* FM 71-1

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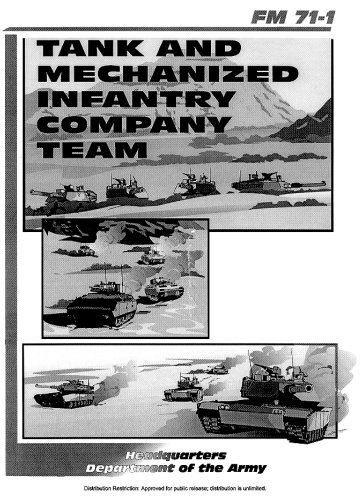
FM 71-1

TANK AND MECHANIZED INFANTRY COMPANY TEAM



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Preface

Because of its mix of weaponry, personnel, and supporting elements, the company team is one of the most versatile combat assets on the modern battlefield. Whether it fights "pure" as a tank or mechanized infantry company or is task organized as a tank-heavy or mech-heavy company team, it gives the commander a powerful combination of firepower, mobility, and shock effect. This manual describes how the company team fights. It focuses on the principles of company team operations and the TTP the company team uses to exploit its combat power and minimize its limitations and vulnerabilities.

FM 71-1 is for leaders at all levels of the company team. Because weapons and equipment vary among the different company-level organizations (pure tank and mechanized infantry companies and tank- and mech-heavy company teams), users should adapt information presented in the manual to fit their specific requirements. Where capabilities of the various company team systems differ significantly, the manual examines alternative considerations and techniques for their employment.

The proponent of this publication is HQ TRADOC. Readers are invited to submit comments on the manual and recommendations for improving it. Prepare these comments using DA Form 2028, and send the form to Commander, US Army Armor Center, ATTN: ATZK-TDD-P, Fort Knox, Kentucky 40121-5000.

Unless otherwise stated, masculine nouns and pronouns do not refer exclusively to men.

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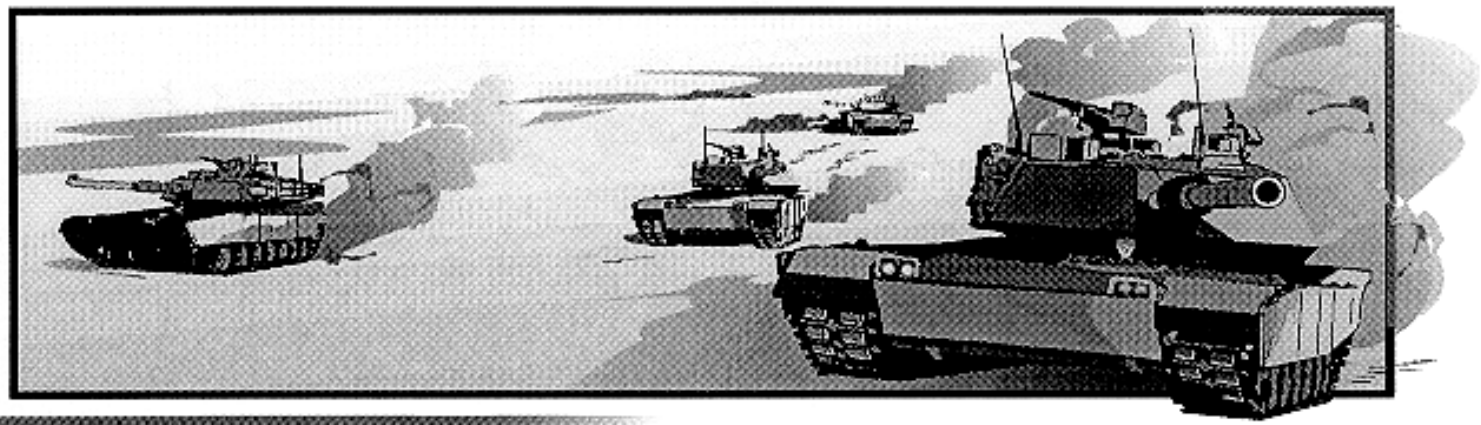

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CHAPTER 1

Introduction

Tank and mechanized infantry companies and company teams can fight and win engagements on any part of the battlefield in a conventional, nuclear, or chemical environment. The company team is normally task organized by the battalion task force commander, based on his estimate of the situation, to perform a variety of tactical missions as part of task force operations. In filling this combat role, the company team integrates with combat, combat support (CS), and combat service support (CSS) elements.

Company teams are capable of deploying in an 18-hour deployment sequence as part of the Army's force projection mandate. (**NOTE:** For a more detailed discussion of deployment operations and force projection operations, refer to FM 100-5.) They also can conduct stability and support operations as part of a joint task force or multinational force.

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SECTION 1 - MISSION, ORGANIZATION, CAPABILITIES, AND LIMITATIONS

The mission of the tank and mechanized infantry company team is to close with the enemy by means of fire and movement to defeat or capture him or to repel his assault by fire, close combat, or counterattack. In accomplishing its assigned missions, the company team employs CS and CSS assets within its capabilities.

The company team is an organization whose effectiveness depends on the synergy of its subordinate elements, including tanks, BFVs, infantry, engineers, and support elements. These components have a broad array of capabilities; individually, however, they also have a number of vulnerabilities. Effective application of the company team as a combined arms force can capitalize on the strengths of the team's elements while minimizing their respective weaknesses.

TANK COMPANY HEADQUARTERS

Figure 1-1 illustrates the organization of a tank company. The company headquarters includes the following personnel and equipment:

- Two tanks with full crews, commanded by the company commander and the XO.
- An M113A2 APC with crew under the command of the 1SG.
- Two M998 HMMWVs with drivers. These vehicles carry the company master gunner and the company NBC NCO.
- One cargo truck with 400-gallon water trailer. Manning this vehicle is the company supply section, which comprises the supply sergeant and the armorer.

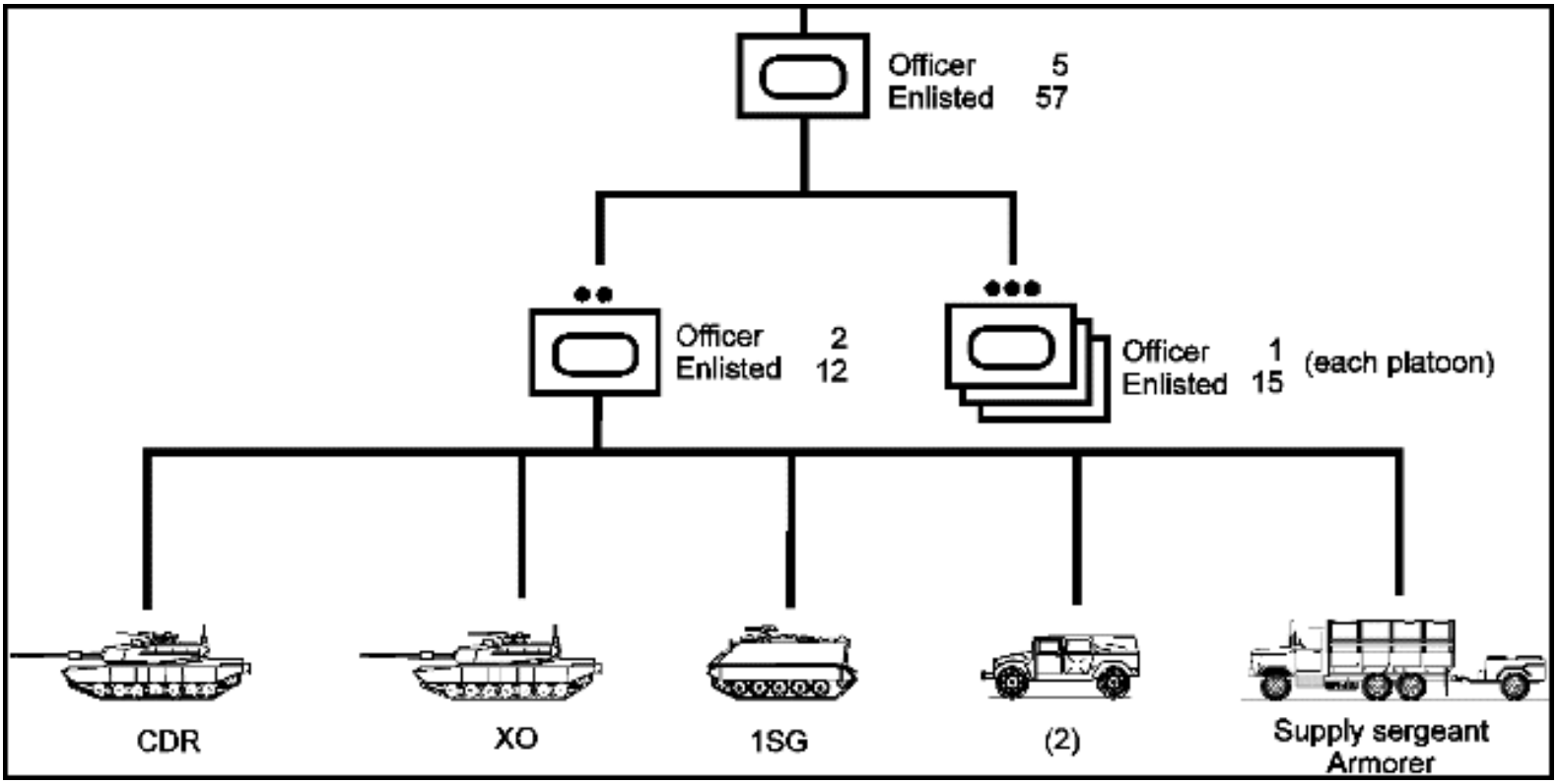


Figure 1-1. Tank company organization.

MECHANIZED INFANTRY COMPANY HEADQUARTERS

Figure 1-2 illustrates the organization of a mechanized infantry company. The company headquarters includes the following personnel and equipment:

- Two BFVs with full crews under the command of the company commander and the XO.
- An M113A2 APC with crew under the command of the 1SG.
- Two M998 HMMWVs with drivers.
- Two cargo trucks with one 400-gallon water trailer and one cargo trailer. The company supply section mans these vehicles.

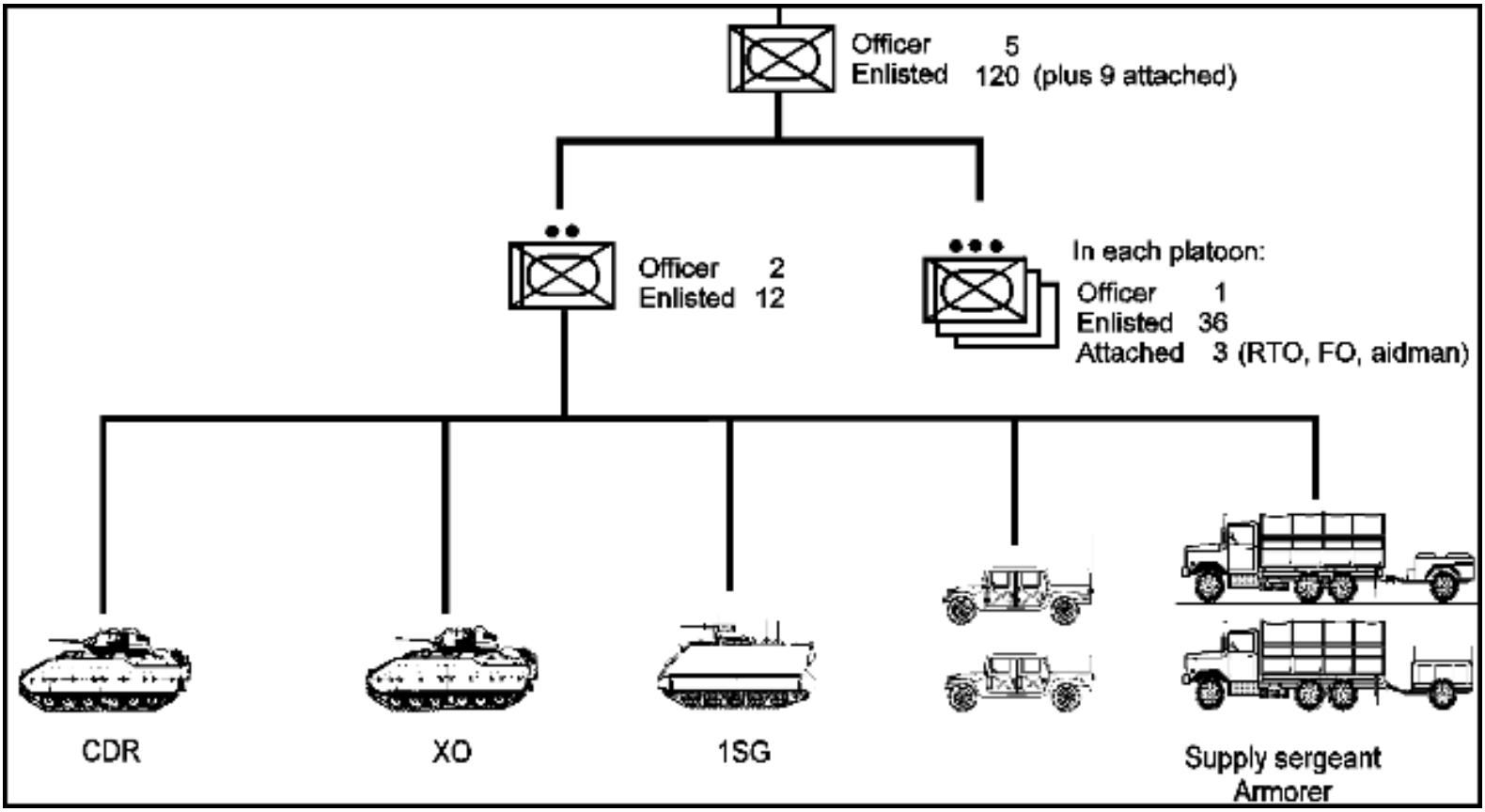


Figure 1-2. Mechanized infantry company organization.

TANK PLATOON

The tank platoon is considered the smallest maneuver element in the company. It normally fights as a unified element, with its sections fighting in concert with one another. Based on METT-TC factors, however, tank sections may be task organized with other elements. Examples include the task organization of a tank section with an infantry company during light/heavy operations or the task organization of a tank section with a mechanized infantry platoon during MOUT.

Personnel and equipment

As noted, the tank platoon comprises four tanks, normally M1-series vehicles, organized in two sections. The platoon leader (Tank 1) and PSG (Tank 4) are the section leaders. Tank 2 is the wingman in the platoon leader's section, and Tank 3 is the wingman for the PSG's tank. Each four-man crew consists of the TC, gunner, loader, and driver. For a detailed description of the tank platoon's organization and personnel responsibilities, refer to FM 17-15. Figure 1-3 illustrates tank platoon organization.

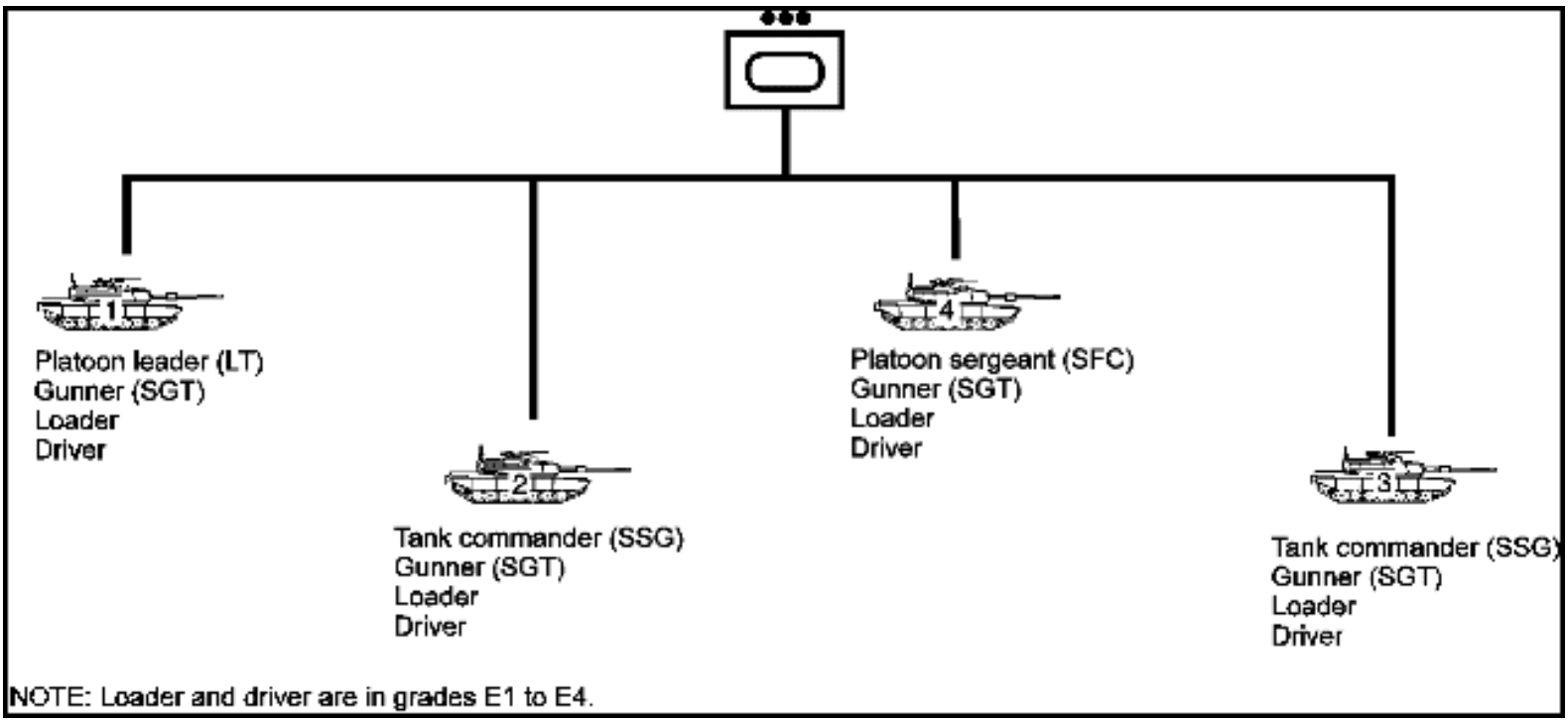


Figure 1-3. Tank platoon organization.

Capabilities and limitations

The tank platoon has the following capabilities:

- It has the necessary manpower and equipment to effectively develop the situation.
- It can conduct operations requiring firepower, mobility, armor protection, and shock effect.
- When equipped with mine rollers and mine plows, it can reduce mine and wire obstacles.
- It can employ maneuver (a combination of fire and movement) to destroy enemy tanks, fighting vehicles, antiarmor systems, and emplacements (such as strongpoints and bunkers).
- It can assault enemy positions.
- It can secure terrain.
- It can defend, repelling enemy attacks with fires.
- It can conduct combat operations under limited visibility conditions.
- It can conduct mounted patrols.
- It can provide support, in the form of armor protection and fires, to infantry and engineer elements in restricted terrain or during an assault.
- It can suppress enemy positions with machine gun and/or main gun fire.
- It can ford water obstacles up to 4 feet in depth.
- It can operate in an NBC environment.
- It can operate in a stability and support environment.

