

CHAPTER 6 COMBAT SUPPORT

Combat support is fire support and other assistance provided to combat elements. It normally includes field artillery, air defense, aviation (less air cavalry), engineers, military police, communications, electronic warfare, and NBC.

6-1. MORTARS

Mortars are the most responsive indirect fires available to battalion and company commanders. Their mission is to provide close and immediate fire support to the maneuver units. Mortars are well suited for combat in built-up areas because of their high rate of fire, steep angle of fall, and short minimum range. Battalion and company commanders must plan mortar support with the FSO as part of the total fire support system. (See FM 7-90 for detailed information on the tactical employment of mortars.)

a. **Role of Mortar Units.** The role of mortar units is to deliver suppressive fires to support maneuver, especially against dismounted infantry. Mortars can be used to obscure, neutralize, suppress, or illuminate during MOUT. Mortar fires inhibit enemy fires and movement, allowing friendly forces to maneuver to a position of advantage. Effectively integrating mortar fires with dismounted maneuver is key to successful combat in a built-up area at the rifle company and battalion level.

b. **Position Selection.** The selection of mortar positions depends on the size of buildings, the size of the urban area, and the mission. Also, rubble can be used to construct a parapet for firing positions.

(1) The use of existing structures (for example, garages, office buildings, or highway overpasses) for hide positions is recommended 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.

(2) Mortars should not be mounted directly on concrete; however, sandbags may be used as a buffer. Sandbags should consist of two or three layers; be butted against a curb or wall; and extend at least one sandbag width beyond the baseplate.

(3) 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 stability has been checked. Overpressure can injure personnel, and the shock on the floor can weaken or collapse the structure.

c. **Communications.** An increased use of wire, messenger, and visual signals will be required. However, wire should be the primary means of communication between the forward observers, fire support team, fire direction center, and mortars since elements are close to each other. Also, 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 technique that applies is the use of radio retransmissions. A practical solution is to use existing civilian systems to supplement the unit's capability.

d. **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, an azimuth is obtained to a distant aiming point. From this azimuth, the back azimuth of the direction of fire is subtracted. The difference is indexed on the red scale and the gun manipulated until the vertical cross hair of the sight is on the aiming point. Such features as the direction of a street may be used instead of a distant aiming point.

e. **High-Explosive Ammunition.** During MOUT, mortar HE fires are used more 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.

(1) High-explosive ammunition, especially the 120-mm projectile, gives good results when used on lightly built structures within cities. However, it does not perform well against reinforced concrete found in larger urban areas.

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

(3) 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.

f. **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.

g. **Special Considerations.** When planning the use of mortars, commanders must consider the following:

(1) FOs should be positioned on tops of buildings so target acquisition and adjustments in fire can best be accomplished.

(2) Commanders must understand ammunition effects to correctly estimate the number of volleys needed for the specific target coverage. Also, the effects of using WP or LP may create unwanted smoke screens or limited visibility conditions that could interfere with the tactical plan.

(3) FOs must be able to determine dead space. Dead space is the area in which indirect fires cannot reach the street level because of buildings. This area is a safe haven for the enemy. For mortars, the dead space is about one-half the height of the building.

(4) Mortar crews should plan to provide their own security.

(5) Commanders must give special consideration to where and when mortars are to displace while providing immediate indirect fires to support the overall tactical plan. Combat in built-up areas adversely affects the ability of mortars to displace because of rubble and the close nature of MOUT.

6-2. FIELD ARTILLERY

A field artillery battalion is normally assigned the tactical mission of direct support (DS) to a maneuver brigade. A battery may not be placed in DS of a battalion task force, but maybe attached.

a. Appropriate fire support coordination measures should be carefully considered since fighting in built-up areas results in opposing forces fighting in close combat. When planning for fire support in a built-up area, the battalion commander, in coordination with his FSO, considers the following.

