not be placed inside buildings with damaged roofs

unless the structure's ability has been checked. Overpressure can injure personnel, and the shock on the floor can weaken or collapse the structure.

## **J-2. COMMUNICATIONS**

An increased use of wire, messenger, and visual signals will be required.

- a. Wire should be the primary means of communication used between the forward observers, fire support team, fire direction center, and mortars since elements are close to each other.
- b. FM radio transmissions in built-up areas are likely to be erratic. Structures reduce radio ranges; however, remoting of antennas to upper floors or roofs may improve communications and enhance operator survivability. Another applicable technique is the use of radio retransmissions. A practical solution is to use existing civilian systems to supplement the unit's capability.

## **J-3. MAGNETIC INTERFERENCE**

In an urban environment, all magnetic instruments are affected by surrounding structural steel, electrical cables, and automobiles. Minimum distance guidelines for the use of the M2 aiming circle (FM 23-90) will be difficult to apply. To overcome this problem, obtain an azimuth to a distant aiming point. From this azimuth, the back azimuth of the direction of fire subtract. Index the difference on the red scale and manipulate the gun until the vertical crosshair of the sight is on the aiming point. Such features as the direction of a street maybe used instead of a distant aiming point.

## **J-4. AIMING POSTS**

Posts may be placed vertically in dirt-filled cans or ammunition boxes if the frontal area is covered by concrete or asphalt. Natural aiming points, such as the edges of buildings or lampposts, may also be used.

## **J-5. HIGH-EXPLOSIVE AMMUNITION**

During MOUT, mortar HE fires are more heavily used than any other type of indirect fire weapon. The most common and valuable use for mortars is often harassment and interdiction fires. One of their greatest contributions is interdicting supplies, evacuation efforts, and reinforcement in the enemy rear just behind his forward defensive positions. Although mortar fires are often targeted against roads and other open areas, the natural dispersion of indirect fires will result in many hits on buildings. Leaders must use care when planning mortar fires during MOUT to minimize collateral damage.

- a. High-explosive ammunition gives good results when used on lightly built structures within cities, particularly the 120-mm projectile. It does not perform well against reinforced concrete found in larger urban areas.

b. When using HE ammunition in urban fighting, point detonating fuzes should normally be used. The use of proximity fuzes should be avoided because the nature of built-up areas will cause proximity fuzes to function prematurely. Proximity fuzes, however, are useful in attacking targets such as OPs on tops of buildings.

c. During both World War II and recent Middle East conflicts, light mortar HE fires have been used extensively during MOUT to deny the use of streets, parks, and plazas to enemy personnel (Figure J-1).

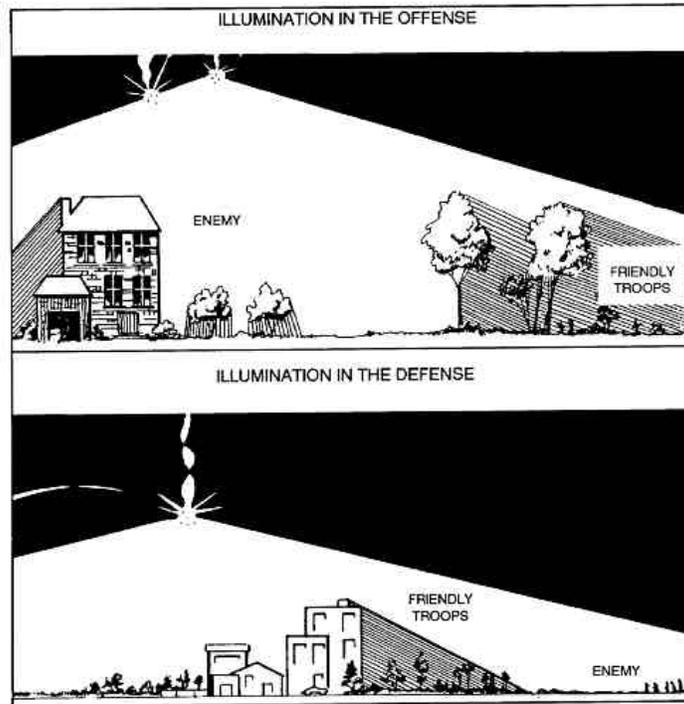


Figure J-1. Use of illumination fires during MOUT.

#### J-6. ILLUMINATION

In the offense, illuminating rounds are planned to burst above the objective to put enemy troops in the light. If the illumination is behind the objective, the enemy troops would be in the shadows rather than in the light. In the defense, illumination is planned to burst behind friendly troops to put them in the shadows and place the enemy troops in the light. Buildings reduce the effectiveness of the illumination by creating shadows. Continuous illumination requires close coordination between the FO and FDC to produce the proper

effect by bringing the illumination over the defensive positions as the enemy troops approach the buildings.