The tank platoon has these limitations:

- Built-up areas, wooded areas, and other types of restricted or rugged terrain can severely limit the platoon's maneuverability.
- Tanks are vulnerable to antiarmor weapons.
- Water crossing operations present a variety of difficulties because of the weight of the platoon's tanks and requirements for fording sites and/or bridges that can support them.
- The tank's weight and size limit its mobility over soft ground and prevent it from crossing many bridges.
- During offensive operations, the platoon is vulnerable to dug-in enemy infantry elements, which are especially dangerous when equipped with antiarmor systems.
- In defensive operations in restricted terrain, the tank platoon is vulnerable to dismounted infantry elements attacking from well-covered positions.
- The platoon requires large amounts of fuel during extended operations. It can operate for eight hours without refueling.
- It has limited capability to hold ground without infantry support.

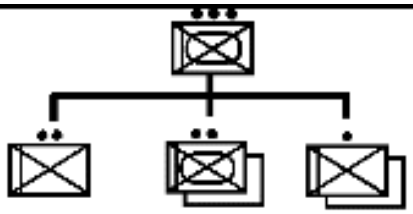
MECHANIZED INFANTRY PLATOON

The mechanized infantry platoon can fight as a unified maneuver element or as two distinct elements, one mounted and one dismounted. The platoon must be prepared to operate in a variety of situations, both mounted and dismounted, conducting missions to attack, defend, delay, and move.

Personnel and equipment

The mechanized infantry platoon is equipped with four BFVs. For mounted operations, it is organized in two sections of two vehicles each. The dismounted element consists of two squads of nine soldiers each and a machine gun section of five soldiers. The dismounted infantry squads ride in the BFVs, which serve as the base of fire during dismounted infantry operations. For a detailed description of the mechanized infantry platoon's organization and personnel responsibilities, refer to FM 7-7J.

Figure 1-4 illustrates the organization of the mechanized infantry platoon.



1 Platoon leader

4 Platoon sergeant

Section A

2 Wingman

Section B

3 Wingman

SECTION A — BFV 1

BFV driver/ SPEC
M16

Senior gunner/ SGT
M16

Platoon leader/2d LT (BFV commander)
M4

1st SQUAD — Team A

BFV gunner/ SPEC
M16

Team leader/ SGT
M203

Automatic rifleman/ SPEC
M249

Grenadier/ PFC
M203

Antiarmor specialist/ PFC
M16/CLU

*Forward observer

BFV 2

BFV driver/ SPEC
M16

BFV gunner SPEC
M16

Master gunner/ SSG (BFV commander)
M16

Team B

Squad leader/ SSG
M16

Team leader/ SGT
M203

Automatic rifleman/ SPEC
M249

Automatic rifleman/ SPEC
M249

Rifleman/ PFC
M16

Platoon RTO/PFC
M4

SECTION B — BFV 3

BFV driver/ SPEC
M16

BFV gunner SPEC
M16

BFV commander/ SSG
M16

2d SQUAD — Team B

Squad leader/ SSG
M16

Team leader/ SGT
M203

Automatic rifleman/ SPEC
M249

Automatic rifleman/ SPEC
M249

Antiarmor specialist/ PFC
M16/CLU

BFV 4

BFV driver/ SPEC
M16

Senior gunner/ SGT
M16

Platoon sergeant/ SFC (BFV commander)
M4

Team A

Team leader/ SGT
M203

Automatic rifleman/ SPEC
M249

Grenadier/ PFC
M203

Antiarmor specialist/ PFC
M16

*Aidman

*Forward observer's RTO

MG SECTION

MG leader/ dismounted PSG/SSG
M16

Gunner/PFC
M240E/ M9

Assistant gunner/ PFC
M16

Gunner/PFC
M240E/ M9

Assistant gunner/ PFC
M16

NOTE: * indicates individuals attached to the platoon.

Figure 1-4. Mechanized infantry platoon organization.

Capabilities and limitations

The following paragraphs list capabilities of the mechanized infantry platoon in mounted and dismounted operations, as well as the platoon's tactical limitations.

The mechanized infantry platoon has these capabilities:

- It has the necessary manpower and equipment to effectively develop the situation.
- It can destroy light armor vehicles using direct fire from the BFV's cannon.
- It can employ cannon fire to fix, suppress, or substantially limit the movement of tanks, fighting vehicles, and antiarmor systems at a range of up to 2,500 meters.
- It can destroy tanks and fighting vehicles with long-range ATGM fires. In the missile launch mode, the BFV is best employed at a range of 2,500 to 3,750 meters, where the target can be tracked for at least 12 seconds.
- It can suppress and destroy the enemy's dismounted infantry elements with cannon and machine gun fire.
- It can repel enemy attacks with close combat.
- It can assault through small arms and indirect fires to deliver dismounted elements to tactical positions.
- It can operate in an NBC environment.
- It can operate in a stability and support environment.
- It can seize and/or retain key terrain.
- It can block dismounted avenues of approach.
- It can protect obstacles and prevent enemy breaching operations.
- It can establish strongpoints to deny the enemy key terrain or flank positions.
- It can conduct assault breaches of obstacles.
- In conjunction with its BFVs, the platoon's infantry squads can clear danger areas and prepare positions for mounted elements.
- In conjunction with the BFVs, infantry squads can assault enemy positions.
- The infantry squads can augment the antiarmor fires of tanks and BFVs.
- The infantry squads can move over terrain not trafficable by tracked vehicles.
- The platoon can infiltrate enemy positions.
- It can conduct mounted or dismounted patrols and OPs in support

of security operations.

- If provided with airlift support, it can conduct air assault operations.

The mechanized infantry platoon has these limitations:

- The platoon's BFVs are vulnerable to enemy antiarmor fires.
- The platoon's infantry squads are vulnerable to small arms and indirect fires. Infantry squads should not be positioned where they will be exposed to long-range fires before they are able to take the enemy under fire.
- The pace of dismounted offensive operations is limited to the foot speed of the dismounted infantryman.
- The BFV poses a variety of difficulties in water crossing operations, including the requirement for either adequate fording sites or a bridge with sufficient weight classification.

COMBAT SUPPORT ASSETS

The company team may be task organized with the following CS elements:

- The company team FIST.
- Engineer assets, such as an engineer platoon or squad and/or special equipment.
- Either a Stinger team, which rides on a dedicated BSFV or another company team vehicle, or a Bradley Linebacker.
- A task force scout platoon during some security operations.
- A task force mortar platoon or section during some tactical operations.
- Sensor teams, such as those using ground surveillance radar (GSR) or the improved remotely monitored battlefield sensor system (IREMBASS), during some security operations.
- Counterintelligence, civil affairs, and linguistic support teams during some stability and support operations.

COMBAT SERVICE SUPPORT ASSETS

The tank or mechanized infantry company team has an organic supply section. In addition, it is normally task organized with the following CSS attachments:

- A maintenance team.
- A medical aid and evacuation team.

SECTION 2 - COMPANY TEAM BATTLEFIELD FOCUS

The company team employs maneuver (fire and movement) and integrates CS and CSS assets to complete tactical tasks in support of the battlefield purpose specified by the controlling task force commander. In doing this, the company team commander develops the situation, gaining sufficient information on the enemy situation to make prudent tactical decisions; the team then closes with and destroys enemy forces. The area of operations defined by this principle varies widely according to the nature of the battle and other METT-TC factors. It may be less than 100 meters in any direction during operations in forested areas, urban areas, close terrain, or trench lines. In more open terrain, the area of operations may extend up to 4 kilometers from the team's direct fire weapon systems and out to 6 kilometers with support from the task force's indirect fire systems.

During offensive operations, the company team may face stationary or moving enemy forces. The commander must apply his knowledge of the ground, the enemy, and the team's combat, CS, and CSS assets to achieve superiority in local combat power. The close fight may require the team to breach obstacles, using suppressive fires and/or assaulting to penetrate or destroy enemy defenses. It is this ability to close with, destroy, and penetrate enemy ground forces that is the unique contribution of the company team. Following the destruction or penetration of the enemy, the company team aggressively follows through to its next action. The team destroys defending forces by integrating direct and indirect fires with mounted and dismounted movement. Following the attack, the company team consolidates and prepares for further action. It may also be tasked to conduct security operations for a larger force during offensive operations.

In the defense, the company team will most likely be expected to defend against an enemy battalion. It can repel the attacking enemy with fires and close combat, integrating the effects of direct and indirect fires, maneuver, and obstacles. It may also be designated as a reserve or counterattack force during defensive operations, or it may be tasked to conduct security operations for a larger force.

Regardless of the operation (offensive or defensive) it is conducting at any given moment, the company team must remain focused on continuing or returning to the offense. The team commander must aggressively seek and employ the appropriate offensive options in any situation.

SECTION 3 - DUTIES AND RESPONSIBILITIES OF KEY PERSONNEL

COMMANDER

The commander is responsible for everything the company team does, or fails to do, in executing the mission assigned to it by the task force and/or brigade. His responsibilities include leadership, discipline, tactical employment, training, administration, personnel management, supply, maintenance, communications, and sustainment activities. These duties require the commander to understand the capabilities of the team's soldiers and equipment and to know how to employ them to best tactical advantage. At the same time, he must be well versed in enemy organizations, doctrine, and equipment.

Using this knowledge, the commander prepares his unit for combat operations using troop-leading procedures. Ultimately, he must know how to exercise command effectively and decisively. He must be flexible, using sound judgment to make correct decisions quickly and at the right time based on the higher commander's intent and the tactical situation. He must be able to issue instructions to his subordinate leaders in the form of clear, accurate combat orders; he then must ensure that the orders are executed.

EXECUTIVE OFFICER

The XO is the company team's second in command and its primary CSS planner and coordinator. He and his crew may serve as the team net control station (NCS) for both radio and digital traffic. The XO's other duties include these:

- Ensure accurate, timely tactical reports are sent to the task force.
- Assume command of the company team as required.
- In conjunction with the 1SG, plan and supervise the company team CSS effort prior to the battle.
- Assist in preparation of the OPORD, especially paragraph 4 (service support).
- Conduct tactical coordination with higher, adjacent, and supporting units.
- As required, assist the commander in issuing orders to the company team headquarters and attachments.
- Conduct additional missions as required. These may include serving as OIC for a quartering party or as the leader of the detachment left in contact (DLIC) in a withdrawal.
- Assist the commander in preparations for follow-on missions.

FIRST SERGEANT

The 1SG is the team's senior NCO and normally is its most experienced soldier. He is the commander's primary tactical advisor; he is an expert in individual and NCO skills. He is the team's primary CSS operator; he helps the commander to plan, coordinate, and supervise all logistical activities that support the tactical mission. He operates where the commander directs or where his duties require him.

The 1SG's specific duties include the following:

- Execute and supervise routine operations. The 1SG's duties may include enforcing the tactical SOP; planning and coordinating training; coordinating and reporting personnel and administrative actions; and supervising supply, maintenance, communications, and field hygiene operations.
- Supervise, inspect, and/or observe all matters designated by the commander. For example, the 1SG may observe and report on a portion of the team's sector or zone, proof fighting positions, or assist in proofing an engagement area.
- Plan, rehearse, and supervise key logistical actions in support of the tactical mission. These activities include resupply of Class I, III, and V products and materials; maintenance and recovery; medical treatment and evacuation; and replacement/RTD processing.
- Assist and coordinate with the XO in all critical functions.
- As necessary, serve as quartering party NCOIC.
- Conduct training and ensure proficiency in individual and NCO skills and small-unit collective skills that support the company team's METL.
- In conjunction with the commander, establish and maintain the foundation for company team discipline.

PLATOON LEADER

The platoon leader is responsible to the commander for leadership, discipline, training, and sustainment activities related to the platoon; for maintenance of its equipment; and for its success in combat. He must be proficient in the tactical employment of the platoon and his section (mounted or dismounted) in concert with the rest of the company team.

In many ways, the platoon leader's command and control responsibilities parallel those of the team commander. Like the commander, he must have a solid understanding of troop-leading procedures and develop his ability to apply them quickly and efficiently. He must know the capabilities and limitations of the platoon's personnel and equipment and be well versed in enemy organizations, doctrine, and equipment. On the battlefield, characteristics of an effective platoon

leader again mirror those of the commander: a combination of tactical flexibility, sound judgment, and the ability to make rapid decisions accurately and at the right time based on the commander's intent and specifics of the tactical situation.

PLATOON SERGEANT

The PSG is platoon's second in command and is accountable to the platoon leader for the leadership, discipline, training, and welfare of the platoon's soldiers. He coordinates the platoon's maintenance and logistical requirements and handles the personal needs of individual soldiers. The PSG fights his section in concert with the platoon leader's section.

FIRE SUPPORT OFFICER

The company team fire support officer (FSO) helps the commander to plan, coordinate, and execute the team's fire support requirements and operations. During operational planning, he develops and refines a fire support plan based on the commander's concept and guidance. He then coordinates the plan with the battalion FSO. The team FSO also has these responsibilities:

- Advise the commander on the capabilities and current status of all available fire support assets.
- Serve as the commander's primary advisor on the enemy's indirect fire capabilities.
- Assist the commander in developing the OPORD to ensure full integration of fires.
- Recommend targets and fire control measures, and determine methods of engagement and responsibility for firing the targets.
- Determine the specific tasks and instructions required to conduct and control the fire plan.
- Develop an observation plan, with limited visibility contingencies, that supports the company team and task force missions.
- Brief the fire support plan to the company team commander and the task force FSO.
- Brief the fire support plan as part of the company team OPORD, and coordinate with platoon FOs (when attached) to ensure they understand their responsibilities.
- Refine and integrate the company team target worksheet; submit the completed worksheet to the task force fire support element (FSE).
- Assist the commander in incorporating execution of the indirect fire plan into each company team rehearsal. This includes integrating indirect fire observers into the rehearsal plan.

- In tactical situations, alert the company team commander if a request for fires against a target has been denied.
- In tactical situations, monitor the location of friendly units and assist the commander in clearance of indirect fires.
- Request counterbattery support in response to enemy artillery and/or mortar attacks.

COMMUNICATIONS SPECIALIST

The communications specialist supervises the operation, maintenance, and installation of organic wire and FM communications. His responsibilities include sending and receiving routine traffic and making required communications checks. The communications specialist may also have these duties:

- Perform limited troubleshooting of the company team's organic communications equipment, and provide the link between the company team and the task force for maintenance of communications equipment.
- Supervise all activities in regard to the company team's COMSEC equipment. This usually will entail requisition, receipting, training, maintenance, security, and employment of this equipment and related materials.
- Assist the commander in planning and employment of the team's communications systems. Using the commander's guidance, the communications specialist may assist in preparation of paragraph 5 (command and signal) of the OPORD.
- Supervise or assist in company team CP operations. Responsibilities may include relaying information, monitoring the tactical situation, establishing the CP security plan and radio watch schedule, and informing the commander and subordinate elements of significant events. (**NOTE:** In many situations, the communications specialist will be a soldier with the rank of specialist or below; he may or may not have the experience to take on additional duties such as NCOIC of the CP.)

SUPPLY SERGEANT

The supply sergeant requests, receives, issues, stores, maintains, and turns in supplies and equipment for the company team. He coordinates all supply requirements and actions with the 1SG and the battalion S4. Normally, the supply sergeant will be positioned with the task force field trains, where he is supervised by the HHC commander or support platoon leader. He communicates with the company team using the task force A/L radio net (when available in the field trains). (**NOTE:** Refer to Chapter 7 for a detailed discussion of CSS operations and requirements.)

The supply sergeant's specific responsibilities include the following:

- Control the company team cargo truck and water trailer, and supervise the supply clerk/armorer.
- Monitor company team activities and/or the tactical situation; anticipate and report logistical requirements; and coordinate and monitor the status of the company team's logistics requests.
- Coordinate and supervise the organization of the company team LOGPAC in the task force field trains.

NBC NCO

The NBC NCO assists and advises the company team commander in planning for and conducting operations in an NBC environment. He plans, conducts, and/or supervises NBC defense training, covering such areas as decontamination procedures and use and maintenance of NBC-related equipment. Specific duties include the following:

- Assist the commander in developing company team operational exposure guidance (OEG) in accordance with OEG from higher headquarters.
- Make recommendations to the commander on NBC survey and/or monitoring, decontamination, and smoke support requirements.
- Requisition NBC-specific equipment and supply items.
- Assist the commander in developing and implementing the company team NBC training program. The NBC NCO ensures that the training program covers the following requirements:
    - First-line supervisors provide effective sustainment training in NBC common tasks.
    - NBC-related leader tasks are covered in sustainment training.
    - NBC-related collective tasks are covered in overall unit training activities.
    - NBC factors are incorporated as a condition in the performance of METL tasks.
- Inspect company team elements to ensure NBC preparedness.
- Process and disseminate information on enemy and friendly NBC capabilities and activities, including attacks.
- Advise the commander on contamination avoidance measures.

- Coordinate, monitor, and supervise decontamination operations.

ARMORER

The armorer performs organizational maintenance on the company's small arms and is responsible for evacuating weapons as necessary to the direct support (DS) maintenance unit. In addition, he normally assists the supply sergeant in the brigade support area (BSA). (**NOTE:** As an option, the armorer may serve as the driver of the 1SG's vehicle to make him more accessible for weapons repair and maintenance in forward areas.)

MASTER GUNNER

The master gunner is the company team's expert in vehicle gunnery. He assists the commander in gunnery training and preparations for combat to ensure that every crew and platoon can make effective, lethal use of their firepower assets. These preparations include assisting tank and BFV crews by establishing or coordinating boresight lines, plumb and sinc berms (for M1A2 units), and/or use of live-fire screening ranges and zero ranges. The master gunner also assists turret mechanics from the company maintenance team (CMT) in troubleshooting and repairing turret main armament and fire control systems. As the company team's direct fire weapons expert, he can assist in engagement area development and direct fire planning for both offensive and defensive operations. Additional duties in the planning and preparation phases may include assisting in CSS coordination and execution, serving as NCOIC of the CP, and assisting the commander in troop-leading procedures.

During combat operations, the master gunner advises the commander on applicable battlesight ranges. He may serve as the gunner on one of the command tanks or BFVs, as a CSS operator riding on the APC, or as a section NCOIC in the company team's wheeled vehicles with responsibility for facilitating communications with the task force.

MAINTENANCE TEAM CHIEF

The maintenance team chief (attached from the task force maintenance platoon) supervises the CMT. He decides whether damaged vehicles and equipment can be repaired in place or must be evacuated. Other key responsibilities include coordinating evacuation and repair operations; managing requisition of Class IX supplies in conjunction with the task force maintenance officer; and managing the employment of the CMT mechanics and evacuation assets. The maintenance team chief monitors the tactical situation and directs maintenance team personnel during combat repair and recovery operations. If necessary, he leads the company team combat trains in the 1SG's absence.

SENIOR AIDMAN

The senior aidman (attached from the BAS) works with the company team medic in coordinating medical activities and supervising team personnel (such as combat lifesavers and platoon aidmen) who hold medical responsibilities. He provides training in such areas as basic first aid and buddy aid; he can also train and direct company team combat trains personnel to assist in handling mass casualties. He is responsible for resupply of Class VIII materials and equipment for the company team.