(1) Target acquisition may be more difficult because of the increased cover and concealment afforded by the terrain. Ground observation is limited in built-up areas, therefore FOs should be placed on tops of buildings. Adjusting fires is difficult since buildings block the view of adjusting rounds; therefore, the lateral method of adjustment should be used.

(2) Initial rounds are adjusted laterally until a round impacts on the street perpendicular to the FEBA. Airburst rounds are best for this adjustment. The adjustments must be made by sound. When rounds impact on the perpendicular street, they are adjusted for range. When the range is correct, a lateral shift is made onto the target and the gunner fires for effect.

(3) Special consideration must be given to shell and fuze combinations when effects of munitions are limited by buildings.

(a) Careful use of VT is required to avoid premature arming.

(b) Indirect fires may create unwanted rubble.

(c) The close proximity of enemy and unfriendly troops requires careful coordination.

(d) WP may create unwanted fires and smoke.

(e) Fuze delay should be used to penetrate fortifications.

(f) Illumination rounds can be effective; however, friendly positions should remain in shadows and enemy positions should be highlighted. Tall buildings may mask the effects of illumination rounds.

(g) VT, TI, and ICM are effective for clearing enemy positions, observers, and antennas off rooftops.

(h) Swirling winds may degrade smoke operations.

(i) FASCAM may be used to impede enemy movements. FASCAM effectiveness is reduced when delivered on a hard surface.

(4) Targeting is difficult in urban terrain because the enemy has many covered and concealed positions and movement lanes. The enemy may be on rooftops and in buildings, and may use sewer and subway systems. Aerial observers are extremely valuable for targeting because they can see deep to detect movements, positions on rooftops, and fortifications. Targets should be planned on rooftops to clear away enemy FOs as well as communications and radar equipment. Targets should also be planned on major roads, at road intersections, and on known or likely enemy fortifications. Employing artillery in the direct fire mode to destroy fortifications should be considered. Also, restrictive fire support coordination measures (such as a restrictive fire area or no-fire area) maybe imposed to protect civilians and critical installations.

(5) The 155-mm and 8-inch self-propelled howitzers are effective in neutralizing concrete targets with direct fire. Concrete-piercing 155-mm and 8-inch rounds can penetrate 36 inches and 56 inches of concrete, respectively, at ranges up to 2,200 meters. These howitzers must be closely protected when used in the direct-fire mode since none of them have any significant protection for their crews. Restrictions may be placed on types of artillery ammunition used to reduce rubble on avenues of movement that may be used by friendly forces.

(6) Forward observers must be able to determine where and how large the dead space is. Dead space is the area in which indirect fires cannot reach the street level because of buildings. This area is a safe haven for the enemy because he is protected from indirect fires. For low-angle artillery, the dead space is about five times the height of the building. For mortars and high-angle artillery, the dead space is about one-half the height of the building.

(7) Aerial observers are effective for seeing behind buildings immediately to the front of friendly forces. They are extremely helpful when using the ladder method of adjustment because they may actually see the adjusting rounds impact behind buildings. Aerial observers can also relay calls for fire when communications are degraded due to power lines or building mask.

(8) Radar can locate many artillery and mortar targets in an urban environment because of the high percentage of high-angle fires. If radars are sited too close behind tall buildings, some effectiveness will be lost.

b. The use of airburst fires is an effective means of clearing snipers from rooftops. HE shells with delay fuzes may be effective against enemy troops in the upper floors of buildings, but, due to the overhead cover provided by the building, such shells have little effect on the enemy in the lower floors. (The planning and use of field artillery in offensive and defensive operations are also addressed in Chapters 3 and 4.)

6-3. NAVAL GUNFIRE

When a unit is operating with gunfire support within range, naval gunfire can provide effective fire support. If naval gunfire is used, a supporting arms liaison team (SALT) of a US Marine air naval gunfire liaison company (ANGLICO) may be attached to the battalion. The SALT consists of one liaison section that operates at the battalion main CP. It also has two firepower control teams at the company level, providing ship-to-shore communications and coordination for naval gunfire support. The SALT collocates and coordinates all naval gunfire support with battalion FSE.

6-4. TACTICAL AIR

A battalion may be supported by USAF, USN, USMC, or allied fighters and attack aircraft while fighting in built-up areas.

a. The employment of CAS depends on the following.

(1) **Shock and concussion.** Heavy air bombardment provides tactical advantages to an attacker. The shock and concussion of the bombardment reduce the efficiency of defending troops and destroy defensive positions.

(2) **Rubble and debris.** The rubble and debris resulting from air attacks may increase the defender's cover while creating major obstacles to the movement of attacking forces.

(3) **Proximity of friendly troops.** The proximity of opposing forces to friendly troops may require the use of precision-guided munitions and may

require the temporary disengagement of friendly forces in contact. The AC-130 is the air weapons platform of choice for precision MOUT as the proximity of friendly troops precludes other tactical air use.

(4) **Indigenous civilians or key facilities.** The use of air weapons maybe restricted by the presence of civilians or the requirement to preserve key facilities within a city.

(5) **Limited ground observation.** Limited ground observation may require the use of airborne FAC.

- b. CAS maybe employed during offensive operations—
 - To support the isolation of the city by interdicting entry and exit routes.
 - To support attacking units by reducing enemy strongpoints with precision-guided munitions.
 - To conduct tactical air reconnaissance and to provide detailed intelligence of enemy dispositions, equipment, and strengths.
- c. CAS maybe employed during defensive operations—
 - To strike enemy attack formations and concentrations outside the built-up area.
 - To provide precision-guided munitions support to counterattacks for recovering fallen friendly strongpoints.

6-5. AIR DEFENSE

Basic air defense doctrine does not change when units operate in urbanized terrain. The fundamental principles of mix, mass, mobility, and integration all apply to the employment of air defense assets.

a. The ground commander must consider the following when developing his air defense plan.

(1) Enemy air targets, such as principal lines of communications, road and rail networks, and bridges, are often found in and around built-up areas.

(2) Good firing positions may be difficult to find and occupy for long-range air defense missile systems in the built-up areas. Therefore, the number of weapons the commander can employ may be limited.

(3) Movement between positions is normally restricted in built-up areas.

(4) Long-range systems can provide air defense cover from positions on or outside of the edge of the city.

(5) Radar masking and degraded communications reduce air defense warning time for all units. Air defense control measures must be adjusted to permit responsive air defense within this reduced warning environment.

b. Positioning of Vulcan weapons in built-up areas is often limited to more open areas without masking such as parks, fields, and rail yards. Towed Vulcans (separated from their prime movers) maybe emplaced by helicopter onto rooftops in dense built-up areas to provide protection against air attacks from all directions. This should be accomplished only when justified by the expected length of occupation of the area and of the enemy air threat.

c. Stingers provide protection for battalions the same as in any operation. When employed within the built-up area, rooftops normally offer the best firing positions.

d. Heavy machine guns emplaced on rooftops can also provide additional air defense.

6-6. ARMY AVIATION

Army aviation support of urban operations includes attack, observation, utility, and cargo helicopters for air movement or air assault operations, command and control, observation, reconnaissance, operations of sensory devices, attack, radio transmissions, and medical evacuation. When using Army aviation, the commander considers the enemy air situation, enemy air defenses, terrain in or adjacent to the city, and the availability of Army or Air Force suppression means.

a. **Offensive Missions.** Missions for Army aviation in support of urban offensive operations include:

(1) Air assault operations to secure key terrain adjacent to or in the urban area and key objectives when the area is lightly defended or enemy fires have been suppressed.

(2) Employment of attack helicopters with aerial weapons to support the commander's scheme of maneuver in or adjacent to the built-up area.

(3) Air movement and medical evacuation.

(4) Command and control by providing rapid displacement of command elements to critical areas and an airborne command platform.

(5) Aerial retransmission.

(6) Intelligence-gathering operations.

(7) Long-range antiarmor fire.

b. **Defensive Missions.** Missions for Army aviation during urban defensive operations include:

(1) Long-range antiarmor fire.