During tactical operations, the senior aidman monitors the tactical situation and responds as necessary. He administers first aid to casualties, supervises other medical personnel, and directs evacuation of casualties from platoon positions when required. He keeps the 1SG informed of the status of casualties and coordinates with him for additional evacuation and treatment assets.

SECTION 4 - OPERATING SYSTEMS

The eight operating systems allow the company team commander to analyze various tactical, maneuver, and support functions as he prepares his unit for combat operations. In developing his plan, the commander integrates considerations and procedures from each operating system, as described in this section, to ensure the unit can effectively accomplish its mission.

COMMAND AND CONTROL

The command and control process is the commander’s basic tool in the employment of the company team. It consists of the activities and procedures used by the commander to plan, direct, coordinate, and control the functions and actions of the company team; it also includes the personnel and equipment that assist him with command and control.

The commander employs the team in accordance with the guidance and orders he receives from the battalion task force. Perhaps his most important skills lie in accurately analyzing the situation and developing a plan that has the greatest chance of accomplishing the mission with the least cost in lives and equipment. After developing the plan, the commander delegates authority to his subordinates, clearly assigning responsibilities, tasks, and purposes and stating his intent so that every member of the unit can effectively use his own initiative.

During the battle, the commander must position himself where he can most effectively carry out the duties and demands of battle command. The position must allow him to make sound tactical decisions in keeping

with the axiom, "See the terrain, see the enemy, see yourself." Because he may not be able to see everything, however, the commander must also be prepared to visualize what is happening through oral and written reports and information from digital systems. He must be ready at all times to influence the battle by using FRAGOs to issue clear, concise instructions to company team elements.

NOTE: As the company team's second in command, the XO holds the critical responsibility of assisting the commander in the command and control process. The XO must be prepared to assume command at any time. During mission planning and preparation, the commander must consider where he and the XO will be positioned on the battlefield; this is a key factor both in assuring effective control of the team and in facilitating a smooth transition if the XO must assume command.

RECONNAISSANCE, SURVEILLANCE, AND INTELLIGENCE

The RSI operating system covers activities employed to see the enemy, terrain, and other aspects of battle space that will affect friendly operations. Although the company team's primary mission is to fight, it normally conducts some type of reconnaissance or surveillance prior to any operation; in addition, it conducts reconnaissance during execution of all operations. Both before and during an operation, the company team receives intelligence and combat information from its parent headquarters, from other company teams, and from elements within the team. At the same time, the team is a critical source of combat information throughout the operation.

MANEUVER

Maneuver is the employment of forces on the battlefield; it entails using a combination of fire (or fire potential) and movement to achieve a position of advantage with respect to the enemy, to develop the situation as necessary, and to close with and destroy the enemy. Based on METT-TC factors, the company team commander may maneuver his tank platoons, BFV platoons, infantry squads, and other support forces to achieve the positional advantage.

Ideally, the commander moves the company team using bounding overwatch when contact is likely, then makes the transition to maneuver (executing actions on contact as necessary) once contact is made. He uses indirect fires and a base of fire by stationary friendly elements to provide protection for the moving elements as they close with the enemy. He also ensures effective flank security, an essential element of successful maneuver.

FIRE SUPPORT

The company team integrates fire support into its portion of the task force fight. The task force fire support plan specifies the intended tactical purpose for each task assigned to the company team; for example, the plan may state that a target will be fired so that it diverts an enemy force from a particular route. The company team commander designates triggers for each target as well as primary and backup observers to call for and adjust fires as necessary. The commander then has ultimate responsibility for ensuring not only that the team effectively executes the target but also that the intended purpose is met (in this case, diverting the enemy from his original course).

INFORMATION OPERATIONS

Friendly forces employ information operations to magnify their own combat power and diminish the enemy's; a key function is to paralyze, disorganize, or degrade the enemy's ability to apply his operating systems. Information operations may be offensive or defensive. Typical components are electronic warfare (EW), physical destruction, deception, operations security (OPSEC), psychological operations (PSYOP), civil affairs (CA), and public affairs (PA).

AIR DEFENSE

The company team executes passive or active air defense measures, or a combination, to evade enemy aircraft, degrade the effects of an air attack, or destroy the attacking aircraft. Passive air defense is aimed at avoiding detection or protecting the unit through the use of camouflage, hide positions, and similar measures. Active air defense may entail use of evasive measures, execution of air defense drills by organic elements, employment of the company team's organic firepower, and/or employment of air defense assets.

MOBILITY AND SURVIVABILITY

This operating system addresses both engineer and NBC functions. In the offense, for example, the company team may receive mobility assets, such as MICLICs from the supporting engineer unit or additional mine plows and rollers from other tank companies, for the conduct of breaching operations. In conducting a defense, the team may be able to employ supporting engineer survivability assets or be called upon to execute the team's portion of the task force countermobility effort. Examples of the company team's NBC-related functions include escorting smoke-generating or chemical reconnaissance elements or conducting decontamination operations supported by a decontamination platoon attached to the brigade.

COMBAT SERVICE SUPPORT

There are five functional areas of CSS: supply, transportation, maintenance, field services, and personnel services. The company team has an organic supply section and normally has attached medical/evacuation and maintenance teams. Other support for the team is provided by CSS assets from the task force.

SECTION 5 - THE HUMAN DIMENSION

Although the "human dimension" is not an operating system, it is a crucial factor in the success of any mission. Soldiers win battles; systems are only their tools. At the same time, soldiers are human, and as such, they have repetitive physical and emotional needs. A leader who is 100-percent "mission first," with no consideration of the human dimension, will see his command degrade quickly.

Leaders and subordinates alike must earn trust; it is not automatic. Commanders must consider the training and experience of their subordinates so they can assign missions that best capitalize on each soldier's strengths. They must also identify and correct their troops' weaknesses. For their part, soldiers must believe that the chain of command will do its best to take care of them within the parameters of the mission requirements.

The individual soldier's competence and performance on the battlefield depends heavily on his belief in his own abilities; in turn, this self-confidence is the sum of his confidence in his equipment, in his leaders, and in his fellow soldiers as part of a team. Soldier confidence is built through effective leadership and tough, realistic training.

For commanders, the guiding principle in handling the human dimension of military operations is that they can tap their units' full combat potential only when soldiers are healthy physically, mentally, and spiritually. Every commander must take every necessary action to enhance his soldiers' health, morale, welfare, and overall readiness to fight.

Refer to FM 22-100 for more information on the human dimension.

SECTION 6 - SPECIALIZED OPERATING ENVIRONMENTS

The company team must be prepared to fight on any type of terrain and in all types of adverse climatic conditions and weather. The following paragraphs examine some of the tactical considerations and requirements the team will face in several special operating environments. The discussion lists field manuals that provide additional information on operations in each type of environment.

MILITARY OPERATIONS IN URBAN TERRAIN

On the urban battlefield, the company team must take full advantage of all natural and man-made features. At the same time, it must remain vigilant because of the potential dangers these features pose. Built-up areas provide virtually unlimited positions affording cover and concealment for a defender; they restrict the attacker's mobility and observation as well.

Whether tank-heavy or mech-heavy, the company team has only a limited number of dismounted infantrymen that it can employ to clear and defend urban areas. The commander therefore must carefully assess how to employ the firepower of the team's tanks and BFVs in support of the infantry squads during clearance or strongpoint defense operations.

Refer to FM 90-10, FM 90-10-1, and Appendix I of this manual for information on MOUT.

DESERT OPERATIONS

Desert operations require special training, effective acclimatization, and a high degree of self-discipline. The company team commander must take into account a variety of unique operational factors, such as increased visibility (both for the team and for enemy elements) and wide mobility corridors. He must also recognize the special problems that desert operations pose in the area of logistical support. The desert is hard on vehicles and equipment, causing a variety of maintenance problems. The extended distances, lack of cover and concealment, and less-than-ideal movement conditions can complicate resupply operations.
(**NOTE:** While the techniques of desert combat and logistical support differ from those used in temperate climates, the commander must always remember that basic operational principles and fundamentals do not change.)

Refer to FM 90-3 for a detailed examination of desert operations.

JUNGLE OPERATIONS

Severe limitations in visibility and mobility are dominant factors for the heavy company team during jungle operations. Lack of visibility greatly increases the potential for problems related to flank coordination, mutual and adjacent support, short engagement ranges, and enemy infiltration. Highly restrictive mobility corridors will almost invariably slow the team's movement. Severe weather also adversely affects operations in the jungle. The degree to which soldiers are acclimated and trained to live and fight in the jungle will contribute to the unit's success or failure.

FM 90-5 is the primary reference for information on jungle operations.

MOUNTAIN OPERATIONS

Mountainous terrain requires the commander to modify the company team's tactics and techniques. Mountains obviously pose a serious physical barrier to any type of movement. The impact can be especially significant for the heavy company team, which will find its mobility and fields of observation and fire greatly restricted. In addition, the severity and highly variable nature of mountain weather have a significant impact on military operations.

See FM 90-6 for additional information on mountain operations.

COLD-WEATHER OPERATIONS

Cold weather, which can vary from the relatively mild winters of central Europe to the extremes of subarctic climates, will greatly affect company team operations. Low temperatures will degrade most optical systems. To varying degrees, cold will also cause performance problems in most vehicles; related weather conditions, such as heavy snow, can severely hamper vehicle mobility. Company team personnel are affected by cold weather as well. Commanders must determine how to limit the amount of time soldiers are directly exposed to the cold. Cold-weather conditions can also affect other tactical considerations; for example, they may change the effectiveness of natural and reinforced obstacles and barriers.

Refer to FM 90-22 for additional information on these operations, including prevention of cold-weather injuries.

CHAPTER 2

Battle Command

Battle command is the art of decision-making and leading on the battlefield. It covers the knowledge, techniques, and procedures necessary to control operations and to motivate soldiers and their organizations into action to accomplish assigned missions. As part of battle command, commanders visualize the current state of the battlefield as well as future states at different points in the operation; they then formulate concepts of operations that allow their units to progress from one state to the other at the least cost. Other elements of the battle command process include assigning missions, prioritizing and allocating resources, selecting the critical times and places to act, and knowing how and when to make adjustments during the fight.

The company team commander employs a variety of means to prepare for operations, issue orders, employ the company team, and communicate. The success of this command and control process rests mainly on effective training; thorough (and thoroughly understood) SOPs; accurate, timely communications; and, most of all, decisive leadership.

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Section 2	**Control** Situational Awareness Reports Standing Operating Procedure Communications Communications Security Company Team Command Post Direct Fire Control

SECTION 1 - COMMAND

Command is the authority that a commander in military service lawfully exercises over subordinates by virtue of rank and assignment. It is vested in an individual who possesses total responsibility and accountability for the actions of his unit. It is the authority that empowers this individual, the commander, to effectively use available resources in planning assigned missions and in organizing, coordinating, employing, and directing the necessary military forces to accomplish these missions at the least possible expense in manpower and material.

Command, however, is more than the simple exercise of constitutional, legal authority; it goes beyond merely the practiced application of a set of managerial skills. The essence of command authority is the sum of many intangible personal assets: the commander's knowledge, experience, and personality and how he interacts with his own unit and with others.

Above all, command is an art. It is the art of effective decision-making and of motivating and leading both individual soldiers and larger organizations. It is the art of turning decisions, motivation, and leadership into actions that impose the will of the commander on his unit and, ultimately, the will of the nation on its enemies.

MISSION-ORIENTED COMMAND AND CONTROL

This method of directing military operations encourages and assists subordinates in taking action consistent with the intent and concept of higher headquarters. Mission-oriented command and control requires a clear understanding by subordinate elements of the unit purpose; at the same time, it provides them with the freedom to react to enemy actions without further guidance. The following paragraphs outline the underlying principles of this type of command and control.

Expect uncertainty

The commander must understand the environment of combat. The battle will be dynamic and the enemy uncooperative. Communications may be degraded, and the chaos of battle may prevent the commander from knowing what is happening beyond the reach of his own senses. The situation the unit anticipates during the planning phase will inevitably change before and during execution.

Reduce leader intervention

When soldiers expect the commander to make every decision or initiate every action, they may become reluctant to act. To counter this tendency, the commander must plan and direct operations in a manner that requires a minimum of intervention. He operates on the principle that some loss of precision is better than inactivity.

The commander still must be prepared to provide subordinates with the criteria and guidance for making decisions when precise control is required for synchronization. During the planning process, he should identify those few critical decisions that will absolutely be required during the battle and then determine the criteria for initiation of actions associated with these decisions. Examples include the use of engagement criteria, trigger lines, and disengagement criteria. The commander then disseminates the decision criteria throughout the company team.

> **NOTE:** The commander must keep in mind that changing conditions and unexpected situations will require him to make decisions continuously once the battle begins. His preparations related to critical decisions will allow him, and his subordinates, to react more effectively when changes become necessary.

Optimize planning time for subordinates

The company team commander must ensure that the timelines he develops for mission planning and preparation provide adequate troop-leading time for the subordinate elements. An effective way to optimize the use of the available time, no matter how short, is to conduct training of the company team orders process under tough, realistic conditions at every available opportunity.

Allow maximum freedom of action for subordinates

Given the expected battlefield conditions, leaders at every level must avoid placing unnecessary limits on their soldiers' freedom of action. The leader at the point of decision must have the knowledge, training, and freedom necessary to make the correct choice in support of the commander's intent. This concept must be emphasized at every opportunity at every level of leadership. Soldiers win battles; their leaders can only place them in a position where they are able to seize the opportunity to do so. Subordinates will be successful on the battlefield only if their commanders and leaders have fostered the necessary confidence and initiative before the battle begins.

Encourage cross-talk

Subordinate leaders do not always require guidance from the commander to address a change in the situation. In some instances, because of their position on the battlefield, two or more subordinates, working together, may have the clearest view of what is happening and may be better suited than the commander to develop a tactical solution. This type of problem-solving, involving direct coordination between subordinate elements, is critical to mission-oriented command and control. In addition to its obvious impact on mission accomplishment, it empowers subordinates to take decisive action and teaches them the value of close cooperation in achieving the unit's overall purpose.

Command and lead well forward

The commander positions himself where he can best fight his company team and make critical decisions to influence the outcome of the fight. This position is normally with the main effort to allow the commander to exert his leadership and to shift or retask the main effort as necessary. He must be far enough forward to "see" the battlefield using all available resources; these assets include not only visual observation but also radio reports and, in digitized units, information provided over digital systems. The team XO is normally with the supporting effort and must be able to rapidly assume command if needed.

PLANS AND ORDERS

Plans are the basis for any mission. The company team commander develops his concept of the operation summarizing how best to accomplish his mission within the scope of the task force and brigade commanders' intents. The team commander uses troop-leading procedures to turn the concept into a fully developed plan and to prepare a concise, accurate OPORD. He assigns additional tasks (and outlines their purpose) for subordinate elements, allocates available resources, and establishes priorities to make the concept work.

The following discussion, covering important aspects of orders development, serves as an introduction to the discussion of troop-leading procedures and delegation skills later in this chapter. The first portion focuses on the mission statement and the commander's intent, which provide the doctrinal foundation for the OPORD. Also included are basic discussions of the three types of orders (warning orders, OPORDs, and FRAGOs) used by the team commander. It is important for the company team commander to have a thorough understanding of these elements because they are the building blocks for everything else that he does during the troop-leading process. (**NOTE:** Refer to Appendix A of this manual for more detailed information on orders formats.)

Mission statement

The commander uses the mission statement to summarize the upcoming operation. This brief paragraph (sometimes a single sentence) describes the form of operation, the unit's task and purpose, the actions to be taken, and the reasons for these actions. It is written in a format based on the five "Ws": **who** (unit), **what** (tasks/operations), **when** (date-time group), **where** (grid location/geographical reference for the area of operations and/or objective), and **why** (purpose). The commander must ensure that the mission is thoroughly understood by all leaders and soldiers two echelons below (section or squad). The following paragraphs cover considerations that apply in development of the mission statement.

Operations

Operations are groupings of related activities in four broad categories: offense, defense, stability, and support. Each category is subdivided into types of operations, with different types further divided into forms of operations.
(**NOTE:** For example, as shown in Table 2-1, the attack is a type of offensive operation. Forms of the attack include the spoiling attack, counterattack, raid, feint, demonstration, and search and attack. Retrograde operations are a type of defensive operation; forms are the delay, withdrawal, and retirement.) Operations are the building blocks of higher unit missions.

Table 2-1. Operations.

Category	OFFENSE	DEFENSE	STABILITY	SUPPORT

Types of operations **(Forms of operations are listed under types)**	Movement to contact Attack - Spoiling attack - Counterattack - Raid - Feint - Demonstration - Search and attack Exploitation Pursuit	Area defense Mobile defense Retrograde - Delay - Withdrawal - Retirement	Peace operations Counterdrug operations Nation assistance Support to insurgencies Show of force Combating terrorism NEOs Support to civil authorities Support to counterinsurgencies Support to civil disturbance	Humanitarian operations Environmental operations

The company team may also take part in a variety of other operations; these may be conducted as part of any operation in the four general categories outlined above. The following are examples of these additional operations:

Reconnaissance	Security	Troop movement
- Zone	- Screen	Breach
- Area	- Guard	Water/gap crossing
- Route	- Cover	Relief in place
Deception	- Area	

Tasks

Tactical tasks are specific activities performed by the unit while it is conducting a form of tactical operation or a choice of maneuver. (**NOTE:** The title of each task can also be used as an action verb in the unit's mission statement to describe actions during the operation.) Normally, a commander will assign one mission-essential task to each subordinate unit. Tasks should be definable, attainable, and measurable. Tactical tasks that require specific TTP for the company team are covered in detail throughout this manual. The following list gives examples of tactical tasks the team and its subordinate elements may be called upon to conduct:

Advance in contact	Contain	Follow and assume	Retain
Assault	Counter-reconnaissance	Follow and support Hold	Rupture Secure
Attack by fire	Defeat	Interdict	Seize
Block	Destroy	Isolate	Support by fire
Breach	Disrupt	Link up	Suppress

Bypass	Disengage	Occupy
Canalize	Disrupt	Protect
Clear	Fix	Reduce

NOTE: For clarity, the commander normally lists tasks and operations together in the OPORD mission statement.

Purpose

A simple, clearly stated purpose improves understanding of the commander's intent. It will also assist subordinate leaders in adjusting their tasks during execution of the mission, allowing them to stay within the parameters of the higher commander's intent. The purpose should tell the subordinates **why** the company team is conducting the mission and **how** the team will operate with or provide support for other units. The following list provides examples of purposes that the company team may be called upon to achieve:

Prevent	Create	Protect	Deceive
Enable	Influence	Cause	Draw
Deny	Allow	Divert	Support

Placement

The commander has several options as to where in the OPORD he outlines his subordinates' mission-essential tasks and purpose. His overriding consideration is that placement of the mission statement should assist subordinate leaders in understanding exactly each of the five "W" elements.

The following is an example of a mission statement the company team commander might include in his order:

Example mission statement

> Team D (**who**) attacks at 040600Z FEB 97 (**when**) to breach (**what**) the obstacle belt at NX330159 (**where**), enabling Team B (task force main effort) to penetrate the enemy's positions vicinity OBJ BOB (**why**).