(2) Rapid insertion or relocation of personnel (antiarmor teams and reserves).

(3) Rapid concentration of forces and fires.

(4) Retrograde movement of friendly forces.

(5) Combat service support operations.

(6) Command and control.

(7) Communications.

(8) Intelligence-gathering operations.

6-7. HELICOPTERS

An advantage can be gained by air assaulting onto rooftops. Before a mission, an inspection should be made of rooftops to ensure that no obstacles exist, such as electrical wires, telephone poles, antennas, or enemy-emplaced mines and wire, that could damage helicopters or troops. In many modern cities, office buildings often have helipads on their roofs, which are ideal for landing helicopters. Other buildings, such as parking garages, are usually strong enough to support the weight of a helicopter. The delivery of troops onto a building can also be accomplished by rappelling from the helicopter or jumping out of the helicopter while it hovers just above the roof.

a. **Small-Scale Assaults.** Small units may have to be landed onto the rooftop of a key building. Success depends on minimum exposure and the suppression of all enemy positions that could fire on the helicopter. Depending on the construction of the roof, rappelling troops from the helicopter may be more of an advantage than landing them on the rooftop. The rappel is often more reliable and safer for the troops than a jump from a low hover.

With practice, soldiers can accomplish a rappel insertion with a minimum of exposure.

b. **Large-Scale Assaults.** For large-scale air assaults, rooftop landings are not practical. Therefore, open spaces (parks, parking lots, sports arenas) within the built-up area must be used. Several spaces large enough for helicopter operations normally can be found within 2 kilometers of a city's center.

c. **Air Movement of Troops and Supplies.** In battle in a built-up area, heliborne troop movement may become a major requirement. Units engaged in house-to-house fighting normally suffer more casualties than units fighting in open terrain. The casualties must be evacuated and replaced quickly with new troops. At the same time, roads are likely to be crowded with resupply and evacuation vehicles, and may also be blocked with craters or rubble. Helicopters provide a responsive means to move troops by flying nap-of-the-earth flight techniques down selected streets already secured and cleared of obstacles. Aircraft deliver the troops at the last covered position short of the fighting and then return without exposure to enemy direct fire. Similar flight techniques can be used for air movement of supplies and medical evacuation missions.

d. **Air Assaults.** Air assaults into enemy-held territory are extremely difficult (Figure 6-1). One technique is to fly nap-of-the-earth down a broad street or commercial ribbon while attack helicopters and door gunners from utility helicopters suppress buildings on either side of the street. Scheduled artillery preparations can be incorporated into the air assault plan through the H-hour sequence. Feints and demonstrations in the form of false insertions can confuse the enemy as to the real assault landings.



Figure 6-1. Air assault of a built-up area.

6-8. ENGINEERS

The engineer terrain team supports the division commander and staff with specialized terrain analyses, products, and information for combat in built-up areas. During fighting in built-up areas, divisional engineers should be attached to the dispersed maneuver elements; for example, one engineer company to each committed brigade, one platoon to each battalion or battalion task force, and a squad to each company or company team. Most engineer manual-labor tasks, however, will have to be completed by infantry units, with reinforcing engineer heavy-equipment support and technical supervision.

a. **Offensive Missions.** Engineers may perform the following missions during offensive operations.

(1) Conduct a technical reconnaissance to determine the location and type of enemy obstacles and minefield, and to make breaching recommendations.

(2) Clear barricades and heavy rubble with earth-moving equipment to assist forward movement.

(3) Use the fires from the CEV or use hand-emplaced demolitions to destroy fortifications and strongpoints that cannot be reduced with the maneuver unit's organic assets.

(4) Use the CEV to destroy structures or to clear rubble.

(5) Lay mines to protect flanks and rear areas.

(6) Conduct mobility operations (gap crossing).

b. **Defensive Missions.** Engineers may perform the following missions during the defense of a built-up area.

(1) Construct complex obstacle systems.

(2) Provide technical advice to maneuver commanders.