Commander's intent

The commander's intent is a clear, concise statement of what the company team must do to succeed in relation to the enemy, the terrain, and the desired end state. It provides the link between the mission statement and the concept of the operation by stating the key tasks that, along with the mission, are the basis for subordinates to exercise initiative when unanticipated opportunities arise or when the original concept of the operation no longer applies. The commander can also use the intent statement to explain a broader purpose for the operation beyond that outlined in the mission statement. The intent, which is mandatory in all orders, may be expressed in several "bullets" or in complete sentences; these presentation methods are covered later in this discussion. As with the mission, the commander must ensure that the intent statement is thoroughly understood by all leaders and soldiers two echelons below (section or squad). The following paragraphs focus on considerations that apply in development and presentation of the intent statement.

How to use the intent statement

The purpose of the intent at the company team level is to provide vehicle commanders and squad leaders with a summary of the most important details of what the company team is supposed to achieve during the operation. The intent statement must be developed and presented so they can remember this critical information, recognize specific situations while in contact on the battlefield, and act in accordance with the commander's intent to achieve the desired end state.

The focus of the intent is on the company team's key tasks during the operation. Key tasks are those that the team must perform to achieve the stated purpose of the operation, as outlined in paragraph 2 of the OPORD; they may also specify conditions that must be met for mission accomplishment. Key tasks are not tied to a specific COA; rather, they identify actions or conditions that are fundamental to the unit's success. In the ever-changing operational environment, such as when significant opportunities present themselves or when the original concept or COA does not apply, subordinate elements use these tasks to ensure their efforts continue to support the commander's intent. Examples of critical areas that key tasks may cover include the tempo of the operation, the desired effect of fires on the enemy, and terrain that must be controlled.

At the same time, the intent statement does not specify the technique or method by which the unit will achieve the commander's projected end state; the method is covered in the concept of the operation. Nor does the intent cover "acceptable risk"; risk factors are part of the commander's guidance and are addressed in the evaluation of all COAs for the operation. In addition, the purpose addressed in the intent is not merely a restatement of the **why** (purpose) from the mission statement, which focuses on the company team's immediate operation. Instead, the commander uses the intent to examine the broader operational context of the company team and higher missions.

"Bullet" method of presentation

One technique in presentation of the commander's intent is to condense it to three to five "bullet" comments (instead of reciting a lengthy paragraph). This can make it easier for the team's subordinate leaders to recall each point and recognize related situations. As an example, the following could summarize the commander's intent for a mechanized infantry team with the task of seizing a choke point for the purpose of allowing the remainder of the task force to pass:

My intent is to accomplish these actions during the operation:

- Control the choke point until the entire task force has passed.
- Prevent effective enemy antiarmor fires against the task force as it passes through the choke point.
- Be prepared to defend the choke point against a counterattack from the southeast.

Paragraph method of presentation

The company team commander can also summarize his intent in paragraph form. He should keep the intent statement as concise as possible; at the same time, however, he must ensure that the paragraph covers all pertinent details of the operation. The following example shows how he might explain the team's mission to provide support by fire as the support force in a task force deliberate attack:

> We must suppress all enemy forces that can place effective direct fires against Team Bravo as it assaults. We will maintain this suppression until Team Bravo begins its maneuver. Additionally, we must be prepared to assume Team Bravo's assault to seize the choke point.

NOTE: The examples provided here should not be interpreted as the only "correct" methods of presenting the intent statement. The company team commander must determine the most effective way to summarize his intent based on such factors as the complexity of the mission, the applicable METT-TC factors, and the conditions under which the order is being issued.

Combat orders

Combat orders are the means by which the company team commander receives and transmits information, from the earliest notification that an operation will occur through the final phases of execution. These basic tools are absolutely critical to mission success. In a tactical situation, the team commander and subordinate leaders work with combat orders on a daily basis; obviously, they must have precise knowledge of the correct format for each type. At the same time, they must ensure that every soldier in the company team understands how to receive and respond to the various types of orders. Because of these requirements, the commander must take every opportunity to train the team in the use of combat orders. The skills associated with orders development and dissemination are highly perishable; they can be lost without constant, realistic practice. (**NOTE:** Refer to Appendix A of this manual for examples of company team orders formats.)

Warning order

During the planning phase of an operation, commanders use warning orders as a shorthand method of alerting their subordinate leaders. Warning orders also initiate the commander's most valuable time management tool, the parallel planning process. The company team commander usually sends a series of warning orders to his subordinate leaders to help them prepare for new missions. The directions and guidelines in the warning order allow subordinates to begin their own planning and preparation activities.

The content of warning orders is based on two major variables: information about the upcoming operation that is available to the company team from the task force and what the team commander ultimately wants to achieve by issuing the warning order (what he wants his subordinates to do with the information). The commander normally issues his warning orders either as he receives additional orders from the task force or as he completes his own analysis of the situation.

In addition to alerting the unit to the upcoming operation, warning

orders allow the commander to put out tactical information incrementally and, ultimately, to shorten the length of the actual OPORD. In the example in Table 2-2, the commander uses three warning orders to issue information that otherwise would make up paragraphs 1 and 2 and most of paragraph 3 in the OPORD. As a result, when he issues the OPORD, he can simply review previously issued information or brief the changes or earlier omissions. He will then have more time to concentrate on visualizing his concept of the fight for his subordinates.

Table 2-2 summarizes an example of how the company team commander might use a series of warning orders both to alert the team to an upcoming operation and to provide tactical information and initial planning guidance. The left-hand column lists actions the commander takes before issuing each of the three warning orders in the example. The center column describes specific elements included in each warning order, with the right-hand column outlining the commander's purpose for each order.

> **NOTE:** The numbering system used in Table 2-2 (warning orders #1, #2, and #3) recurs in the discussion of troop-leading procedures to explain how warning orders are used at various phases of the troop-leading process.

Operation order

When time and information are available, the company commander will normally issue a complete OPORD as part of his troop-leading procedures. As noted, he does not need to repeat information covered previously in his warning orders. The commander may also issue an execution matrix, either to supplement the OPORD or as a tool to aid in the execution of the mission; however, the matrix order does not replace a five-paragraph OPORD.

Techniques for presentation of the OPORD and visualization of the operation are covered in detail in the discussion of step 7 of troop-leading procedures (issue the order). Refer to Appendix A for more detailed information on the five-paragraph OPORD format and for an example matrix order.

Table 2-2. Example of a commander's use of multiple warning orders.

COMPANY TEAM COMMANDER'S ACTION	POSSIBLE CONTENT OF WARNING ORDER	COMMANDER'S PURPOSE

Receive the task force warning order	Warning order #1 covers the following: ● Security plan. ● Movement plan. ● Task organization. ● Tentative timeline. ● Standard drills to be rehearsed.	● Prepare platoons for movement to the tactical assembly area. ● Obtain map sheets. ● Specify company team task organization.
Conduct METT-TC analysis	Warning order #2 covers the following: ● Friendly situation. ● Enemy situation. ● Terrain analysis. ● Company team mission.	● Initiate platoon-level mission analysis. ● Initiate generic rehearsals (drill- and task-related). ● Prepare for combat.
Develop and analyze COAs	Warning order #3 covers the following: ● Commander's intent. ● Concept of the operation. ● COA analysis/selection. ● Concept of fires. ● Subordinate unit tasks and purposes. ● R&S guidance. ● Updated SITEMP/ draft graphics.	● Initiate platoon-level COA development. ● Identify platoon-level reconnaissance requirements. ● Direct leader's reconnaissance. ● Prepare for combat.

Fragmentary order

The FRAGO is a brief oral or written order that can serve any of the following purposes:

- Implement timely changes to existing orders.
- Provide pertinent extracts from more detailed orders.
- Provide instructions until a detailed order is developed.
- Provide specific instructions to subordinates who do not require a complete order.

A written FRAGO follows the five-paragraph OPORD structure; however, it includes only the information required for subordinates to accomplish their mission. To enhance understanding of voice FRAGOs, digitally equipped units can quickly develop hasty graphics and transmit digital overlays.

During the execution of an operation, FRAGOs are the medium of battle command. The company team commander uses them to communicate changes in the enemy or friendly situation and to retask his subordinate elements based on changes in the situation. The company team FRAGO normally includes the following information:

- Updated enemy or friendly situation.
- Changes to company team or platoon tasks and/or purposes.
- Changes to the scheme of maneuver.
- Specific instructions as necessary.

Table 2-3 illustrates the various transmissions that might be sent as part of an oral company team FRAGO.

Table 2-3. Example company team FRAGO.

TYPE/PURPOSE OF ORDER	RADIO TRANSMISSION
Alert	"GUIDONS, THIS IS BLACK 6; FRAGO FOLLOWS."
Situation	"THREE T-80s, TEN BMPs, AND SUPPORTING VEHICLES VICINITY CP 17, MOVING EAST TOWARD CP 11."
Mission	"WE WILL DESTROY THE ENEMY VICINITY CP 11 TO MAINTAIN THE FREEDOM OF MANEUVER OF THE TASK FORCE WHICH IS MOVING TO OUR SOUTH."

Intent	● "I WANT TO ESTABLISH AN ENGAGEMENT AREA VICINITY CP 11, INITIALLY BLOCKING THE ENEMY WITH TWO PLATOONS." ● "I THEN WANT TO DESTROY THE ENEMY BY ATTACKING HIM BY FIRE FROM THE NORTH." ● "I WANT MORTAR FIRES TO SCREEN THE TASK FORCE'S MOVEMENT SOUTH OF CP 11."
Tasks to subordinate units	● "RED AND WHITE, MOVE TO CP 9 TO BLOCK THE ENEMY, ALLOWING BLUE TO DESTROY HIM." ● "ESTABLISH THE BLOCKING POSITION WITH RED ON THE RIGHT; RED, EMPLOY YOUR INFANTRY TO SECURE THE RIGHT FLANK OF THE POSITION." ● "BLUE AND BLACK 5, MOVE TO CP 10 VIA CP 8 AND ATTACK THE ENEMY BY FIRE TO MAINTAIN THE FREEDOM OF MANEUVER OF THE TASK FORCE." ● "REDLEG, MOVE TO A POSITION VICINITY CP 8 FROM WHICH TO CALL FOR SCREENING FIRES TO PREVENT THE ENEMY FROM OBSERVING THE TASK FORCE."
Coordinating instructions	● "I WANT THE BLOCKING FORCE TO INITIATE FIRES WHEN FIVE OR SIX VEHICLES HAVE CROSSED PL ABRAMS." ● "BLUE, BEGIN THE ATTACK BY FIRE WHEN THE ENEMY IS AT CP 11 OR IF THE ENEMY BEGINS MOVEMENT SOUTH TOWARD CP 10."
CSS	"COMPANY TRAINS MOVE TO CP 4."
Command and signal	"I WILL BE WITH RED."
Acknowledgment	"ACKNOWLEDGE. OVER."

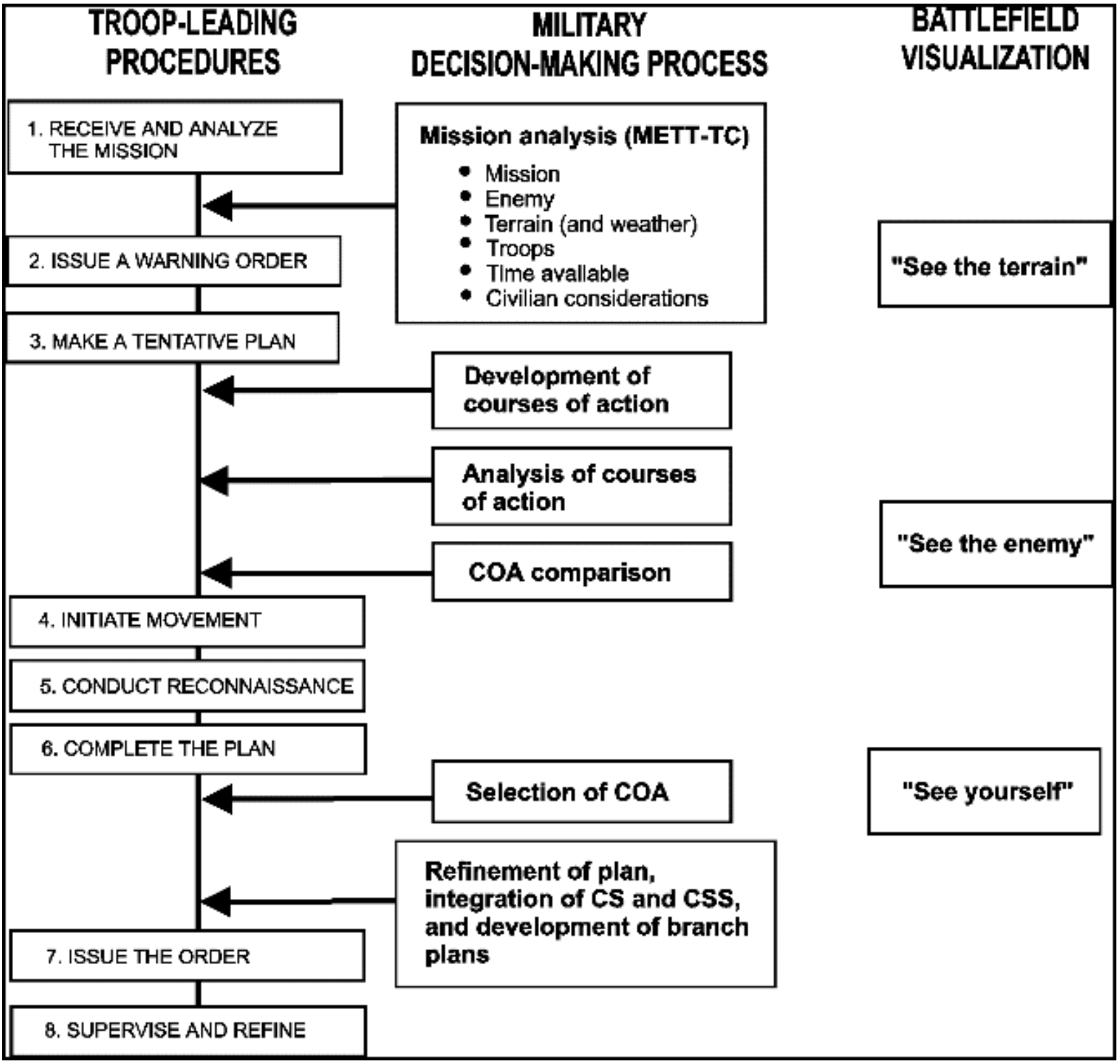


Figure 2-1. Troop-leading procedures and related activities.

COMPANY TEAM TROOP-LEADING PROCEDURES

Troop-leading procedures are the basis of the dynamic process (illustrated in Figure 2-1) by which units develop plans and orders at every level of leadership. The process, although discussed here with the eight steps in traditional order, is not rigid, and the steps are not necessarily sequential. The tasks involved in some steps (such as initiate movement, issue the warning order, and conduct reconnaissance) may recur several times during the process. Although listed as the last step, activities associated with supervising and refining the plan and other preparations occur throughout troop-leading. Conversely, in some situations, time constraints and other factors may prevent leaders from conducting steps as thoroughly as they would like.

Regardless of the time available, leaders must always remember this principle: "See the terrain, see the enemy, see yourself." Only after they view and evaluate the terrain and the enemy can they determine what their own actions should be in that given situation. They update this visualization continuously throughout the troop-leading process, basing this new "picture" of the battlefield on their own refinements to the plan, additional information from the task force and other sources, or developments in the reconnaissance and security fight.

Troop-leading procedures begin when the leader receives the first indication of an upcoming operation (often a warning order from higher headquarters) and continue throughout the planning, preparation, and execution phases of the mission. Starting as the first bit of information becomes available allows the leader to maximize the available planning time.

The warning order is the most important time-management tool the commander has and is also his most effective means of delegating responsibility. In addition, by immediately passing information to subordinate leaders through the use of warning orders, he can ensure that they develop their plans concurrently with his. Under no circumstances should leaders delay the start of the troop-leading process, even if initial information is incomplete or vague.

> **NOTE:** In many cases, the commander can initially make most effective use of his troop-leading time by conducting physical actions on the ground, such as developing an engagement area, preparing BPs, or conducting other preparations. He then can move on to the other troop-leading steps.

The following discussion provides a step-by-step overview of troop-leading procedures. Figure 2-1 illustrates the process, along with some of the considerations and procedures involved in the eight steps.

Step 1 - Receive and analyze the mission

This step normally begins with the receipt of an initial warning order from the task force, although it may begin when the company team commander receives the task force OPORD (if the task force did not use warning orders). If he receives the task force OPORD, he will normally be required to give a confirmation brief to the task force commander to ensure that he understands the higher commander's concept of the operation and his intent for the company team. The team commander must also, as necessary, obtain clarification of the information from the higher headquarters and conduct initial coordination with other units.

Collect initial information

Although mission analysis is continuously refined throughout the troop-leading process, the company team commander's initial analysis is normally based only on the initial task force warning order. During this step, the commander conducts his initial METT-TC analysis, collecting information about the terrain and the friendly and enemy situations. Additionally, he conducts his initial time analysis, develops his initial security plan, and issues an initial warning order to provide guidance and planning focus for his subordinates. (**NOTE:** The initial analysis is normally conducted as quickly as possible to allow the commander to issue the initial warning order in a timely manner. He then conducts a more detailed METT-TC analysis after the initial warning order is put out.)

Issue the initial warning order (warning order #1)

The step begins with the commander and his subordinate leaders gathering information about enemy and friendly forces, terrain, and weather as they prepare to receive the task force plan. They should focus on available information of all types: details provided in the task force warning order; terrain and weather data; their knowledge of the enemy's doctrine. As the task force develops its plans, the company team commander remains proactive, calling the TOC or sending a runner to obtain information, such as updated SITEMPs and graphics, as it becomes available. With each piece of information, he and his leaders continue to build and refine the company team plan. (**NOTE:** In many instances, the tactical situation will still be vague because the reconnaissance and security plan has not been executed, because the task force or brigade has not received its orders, or because the unit has just arrived in the area of operations.)

Upon receipt of the initial task force warning order, the commander immediately passes on the information to the company team's subordinate leaders. At a minimum, the initial team warning order should include the following:

- Enemy situation as stated in the task force order (if available).
- Friendly situation (usually the type of operation, higher unit mission statement, task organization, and boundaries).
- Movement instructions (such as routes to the tactical assembly area, movement times, and formations).
- Coordinating instructions, including an initial timeline, map requirements, and an initial security plan. (**NOTE:** The security plan should cover initial movement to and occupation of the assembly area or BP and address the REDCON levels applicable

at various times during the planning and preparation phases.)

Analyze the mission

The commander conducts mission analysis using the factors of METT-TC: mission, enemy, terrain (and weather), troops, time available, and civilian considerations. Mission analysis is a continuous process. The commander constantly receives information (during the planning phase, en route to the objective, or just prior to assaulting an enemy force) and must decide if the information affects his mission. If it does, he then decides how to adjust his plan to meet this new situation. METT-TC is not necessarily analyzed sequentially. How and when the commander analyzes each factor depends on when information is made available to him. The following discussion covers the six factors of METT-TC in detail.

> **NOTE:** The acronym METT-TC is a common mnemonic device for the factors of mission analysis; the following discussion presents these elements in the traditional order (mission, enemy, terrain, troops, time available, and civilian considerations). Mission is always the first factor to be analyzed. The second factor in the analysis, however, should be terrain rather than the enemy. By analyzing the terrain first, the leader gains a clear picture of factors that influence the enemy situation; this enables him to develop a better understanding of the enemy's capabilities and limitations.

Mission analysis. After receiving an essential task and purpose, either in a warning order or the OPORD, the commander can begin the analysis of his own mission. He may use a refined product, such the modified combined obstacle overlay (MCOO) and/or the SITEMP (if available), to better visualize the interrelationships of the terrain, the enemy, and friendly forces. His goal in this analysis is to clarify what the unit is to accomplish, why the unit is to accomplish it, and what COAs it will take to achieve its overall purpose.

Analysis of higher unit mission and intent. Leaders at every echelon must have a clear understanding of the intent and concept of operation of the commander two levels higher. For additional details on intent and concept, refer to the discussion of mission statements and commander's intent earlier in this chapter.

Analysis of own mission. Once he understands the operation at the task force and brigade levels, the commander can analyze the company team mission. Key considerations in this analysis include the following:

- **Purpose.** Identify the company team's purpose. Determine how the team's purpose relates to the purposes of the task force and its other company teams and elements. (**NOTE:** The purpose of the main effort company team usually matches the task force purpose. Purposes of the supporting effort company teams must relate directly or indirectly to the purpose of the main effort company team.)
- **Specified tasks.** What tasks (such as reconnoiter a route or assist a passage of lines) does the OPORD specify for the company team to accomplish?

- **Implied tasks.** What tasks not specified in the OPORD must the team execute to successfully accomplish its specified tasks?
- **Essential tasks.** What essential tasks specified in the task force OPORD must be accomplished for mission success? Are any implied tasks essential? What specific results must the team achieve in terms of the terrain and the enemy and/or friendly forces?
- **Limitations.** What limitations does the OPORD place on the team's freedom of action?

  NOTE: There are two types of limitations: constraints and restrictions. Constraints dictate actions that the unit must take (such as retain one platoon in reserve). Restrictions specify actions or areas from which the unit is prohibited (such as no direct fires beyond PHASE LINE DOG).

Restated mission. The commander writes his restated mission, ensuring that it includes the five "W" elements: who, what, when, where, and why. If the unit must accomplish more than one essential task, he lists them as on-order missions in the order in which they will occur. For an in-depth discussion of the mission statement and its components, refer to the discussion earlier in this chapter.

Enemy analysis. The following paragraphs examine areas the commander should cover in his analysis of the enemy.

Doctrinal analysis. This step normally begins with a study of the enemy's tactical doctrine, his weapons and equipment, and his supporting battlefield functional systems. The result of this evaluation is a doctrinal template illustrating how the enemy force might look and act without the effects of weather and terrain. Early in the planning process, the commander reviews the enemy's doctrine. He looks at specific enemy actions during a given operation (such as defense out of contact, security zone defense, or movement to contact). It is not enough simply to know the number and types of vehicles the enemy has. The commander and his subordinate leaders must thoroughly understand when, where, and how the enemy will use all assets down to squad level.

The commander will normally not have time to develop a doctrinal template during troop-leading procedures, and he may not have a task force product until he receives the SITEMP. In such situations, predeveloped templates can provide a baseline for planning at company team and platoon levels. Figure 2-2 illustrates an example of a doctrinal template for an MRC strongpoint. One technique is to develop 1:50,000-scale threat doctrinal templates on acetate for use as an "off-the-shelf" doctrinal resource. The commander may develop necessary doctrinal templates for each major operation he expects the enemy to conduct.

Composition (order of battle). Determine the number and types of threat vehicles and equipment in the company team area of operations. Analyze how the enemy organizes for combat, reviewing such areas as

doctrinal formations and distances between units. Where does the enemy place his tanks and PCs within a formation or within a defense? Where and how many dismounted infantrymen and hand-held antitank systems does the enemy have, and how will he employ them? What CS and CSS assets does he have, where are they located, and how will he use them? How, when, and where does he use his reserve?

Capabilities. Study the planning ranges for each threat weapon system. Assess the impact of doctrinal march rates and timelines. (**NOTE:** One technique is to have these capabilities listed in the leader's books of the company team's key subordinate elements.)

Doctrinal objectives. Based on the expected threat mission, identify the enemy's projected doctrinal objectives. In doctrinal terms, why will he conduct this type of operation? Is the enemy oriented on the terrain (for example, a forward detachment), on his own force (such as an advance guard), or on friendly forces (as in a security zone)? What effect will this have on the way the enemy fights?

Anticipated enemy COAs. To identify potential enemy COAs, the commander weighs the results of his initial analysis of terrain and weather against the enemy's composition, capabilities, and doctrinal objectives. The end product is a SITEMP that depicts graphically how he believes the enemy will fight under the specific conditions expected on the battlefield.

The task force S2 should have developed his own SITEMP at this point in the troop-leading process. The company team commander should obtain a copy to assist him in developing the threat COAs; he should not develop the company team SITEMP independently of the S2's product. If there are differences between the company team and task force products, he must resolve them before continuing with his analysis of the enemy.

The commander must apply his own analysis of the specific force the team will face to the existing task force product. As an example, the S2's SITEMP might identify the location of MRPs on the objective area and provide generic weapons range lines. The commander would apply his knowledge of the enemy and terrain to identify individual vehicle positions and, based on intervisibility lines around the objective area, to determine when and where enemy vehicles can engage the company team.

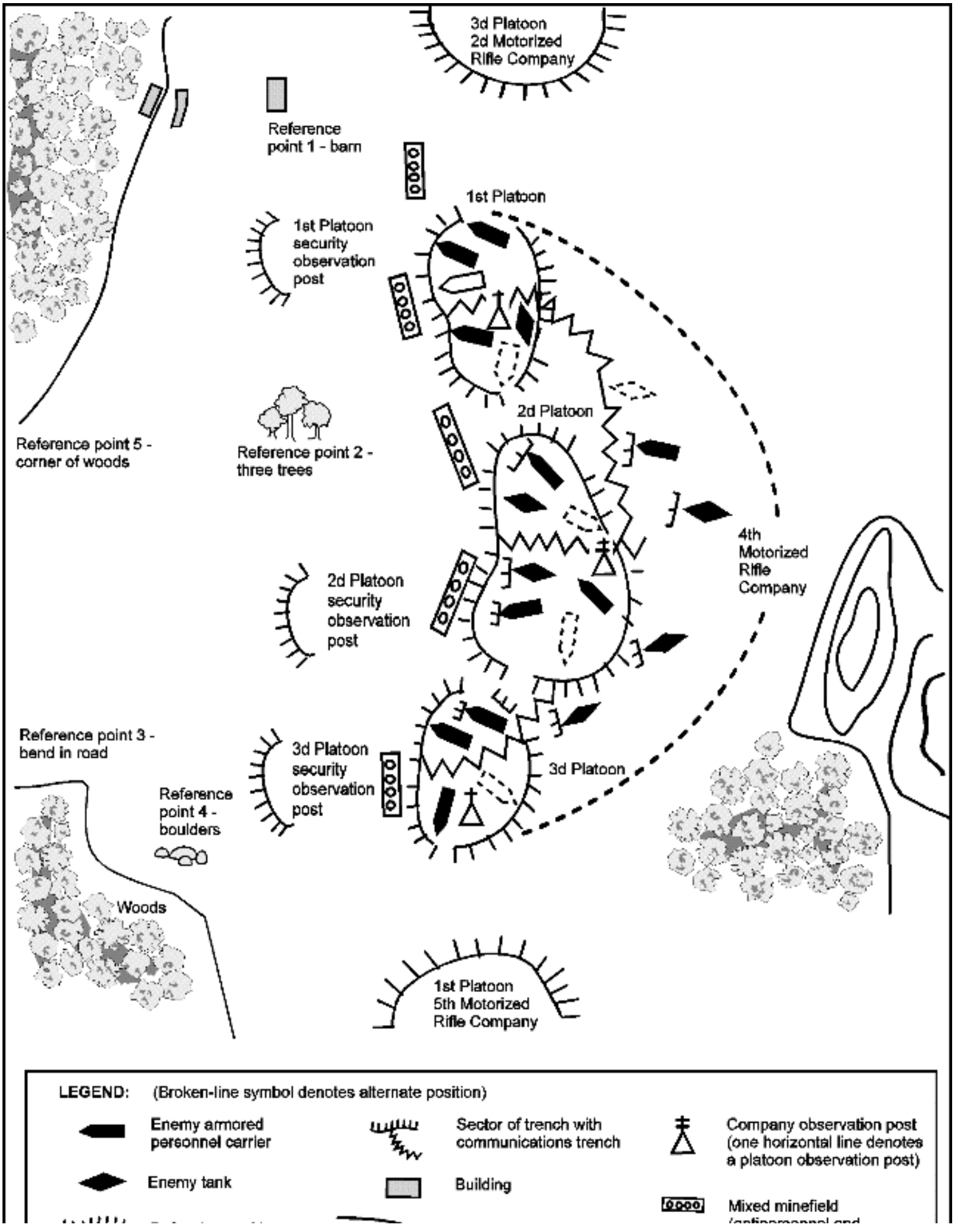

3d Platoon
2d Motorized
Rifle Company
Reference
point 1 - barn
1st Platoon
1st Platoon
security
observation
post
Reference point 5 -
corner of woods
Reference point 2 -
three trees
2d Platoon
4th
Motorized
Rifle
Company
2d Platoon
security
observation
post
Reference point 3 -
bend in road
3d Platoon
security
observation
post
3d Platoon
Reference
point 4 -
boulders
Woods
1st Platoon
5th Motorized
Rifle Company
LEGEND: (Broken-line symbol denotes alternate position)
Enemy armored
personnel carrier
Sector of trench with
communications trench
Company observation post
(one horizontal line denotes
a platoon observation post)
Enemy tank
Building
Mixed minefield

Figure 2-2. Doctrinal template for a motorized rifle company strongpoint.

Factors influencing COAs. The following paragraphs examine key factors the commander should consider in refining (or developing) an accurate SITEMP for the enemy's likely COAs.

Mission. Based on threat doctrine and knowledge of the situation, determine what the enemy's likely mission will be. Why is the enemy conducting this operation? Identify his likely task or objective. Is he trying to protect another threat unit, deceive friendly forces, allow another unit to bypass them, or prevent them from seizing terrain? Is the operation oriented on the terrain, on the enemy force, or on friendly forces? Specifically, what key terrain, enemy force, or friendly element is involved? How will this affect how the enemy attacks or defends?

Objectives. Based on the SITEMP and the projected threat mission, identify the enemy's march objectives (offense) or the terrain or force he intends to protect (defense).

Avenues of approach. Reanalyze the avenues of approach. If the enemy is attacking, which avenues will he use to reach his objectives in executing his likely COAs? How will terrain affect his speed and formations? How will he use the key terrain and locations with clear observation and fields of fire during the fight? Which avenues should friendly forces deny him or divert him from? If the enemy is in the defense, which avenues provide the most direct or fastest access to the terrain the enemy is defending or to the enemy force itself? How will that affect positioning of the enemy forces? From the enemy perspective, what is the most dangerous approach for friendly units (this is where he may weight his effort)?

Known enemy locations. Plot all known enemy positions in the task force area of operations (if not already provided on the S2's SITEMP).

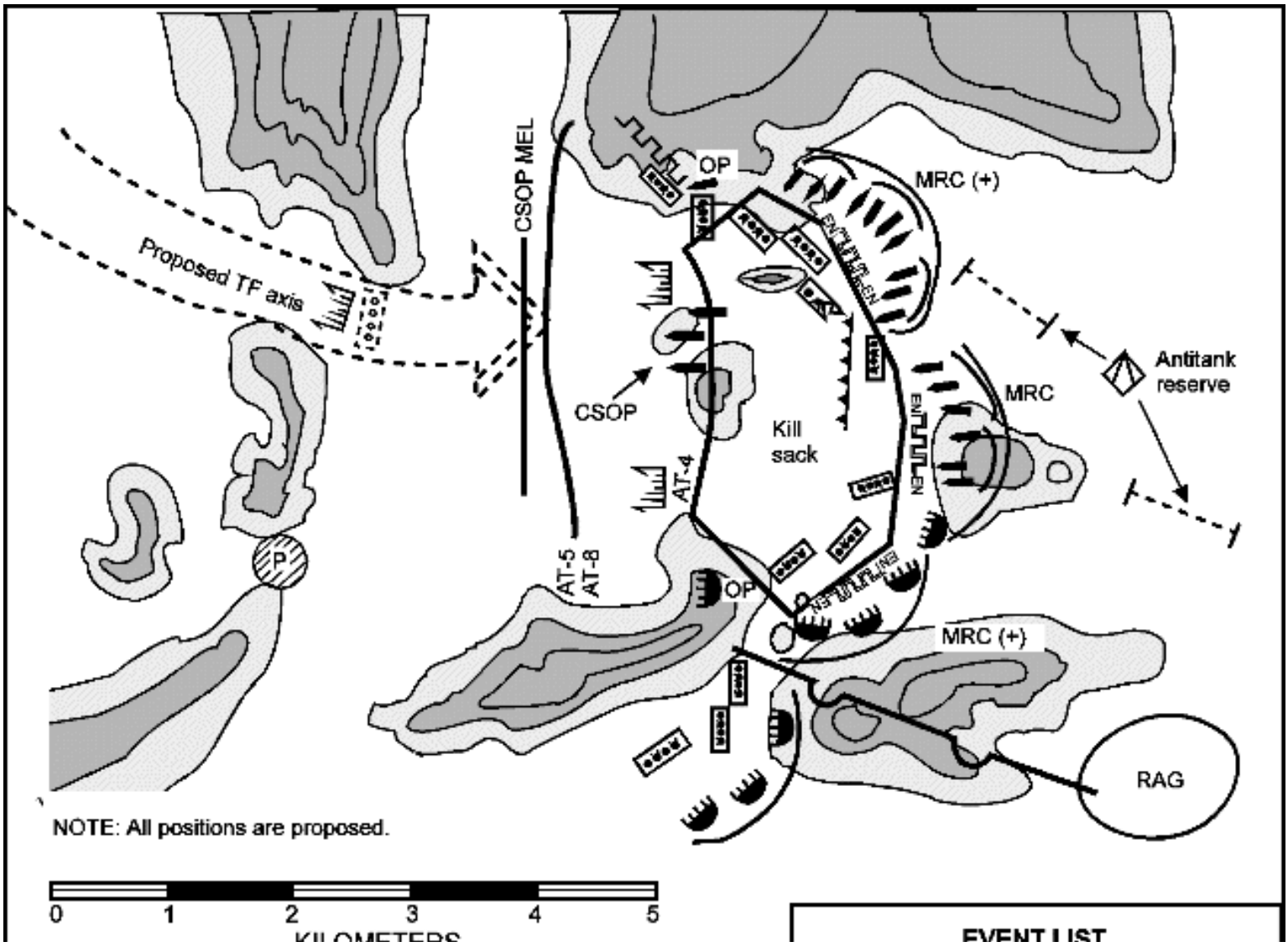
Assumed enemy locations. In planning an attack on an objective, identify all threat platoons, down to the vehicle level, in the company team area of interest; plot their locations on applicable templates. Using the S2's SITEMP as a framework, consider the situation from the enemy commander's perspective. Given his mission, where will he place vehicles in his position? How will he employ them? If it becomes necessary, where will he reposition his forces? Use the MCOO to assist in identifying such features as observation, fields of fires, and maneuver space. One technique is to draw a line representing the maximum engagement range for each enemy weapon system in the team's area of interest based on the fields of fire. In planning a defensive operation, consider where the threat commander will deploy,

where he will position overwatch elements, and where he will move in the engagement area to avoid friendly direct fires. Based on weapons ranges and intervisibility factors, determine when the enemy can place effective fires on the company team defensive position.

Boundaries, CPs, and reserves. Identify likely boundaries, seams, or time separations between platoon-, company-, and battalion-size elements. Determine the location of the enemy's CPs and other command and control assets. Calculate the time required for reserves or reinforcing elements to influence the battle based on their initial positions.

Engineer obstacles and fortifications. Plot the likely locations of obstacles and fortifications based on the enemy's weapons ranges, fields of fires, and engineering capabilities.

Enemy sketch. One way the commander can help subordinates understand the SITEMP is to develop a large sketch of enemy positions on the terrain. He can also use the sketch to illustrate the situation when he issues the company team OPORD later in the troop-leading process. Figure 2-3 is an example of a company team SITEMP with an enemy MRB conducting a defense out of contact.



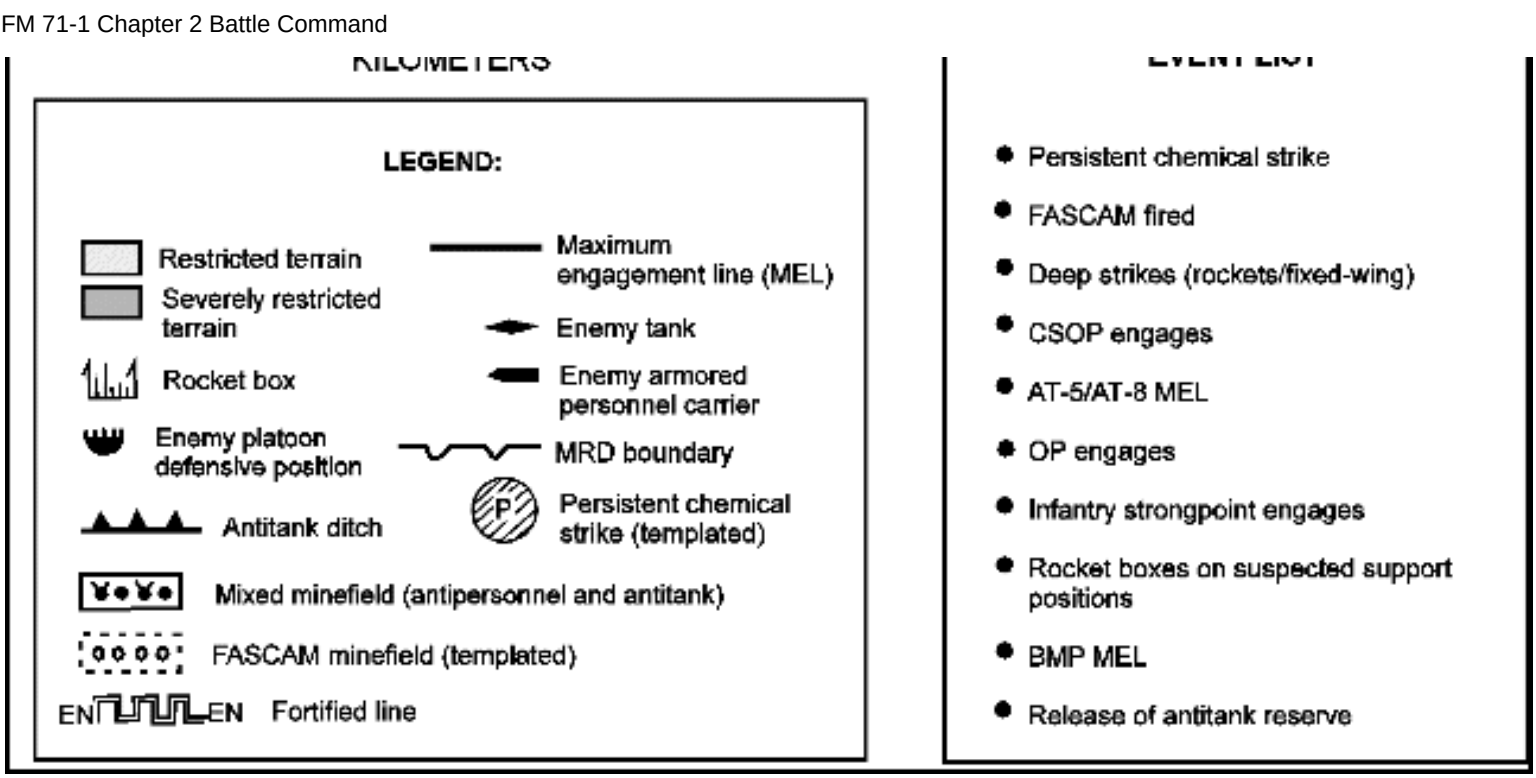


Figure 2-3. Company team SITEMP for an MRB defense out of contact.