(3) Rubble buildings.

(4) Lay mines.

(5) Assist in the preparation of defensive strongpoints.

(6) Maintain counterattack, communications, and resupply routes.

(7) Enhance movement between buildings, catwalks, bridges, and so on.

(8) Fight as infantry, when needed.

c. **Defense Against Armor.** In defensive situations, when opposed by an armor-heavy enemy, priority should be given to the construction of antiarmor obstacles throughout the built-up area. Use of local materials, where possible, makes obstacle construction easier and reduces logistics requirements. Streets should be barricaded in front of defensive positions at the effective range of antitank weapons. These weapons are used to increase the destruction by antiarmor fires, to separate dismounted enemy infantry from their supporting tanks, and to assist in the delay and destruction of the attacker. Antitank mines with antihandling devices, integrated with antipersonnel mines in and around obstacles and covered by fires, help stop an enemy attack.

6-9. MILITARY POLICE

Military police operations play a significant role by assisting the tactical commander in meeting the challenges associated with combat in built-up areas. Through their four battlefield missions (battlefield circulation control, area security, EPW operations, and law and order) MP provide a wide range

of diverse support in urban terrain. MP operations require continuous coordination with host nation civilian police to maintain control of the civilian population and to enforce law and order.

a. MP units take measures to support area damage control operations that are frequently found in built-up areas. With the increased possibility of rubble, MP units report, block off affected areas, and reroute movement to alternate road networks.

b. MP units also secure critical activities, such as communications centers and water and electrical supply sources. They are responsible for securing critical cells within the corps and TAACOM main CPs, which often use existing "hardstand" structures located in built-up areas.

c. MP units are tasked with EPW operations and collect them as far forward as possible. They operate collecting points and holding areas to briefly retain EPWs and civilian internees (CIs). EPW operations are of great importance in built-up areas because the rate of capture can be higher than normal.

d. Commanders must realize that MP support may not be available and that infantry soldiers may have to assume certain MP missions. The following are some of those missions:

(1) Route reconnaissance, selection of routes and alternate routes, convoy escort, and security of lines of communication.

(2) Control of roads, waterways, and railroad terminals, which are critical chokepoints in the main supply routes.

(3) Security of critical sites and facilities to include communication centers, government buildings, water and electrical supply sources, C4 nodes, nuclear or chemical delivery means and storage facilities, and other mission essential areas.

(4) Refugee control in close cooperation with host nation civil authorities. (See Chapter 7 for more information.)

(5) Collection and escort of EPWs.

6-10. COMMUNICATIONS

Buildings and electrical power lines reduce the range of FM radios. To overcome this problem, battalions set up retransmission stations or radio relays, which are most effective when placed in high areas. Antennas should be camouflaged by placing them near tall structures. Remoting radio sets or placing antennas on rooftops can also solve the range problem.

a. **Wire.** Wire is a more secure and effective means of communications in built-up areas. Wires should be laid overhead on existing poles or underground to prevent vehicles from cutting them.

b. **Messengers and Visual Signals.** Messengers and visual signals can also be used in built-up areas. Messengers must plan routes that avoid pockets of resistance. Routes and time schedules should be varied to avoid establishing a pattern. Visual signals must be planned so they can be seen from the buildings.

c. **Sound.** Sound signals are normally not effective in built-up areas due to too much surrounding noise.

d. **Existing Systems.** If existing civil or military communications facilities can be captured intact, they can also be used by the infantry battalion. A civilian phone system, for instance, can provide a reliable, secure means of

communication if codes and authentication tables are used. Other civilian media can also be used to broadcast messages to the public.

(1) Evacuation notices, evacuation routes, and other emergency notices designed to warn or advise the civilian population must be coordinated through the civil affairs officer. Such notices should be issued by the local civil government through printed or electronic news media.

(2) Use of news media channels in the immediate area of combat operations for other than emergency communications must also be coordinated through the civil affairs officer. A record copy of such communications will be sent to the first public affairs office in the chain of command.