Terrain and weather analysis. In this step of mission analysis, the commander focuses not only on the impact of terrain and weather on the company team and other friendly forces, but also on how they will affect enemy operations.

Terrain analysis. Normally, the task force staff will provide the company team with a MCOO, which depicts the physical effects of the battlefield on military operations. Ideally, the MCOO is developed early in the troop-leading process to allow leaders at all levels to take advantage of the information. In developing this product, the task force staff applies the five military aspects of terrain, known as OCOKA. These factors, summarized later in this discussion, are the following:

- Observation and fields of fire.
- Cover and concealment.
- Obstacles.
- Key terrain.
- Avenues of approach.

NOTE: The acronym OCOKA is a common mnemonic device for the military aspects of terrain. The following discussion presents these factors in the traditional order as listed in the previous paragraph; however, leaders should evaluate them in the order that best supports their terrain analysis.

Because the MCOO is focused at the task force level, the company team commander must further refine it using considerations that are applicable at his level. As noted, key terrain for the task force may not be as critical to the company team and vice versa. For example, an intervisibility line near an objective area may be key terrain for an assault force within the company team, but may not be considered as

key by other companies in the task force operation. In the absence of a task force MCOO, the company team commander can develop his own product.

The commander normally must prioritize his analysis of the terrain based on time constraints that influence orders development at the company team level. For example, in the conduct of an assault, his priority may be the area around the objective, followed by analysis of the team's specific axis leading to the objective. Time permitting, he might then analyze the rest of the task force area of operations.

The following discussion examines OCOKA in detail.

Observation and fields of fire. The commander must determine what locations along each avenue of approach provide clear observation and fields of fire for both the attacker and the defender. He analyzes the area surrounding key terrain, objectives, and obstacles. He locates intervisibility lines (terrain that allows observation from one point to another) and assesses the ability of the attacking force to overwatch or support (with direct fire) the movement of its elements.

In analyzing fields of fire, the commander focuses on the ability of friendly and enemy units to cover terrain with direct fires from known or likely positions. In addition, he must identify positions that afford clear observation for FIST personnel, allowing them to employ indirect fires effectively.

Whenever possible, the commander conducts a reconnaissance from the enemy and friendly perspectives. This will help him to determine where both friendly and enemy fires can be concentrated. (**NOTE:** Refer to the discussions of actions on contact in Chapter 3 and of engagement area development in Chapter 4.)

Figure 2-4 lists several offensive and defensive considerations that the commander can include in his analysis of observation and fields of fire.

Offensive considerations
● Are clear observation and fields of fires available on or near the objective for enemy observers and weapon systems? ● Where can the enemy concentrate fires? ● Where will the enemy be unable to concentrate fires? ● Where is he vulnerable? ● Where are positions from which friendly forces can conduct support by fire or attack by fire? ● Where are the natural TRPs? ● Where do I position indirect fire observers?

Defensive considerations
• What locations afford clear observation and fields of fire along enemy avenues of approach? • How obvious are these positions to the enemy? • Where will the enemy set firing lines and/or antitank weapons? • Where will I be unable to mass fires? • Where is the dead space in my sector? Where am I vulnerable? • Where are the natural TRPs? • Where do I position indirect fire observers?

Figure 2-4. Considerations in analysis of observation and fields of fire.

Cover and concealment. The commander looks at the terrain, foliage, structures, and other features on the avenues of approach to identify sites that offer cover and concealment. In the defense, weapon positions must be both lethal and survivable, with effective cover and concealment just as vital as clear fields of fire.

Figure 2-5 lists offensive and defensive considerations that the commander can include in his analysis of available cover and concealment.

Offensive considerations
• What axes afford both clear fields of fire and effective cover and concealment? • Which terrain provides bounding elements with cover and concealment while facilitating lethality?
Defensive considerations
• What locations afford effective cover and concealment as well as clear fields of fire? • How can the enemy use the available cover and concealment?

Figure 2-5. Considerations in analysis of cover and concealment.

Obstacles. In analyzing the terrain, the commander first identifies existing and reinforcing obstacles that may limit mobility (affecting such features as objectives, avenues of approach, and mobility corridors) and affect the company team's countermobility effort.

Existing obstacles include, but are not limited to, the following:

- Gullies, ravines, gaps, and ditches over 3 meters wide.
- Streams, rivers, and canals over 1 meter deep.
- Mountains or hills with a slope in excess of 60 percent.
- Lakes, swamps, and marshes over 1 meter deep.

- Tree stumps and large rocks over 18 inches high.
- Forests or jungles with trees 8 inches or more in diameter and with less than 4 meters of space between trees.
- Man-made existing obstacles, including built-up areas such as towns, cities, or railroad embankments.

Reinforcing obstacles include, but are not limited to, the following:

- Minefields (conventional and situational).
- Antitank ditches.
- Road craters.
- Abatises and log cribs.
- Wire obstacles.
- Infantry strongpoints.

Based on the degree of obstruction posed by obstacles, terrain is further classified in one of the following categories:

- **Unrestricted.** This is terrain free of any restriction to movement; no actions are required to enhance mobility. For armored and mechanized forces, unrestricted terrain is typically flat or moderately sloped, with scattered or widely spaced obstacles such as trees or rocks. This type of terrain generally allows wide maneuver and offers unlimited travel over well-developed road networks.
- **Restricted.** This terrain hinders movement to some degree. Little effort is needed to enhance mobility, but units may have to zigzag or make frequent detours. They may have difficulty maintaining optimum speed, moving in some types of combat formations, or transitioning from one formation to another. For armor and mechanized forces, restricted terrain typically encompasses moderate to steep slopes and/or moderate to dense spacing of obstacles such as trees, rocks, or buildings. Swamps and rugged ground are examples of restricted terrain for dismounted infantry forces. Logistical or rear area movement may be hampered by poorly developed road systems.
- **Severely restricted.** This terrain severely hinders or slows movement in combat formations unless some effort is made to enhance mobility. It may require commitment of engineer forces to improve mobility or deviation from doctrinal tactics, such as using a column rather than a line formation or moving at speeds much lower than otherwise preferred. For armor and mechanized forces, severely restricted terrain is typically characterized by steep slopes, densely spaced obstacles, and/or the virtual absence of a developed road system.

Friendly and enemy elements will usually take advantage of unrestricted terrain in situations requiring rapid movement. In other instances, such as when security is the paramount concern, they may move in more restricted terrain, which may provide more cover and concealment.

Figure 2-6 lists several offensive and defensive considerations the commander can include in his analysis of obstacles and restricted terrain.

Offensive considerations
● How is the enemy using obstacles and restricted terrain features? ● What is the composition of the enemy's reinforcing obstacles? ● How will obstacles and terrain affect my movement and/or maneuver? ● If necessary, how can the company team avoid such features? ● How do we detect and, if desired, bypass the obstacles? ● Where has the enemy positioned weapons to cover the obstacles, and what type of weapons is he using? ● If I must support or execute a breach, where is the expected breach site?
Defensive considerations
● Where do I want to kill the enemy? Where do I want him to go? ● How will existing obstacles and restricted terrain affect the enemy? ● How can I use these features to force the enemy into my engagement area, deny him an avenue, or disrupt his movement?

Figure 2-6. Considerations in obstacle analysis (including terrain considerations).

Key terrain. Key terrain is any location or area whose seizure, retention, or control affords a marked advantage to either combatant. As an example, a prominent hilltop overlooking an avenue of approach may or may not be key terrain. Even if the hill offers clear observation and fields of fire, it will be of no marked advantage to the unit that controls it if the opposition can easily bypass it on another avenue of approach. On the other hand, if the hilltop can influence the area through which a force must pass regardless of which avenue of approach it uses, the unit that controls the higher terrain has a definite advantage.

Designation of an area as key terrain depends largely on the characteristics of the avenue of approach (such as the width or length and the restrictiveness of terrain along the avenue) and the size of the unit required to control it. Other contributing factors include maneuver space, fields of fire, and cover and concealment afforded by the key terrain itself. For example, an area where several trails converge may be key terrain for a company team, whereas an area in which several battalion-size avenues of approach join may prove key for a brigade.

At the company team level, the commander must assess what terrain is key to his mission accomplishment. An example of key terrain for a company team in the attack could be a small hill or tree line that overlooks the enemy's reverse slope defense. Securing this area may be critical in establishing a support by fire position to protect the breach force.

The company team commander must also identify decisive terrain, which is key terrain that will have an extraordinary impact on the mission. Decisive terrain is relatively rare; it will not be present in every situation. By designating terrain as decisive, the commander recognizes that seizing and/or retaining it is an absolute requirement for successful accomplishment of the mission.

Figure 2-7 lists several considerations that the commander can include in his analysis of key terrain. (**NOTE:** Figure 2-9 illustrates a sample MCOO with restricted terrain, avenues of approach, key terrain, and graphic control measures.)

Operational considerations
❍ What terrain is key to the company team and to the task force and why? ❍ Is the enemy controlling this key terrain? ❍ What terrain is key to the enemy and why? ❍ How do I gain or maintain control of key terrain? ❍ What terrain is key for friendly observation, both for command and control and for calling for fires?

Figure 2-7. Considerations in key terrain analysis.

Avenues of approach. These are areas through which a unit can maneuver. The definition of an avenue of approach is an area that provides sufficient ease of movement and enough width (for dispersion) to allow passage of a force large enough to significantly affect the outcome of the battle. In turn, avenues of approach are composed of mobility corridors, which are areas through which the force will be canalized by terrain features and constrictions. In making his terrain analysis, the company team commander can use the following process to identify avenues of approach:

- Identify mobility corridors.
- Categorize each corridor by the size or type of force it will accommodate.
- Group mobility corridors to form avenues of approach.

The commander must identify mounted, dismounted, and air avenues of approach within the sector or area of operations. Mounted forces may move on avenues along unrestricted or restricted terrain (or both). Dismounted avenues and avenues used by reconnaissance elements normally include restricted terrain and, at times, severely restricted terrain. In addition, the terrain analysis must identify avenues of approach for both friendly and enemy units.

After identifying avenues of approach, the commander must evaluate each avenue. He determines the size and/or type of force that could use the avenue and evaluates the terrain that the avenue traverses as well as the terrain that bounds or otherwise influences it. Figure 2-8 lists several offensive and defensive considerations that the commander can include in his evaluation of avenues of approach.

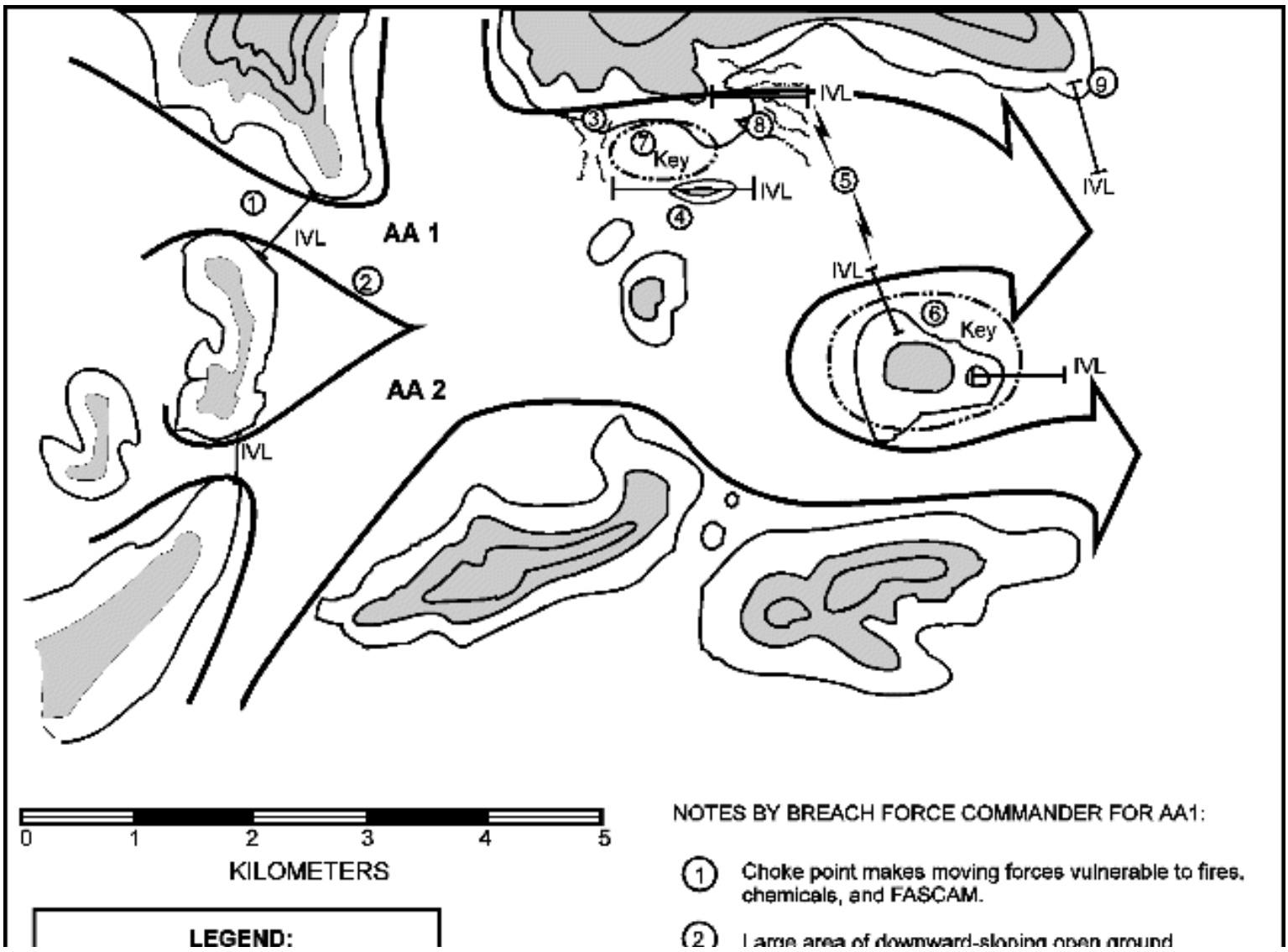
Offensive considerations

- How can I use each avenue of approach to support my movement and/or maneuver?
- How will each avenue support movement techniques, formations, and (once we make enemy contact) maneuver?
- Will variations in trafficability or lane width force changes in formations or movement techniques or require defile drills?
- What are the advantages and/or disadvantages of each avenue?
- What are the enemy's likely counterattack routes?
- Do lateral routes exist that we can use to shift to other axes or that the enemy can use to threaten our flanks?

Defensive considerations

- What are all likely enemy avenues into my sector?
- How can the enemy use each avenue of approach?
- Do lateral routes exist that the enemy can use to threaten our flanks?
- Which avenues would support a friendly counterattack?

Figure 2-8. Considerations in avenue of approach analysis.



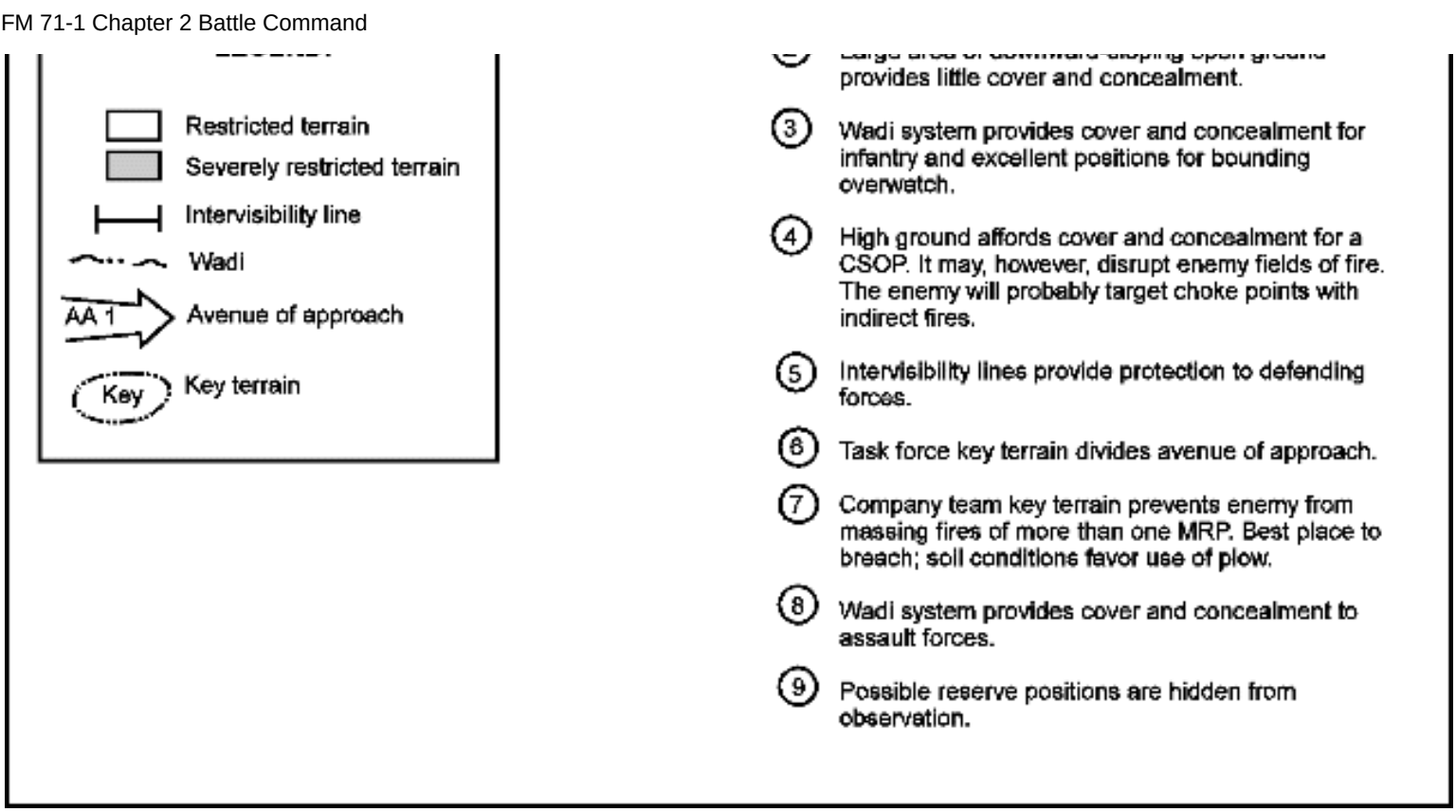


Figure 2-9. MCOO showing restricted terrain, avenues of approach, and key terrain.

Weather analysis. Consideration of the effects of weather conditions is an essential part of the mission analysis. The commander should review the results of his terrain analysis and determine the impact of the following factors on terrain, personnel, and equipment and on the projected friendly and enemy COAs.

Light data. At what times are BMNT, sunrise, sunset, EENT, moonrise, and moonset? Is the sun to the back of friendly forces or the enemy? What effect will this have on either force's ability to see? Will friendly forces have to remove or install driver's night periscopes during movement? When during the operation will they have to use night vision goggles? What effect will long periods of darkness (such as during winter nights) have on soldiers' ability to stay awake and alert?

Precipitation. How will precipitation affect the terrain along each avenue of approach? Will some restricted terrain become severely restricted if it rains or snows? Will moist air cause foggy conditions? Will lack of precipitation cause extremely dusty conditions? How will fog, dust, or stormy conditions affect visibility?

Temperature. What will the temperature be during the operation and what effect will this have on soldiers? Will they be able to sustain a long fight in extreme conditions? Will the ground freeze or thaw during the operation? What effect will this have on trafficability? How will extreme heat or cold affect the optical images in the vehicle sights? Will changes in the temperature and barometric pressure require MRS updates on the tanks? How

often? Are temperature dispersions favorable for the use of smoke or chemicals?

Wind speed and direction. What is the expected wind speed and direction during the operation? What effect will wind conditions have on use of smoke, flares, or chemical agents? Will the wind affect dust, fog, and other battlefield conditions?

Visibility. How will weather conditions (including light conditions, precipitation, temperature, and wind speed and direction) affect visibility? Will friendly forces have the sun in their eyes? Will the wind blow dust or smoke away from the route of march (making it easier to see) or back toward friendly forces? Under such conditions, what is the maximum observation range? How will that range affect the enemy?

Troop analysis (available assets). Analyze the combat readiness of troops and equipment task organized to the team, including attachments. Direct subordinate leaders to outline the readiness status of their elements; if possible, inspect each element to verify readiness. Compile updates of each vehicle's maintenance, fuel, ammunition, and personnel status. Determine the anticipated readiness status, as of the time the operation is to start, of vehicles and equipment that are currently nonmission-capable (NMC).

Time analysis. Identify the specific and implied times governing actions that must occur throughout the planning, preparation, and execution phases of the operation. Assess the impact of limited visibility conditions (including darkness) on the troop-leading process and other time-sensitive preparations for the company team and its subordinate elements. (**NOTE:** Figure 2-10 illustrates a method of analyzing usable light and limited light conditions.) Analyze the timing for the execution phase in terms of the terrain and enemy and friendly forces. Update previous timelines, listing all events that affect the company team and all subordinate elements.

Figure 2-11 illustrates a sample company team planning timeline.

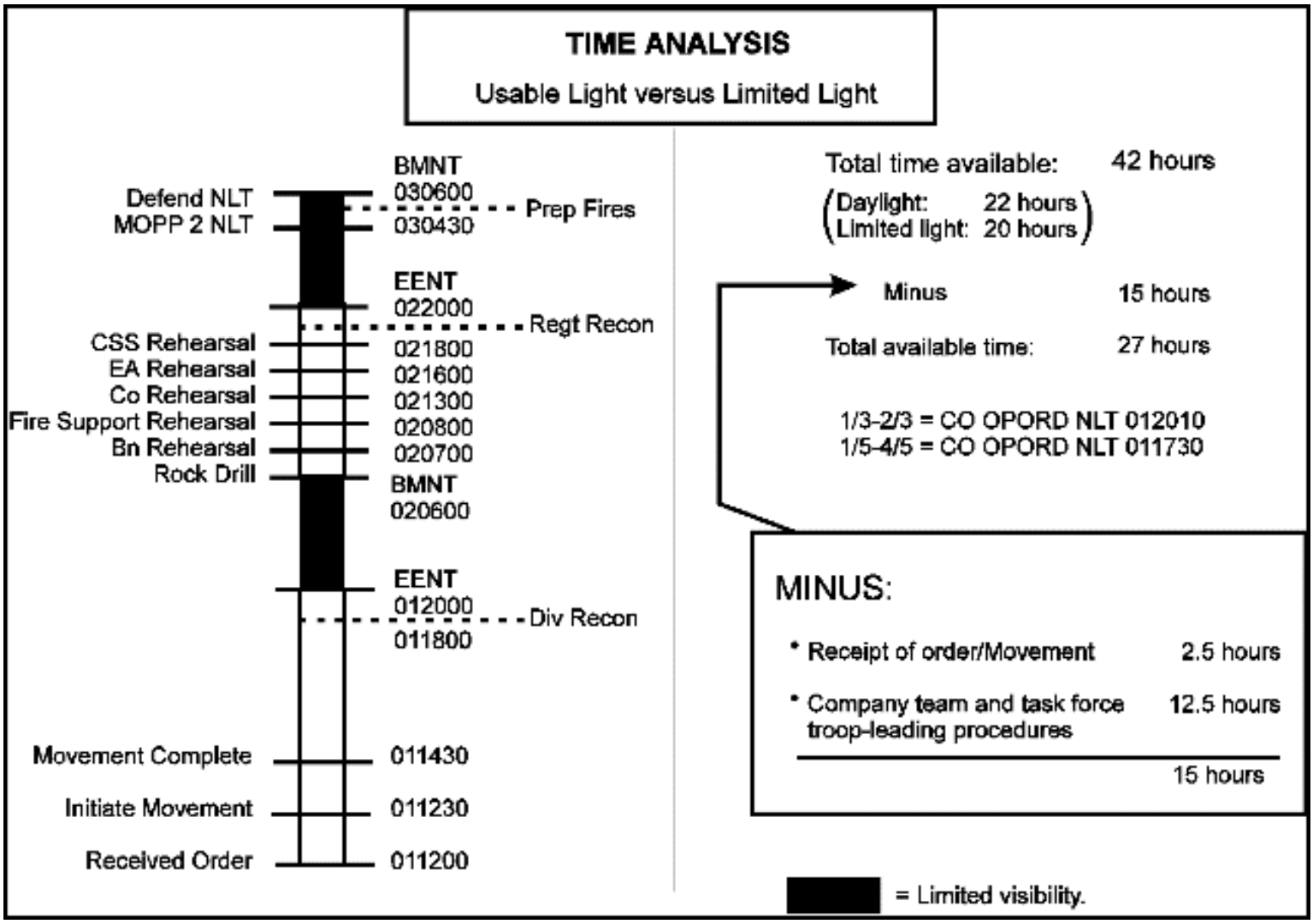
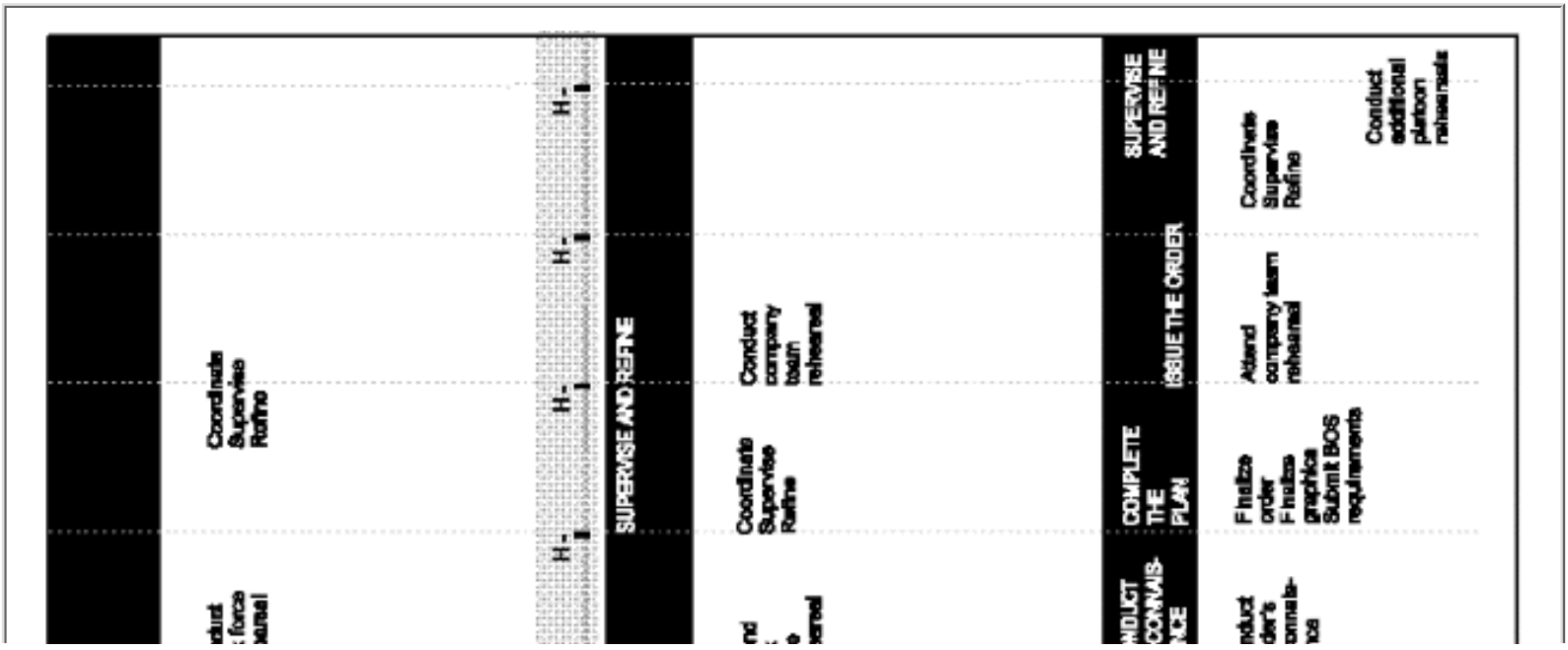


Figure 2-10. Use of time analysis to assess light conditions for an operation.

Analysis of civilian considerations. Identify any civilian considerations that may affect the company team mission. These factors may include refugees, humanitarian assistance requirements, or specific considerations related to the applicable ROE and/or ROI.



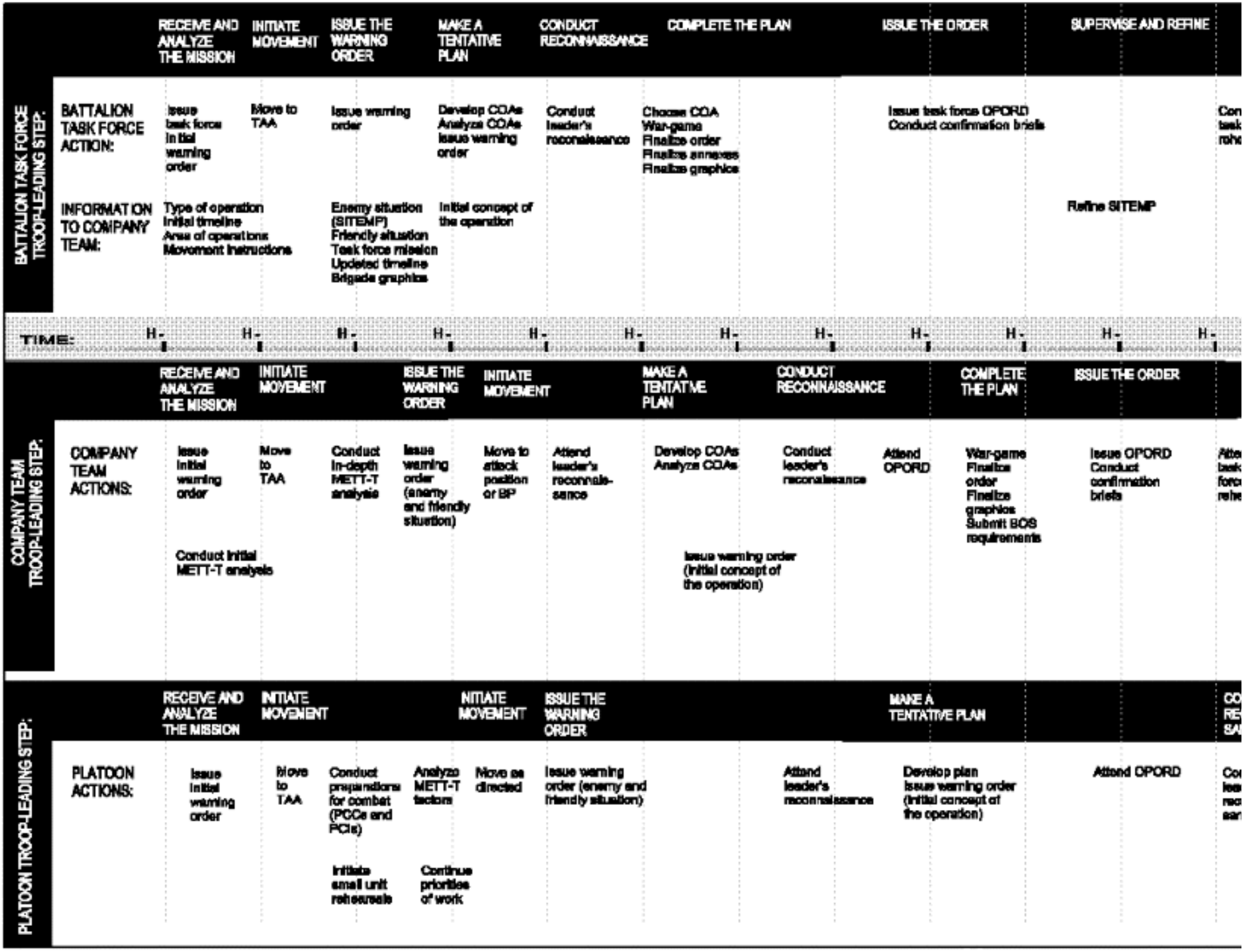

BATTALION TASK FORCE TROOP-LEADING STEP:
RECEIVE AND ANALYZE THE MISSION
INITIATE MOVEMENT
ISSUE THE WARNING ORDER
MAKE A TENTATIVE PLAN
CONDUCT RECONNAISSANCE
COMPLETE THE PLAN
ISSUE THE ORDER
SUPERVISE AND REFINE
BATTALION TASK FORCE ACTION:
Issue task force initial warning order
Move to TAA
Issue warning order
Develop COAs
Analyze COAs
Issue warning order
Conduct leader's reconnaissance
Choose COA
War-game
Finalize order
Finalize annexes
Finalize graphics
Issue task force OPORD
Conduct confirmation briefs
INFORMATION TO COMPANY TEAM:
Type of operation
Initial timeline
Area of operations
Movement instructions
Enemy situation (SITEMP)
Friendly situation
Task force mission
Updated timeline
Brigade graphics
Initial concept of the operation
Refine SITEMP
TIME:
H-
COMPANY TEAM TROOP-LEADING STEP:
RECEIVE AND ANALYZE THE MISSION
INITIATE MOVEMENT
ISSUE THE WARNING ORDER
INITIATE MOVEMENT
MAKE A TENTATIVE PLAN
CONDUCT RECONNAISSANCE
COMPLETE THE PLAN
ISSUE THE ORDER
COMPANY TEAM ACTIONS:
Issue initial warning order
Move to TAA
Conduct in-depth METT-T analysis
Issue warning order (enemy and friendly situation)
Move to attack position or BP
Attend leader's reconnais-sance
Develop COAs
Analyze COAs
Conduct leader's reconnaissance
Attend OPORD
War-game
Finalize order
Finalize graphics
Submit BOS requirements
Issue OPORD
Conduct confirmation briefs
Conduct initial METT-T analysis
Issue warning order (initial concept of the operation)
PLATOON TROOP-LEADING STEP:
RECEIVE AND ANALYZE THE MISSION
INITIATE MOVEMENT
INITIATE MOVEMENT
ISSUE THE WARNING ORDER
MAKE A TENTATIVE PLAN
PLATOON ACTIONS:
Issue initial warning order
Move to TAA
Conduct preparations for combat (PCCs and PCIs)
Analyze METT-T factors
Move as directed
Issue warning order (enemy and friendly situation)
Attend leader's reconnaissance
Develop plan
Issue warning order (initial concept of the operation)
Attend OPORD
Initiate small unit rehearsals
Continue priorities of work

Figure 2-11. Troop-leading procedures in the parallel planning process.

Step 2 - Issue the warning order (warning order #2)

Based on his restated mission and the information compiled thus far in the troop-leading process, the commander issues as detailed a warning order as possible. The company team warning order, usually given orally, allows subordinate units to continue with the planning and preparation activities that started with the initial warning order. The commander should not delay issuing the order while awaiting additional information; likewise, he should not withhold needed information, even if it is somewhat incomplete. He can send updates as needed using subsequent warning orders. As a minimum, the company team warning order should include the elements outlined in the following paragraphs.

Situation (enemy and friendly) At this point in the troop-leading process, the commander has normally had time to conduct a detailed mission analysis. The goal of the warning order is to allow his subordinates to start their own mission analysis. Provide a layout of the terrain using the five military aspects of terrain (if this was not done earlier). Include results of the enemy analysis. Give the intent and mission statements of the commander two levels up. Brief the task organization and the higher concept of the operation. Allow subordinates to copy the draft SITEMP, if available, and all available operational graphics.

Mission Give the restated company team mission.

Coordinating instructions Provide any instructions that will allow for proactive planning and preparation, including priorities of work and the unit security plan. As part of the coordinating instructions, the commander may find it useful to provide a timeline that includes an assessment of the troop-leading procedures conducted at the task force, company team, and platoon levels as a means of deconflicting leader responsibilities at each level. (**NOTE:** Figure 2-11 illustrates a timeline that could be used for this purpose.) In addition, specify what types of mission-specific rehearsals (for example, covering actions on contact, breaching, or support by fire) that you expect subordinate units to conduct within the framework of their timelines.

Service support Address any changes to the support requirements (such as the addition of an engineer platoon) for which the XO, 1SG, or subordinate leaders may have to plan.

Step 3 - Make a tentative plan

Using results of his METT-TC analysis, his knowledge of the situation, and other available resources, the commander begins development of his tentative plan. He can use the techniques and principles outlined in the following paragraphs.

SITEMP updates The commander continues to update his SITEMP using refined versions of the S2's SITEMP and the intelligence annex from the task force OPORD (both should be available by this time). He can use additional information, including results of the company team's reconnaissance and of task force reconnaissance and security operations, as it becomes available during the troop-leading process.

COA development procedures

The purpose of COA development is simple: to determine one or more ways to achieve the mission, in most cases by applying the company team's combat power to defeat the enemy at the decisive point in the battle. The commander makes each COA as detailed as necessary to describe clearly how he plans to use his forces to achieve the unit's tasks and purpose. He focuses on the actions the unit must take at the decisive point.

When time permits, the commander should develop several COAs for the company team. The spectrum of COAs should provide enough flexibility, and cover enough different possible situations, to achieve the unit purpose against each likely enemy COA that was identified previously in the troop-leading process. In developing COAs, the commander must ensure they meet the following criteria:

- **Suitability.** Each COA must enable the company team to accomplish its mission while complying with the higher unit order.
- **Feasibility.** The company team must have the capability to successfully accomplish the COA in terms of available time, space, and resources.
- **Acceptability.** The advantage gained by executing the COA must justify the cost in manpower and material resources.
- **Distinguishability.** Each COA must be sufficiently different from the others to justify full development and consideration.
- **Completeness.** Development of the COA must cover the operational factors of **who**, **what**, **when**, **where**, and **how**.

There are normally six steps in COA development. The following paragraphs describe each step in detail.

COA Step 1 - Analyze relative combat power. Combat power is created by combining the elements of maneuver, firepower, protection, and leadership in combat against the enemy. The commander applies the effects of these elements with other potential CS and CSS assets. The purpose of analyzing relative combat power is to identify enemy strengths and weaknesses, to identify friendly strengths and weaknesses, and to determine whether the company team has adequate combat power to defeat the force against which it is arrayed.

COA Step 2 - Generate options. The commander must first identify the decisive points or times at which the unit will mass the effects of overwhelming firepower to achieve a specific result (with respect to terrain, enemy, and/or time) that will accomplish the unit's purpose. This will be the company team's main effort. The commander must next identify any supporting efforts; these are tasks other than the main effort that must be accomplished to allow the main effort to succeed. The commander then determines the purposes of the main effort and the supporting efforts. (**NOTE:** The main effort's purpose is directly related to the mission of the unit, while the supporting efforts' purposes relate directly to the main effort.) The commander can then identify the essential tasks that will enable the main and supporting efforts to

achieve their purposes. Figure 2-12 depicts company team purposes for a breaching operation.

COA Step 3 - Array initial forces. The commander must then determine the specific number of combat systems necessary to accomplish each task. He should allocate resources to the main effort and continue with supporting efforts in descending order of importance. For example, the main effort in a breaching operation may require four tanks and three plows, whereas a supporting assault force, required to fight for terrain, may call for BFVs and infantry squads.

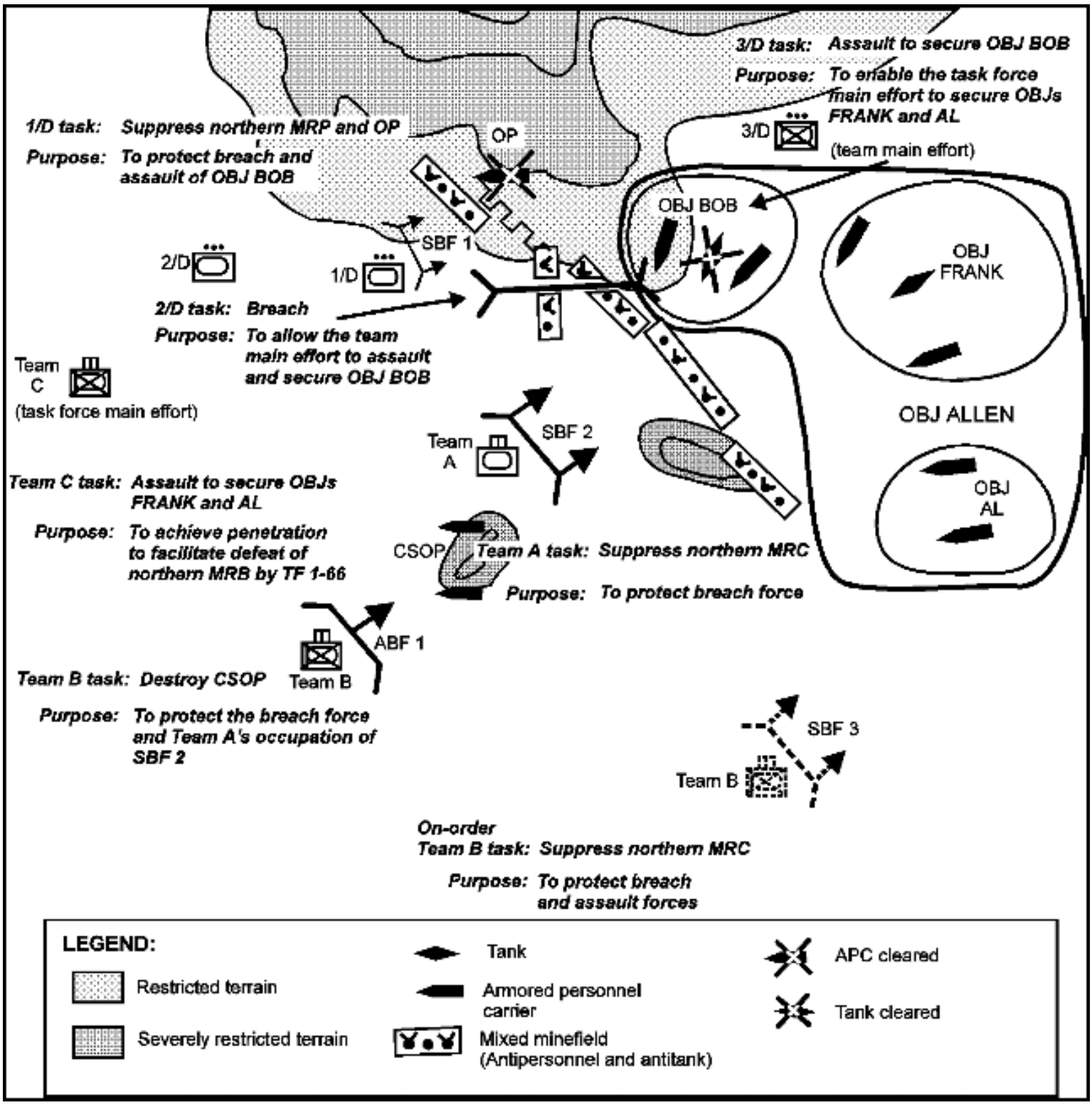


Figure 2-12. Identification of company team purposes in a breaching operation.

COA Step 4 - Develop schemes of maneuver. Applying information from the analysis of terrain and enemy, the commander links the company team's tasks in schemes of maneuver. He determines how the achievement of one task will lead to the execution of the next. He identifies the best ways to use the available terrain and how best to employ the team's strengths against the enemy's weaknesses. The commander then develops the maneuver control measures necessary to convey the commander's intent, enhance understanding of the schemes of maneuver, prevent fratricide, and clarify the tasks and purposes of the main and supporting efforts.

COA Step 5 - Assign headquarters. The commander assigns specific elements as the main and supporting efforts.

COA Step 6 - Prepare COA statements and sketches. The commander's ability to prepare COA sketches and statements will depend on the amount of time available. Whenever possible, he should prepare a sketch showing each COA to clarify maneuver aspects of the COA; he should also prepare a statement describing specific actions that may occur. Figure 2-13 shows a sample COA sketch and COA statement.

Analysis of COAs

After developing the COAs, the commander must analyze them to confirm that the criteria for valid COAs are met, to determine the advantages and disadvantages of each COA, and to visualize the flow of the battle. Typically, he war-games each friendly COA against each likely enemy COA. If time is limited, he may choose to employ the box technique of war-gaming, analyzing only the most critical event in each friendly COA against the corresponding enemy action. (**NOTE:** If the commander uses this technique, he must be prepared to conduct more detailed war-gaming later to complete the plan.)

COA comparison

After war-gaming the COAs, the commander must compare them, weighing the specific advantages, disadvantages, strengths, and weaknesses of each course as noted during the war game. These attributes may pertain to the accomplishment of the company team purpose, the use of terrain, the destruction of the enemy, or any other aspect of the operation that the commander believes is important.

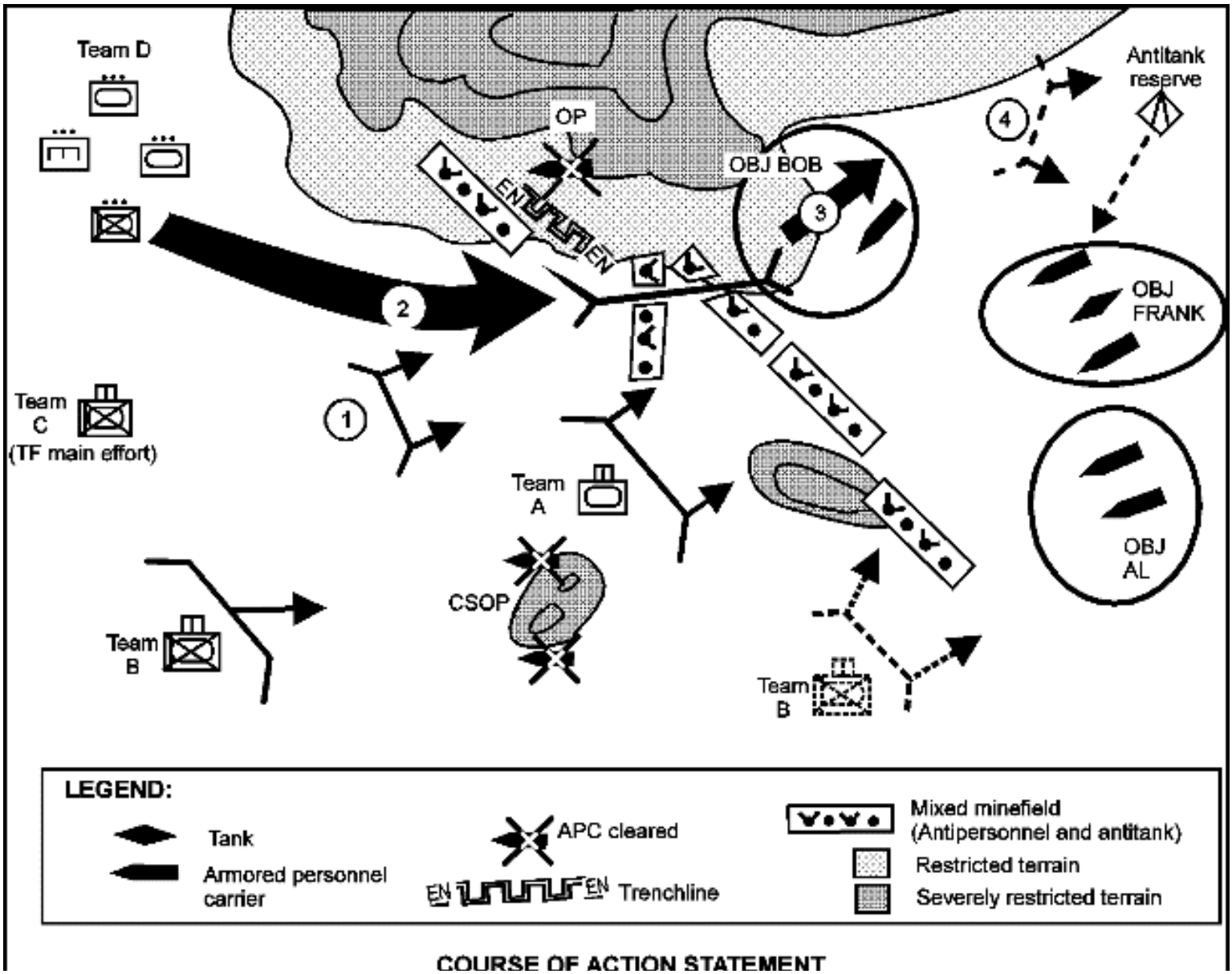
The commander uses these factors as his frame of reference in tentatively selecting the best available COA. He makes the final selection of a COA (during completion of the plan) based on this comparison, taking into account results of the company team's reconnaissance and the reconnaissance and security operations of the task force and brigade.

Tentative plan warning order (warning order #3) The commander may use a warning order to outline his tentative plan for subordinates and to issue instructions for reconnaissance and movement (as necessary). The order should clearly and briefly cover key aspects of the tentative plan: the purpose and result (end state) of the operation; the company team's essential tasks; when the operation begins; the area of operations; the scheme of maneuver; and subordinate unit tasks and purposes.

In describing his concept, the commander should emphasize that the plan remains generally unrefined, with many of the details to be clarified through additional war-gaming and issued in the OPORD. This warning order is important because it allows subordinates to see how the commander is developing the plan; it allows them to begin (or continue) mission analysis based on their elements' assigned tasks and purposes.

Step 4 - Initiate movement

The commander initiates any movement that is necessary to continue preparations or to posture the unit for the operation. This may include movement to an assembly area, BP, or attack position; movement of reconnaissance elements; or movement to compute time-distance factors for the unit's mission.



MISSION: Team D attacks at 040600 Feb 97 to breach enemy defenses vicinity OBJ BOB (NX 330159) to allow the task force main effort (Team C) to secure OBJs FRANK and AL.

COURSE OF ACTION: Team D crosses the LD at 0600 on AXIS RED behind Team B and transitions to bounding overwatch at PLD. Once Team B makes contact, Team D will support by fire to allow Team A and Team B to maneuver into position to suppress OBJs FRANK and AL. Once OBJs FRANK and AL are suppressed and obscured (precondition for execution), Team D will move forward to breach.

ACTION (1) : The support force (a tank platoon from Team D, consisting of 4 M1A1s) and Team A will support by fire and suppress the security OP, infantry positions, and MRP on OBJ BOB to protect the breach force.

ACTION (2) : The breach force, consisting of one tank platoon (4 tanks, 3 plows, 1 roller) followed by the engineer platoon (4 M113s, 2 MICLICs, 3 squads), will breach the obstacles on the enemy's northern flank to allow the team main effort to assault and secure OBJ BOB.

ACTION (3) : Once the breach force reduces the obstacle(s), the team main effort, a mechanized infantry platoon (4 BFVs and 2 squads), will assault and clear enemy on OBJ BOB to enable the task force main effort to secure OBJs FRANK and AL

ACTION (4) : After the creation of the breach, the two tank platoons will establish support by fire to protect the eastern flank of the task force main effort as it secures OBJs FRANK and AL. The mechanized platoon and the engineer platoon will secure the breach lane to facilitate the passage of follow-on units. This is the **end state** of the mission.

NOTE: The COA statement is usually given orally.

Figure 2-13. COA sketch and statement.

Step 5 - Conduct reconnaissance

This step covers the necessary reconnaissance that allows the commander to refine the unit's plan. Even if the company team commander has made a leader's reconnaissance with the task force commander and staff at some point during troop-leading procedures, he should still conduct a reconnaissance of his own with the team's subordinate leaders. This will allow them to see as much of the terrain and enemy as possible; it should also help each leader to visualize the projected plan, and any related branch plans, more clearly.

At the team level, the leader's reconnaissance may include movement to or beyond the LD or a drive from the FEBA back to and through the engagement area along likely enemy routes. If possible, the commander should select a vantage point that provides the group with the best possible view of the decisive point.

In addition to the leader's reconnaissance, the company team may conduct more detailed reconnaissance operations. Examples include surveillance of an area by subordinate elements, patrols by infantry squads to determine where the enemy is (and is not) located, and establishment of OPs to gain additional information. The nature of the reconnaissance, including what it covers and how long it lasts, depends on the tactical situation and time available. The commander should use the results of the COA development process to identify information and security requirements for the team's reconnaissance operations.

Step 6 - Complete the plan

Completion of the plan includes several steps that transform the commander's intent and concept into a fully developed OPORD. These steps, examined in detail here, are the following:

- Select a COA.
- Conduct detailed war-gaming.
- Finalize the plan.
- Prepare the OPORD.

Complete the plan Step 1 - Select a COA

The company team commander makes this selection based on his comparison of the alternative COAs (conducted earlier as part of troop-leading step 4, make a tentative plan), results of the team's reconnaissance, and information gained through task force and brigade reconnaissance and security operations.

Complete the plan Step 2 - Conduct detailed war-gaming

This is normally a more time-intensive process than the initial war-gaming of the COAs. By war-gaming the plan again, this time in more detail, the commander can better visualize how the fight will occur, determine when and where he will need to make decisions, and identify when and where he must employ CS and CSS assets. The end result of war-gaming is a fully integrated plan that includes a detailed operations overlay, a detailed direct fire plan, an integrated indirect fire plan, refined obstacle and ADA plans, and a complete company team CSS plan.

Purposes of war-gaming. The commander uses the detailed war-gaming process to assist him in accomplishing these planning and preparation objectives:

- Build additional flexibility into the plan by developing branch plans based on likely enemy COAs, or refine the COA so it addresses all likely enemy COAs.
- Develop graphic control measures (such as checkpoints, contact points, and TRPs) that facilitate control and flexibility.
- Integrate operating system assets (including fire support, engineers, ADA, and NBC) with maneuver elements to support company team tasks and purposes identified in the scheme of maneuver.
- Conduct a bottom-up review of the task force plan, including integration of task force operating system assets at company team level. This step may entail identifying required refinements, additions, and deletions to the task force plan and developing recommendations for later submission to the higher staff.
- Develop coordinating instructions.
- Complete paragraphs 3, 4, and 5 of the OPORD (as well as selected annexes if required).
- Assess on-order and be-prepared missions.
- Identify projected CSS expenditures.
- Identify projected casualties and resulting medical requirements.

War-gaming guidelines. The commander and subordinate leaders should use the following procedures and considerations in conducting

detailed war-gaming:

- The essential tasks identified during COA development can be used to drive the progress of the war game.
- Include all appropriate personnel in the war-gaming process; these may be the XO, 1SG, FSO, maintenance team chief, and others.
- Evaluate the COAs using a map, accurate sketch, or terrain model.
- Carefully consider actions on contact.
- As the war game continues, identify when and where to integrate CS and CSS assets.
- As necessary, make refinements to supplementary plans, such as those for fire support, obstacles, and ADA.
- Use additional graphic control measures to add clarity to the scheme of maneuver.

War-gaming techniques. The commander can choose among three basic war-gaming techniques (the box, the belt, and avenue in depth) in the analysis of friendly COAs. He and the subordinate leaders can use any one technique or a combination to help them visualize the battlefield or look at the battle in a logical sequence. In doing this, they should avoid becoming unduly concerned with the structure of the war game. Rather, they should remain focused on its purpose, adapting the war-gaming techniques as necessary to accomplish the purpose.

Box technique. The box method focuses the war game on a specific area of the battlefield. This may be the objective area, the engagement area, or some other critical location where the decisive action will take place. Determine the size of the box based on the specific situation; it should include all of the units, friendly and enemy, that will have a direct impact on the decisive action. This technique is a good one to use when time is limited because of its focus on the decisive action. A key disadvantage, however, is that in considering only actions at the decisive point the commander may overlook other critical actions or events that could have a significant impact on the company team's mission.

Belt technique. The belt technique allows the commander to divide the COA into phases or belts. This may be done in several ways, such as from phase line to phase line or by significant event. Each phase is then war-gamed in sequence. This approach is most effective for offensive COAs. As an example, an offensive operation can be divided into these phases or belts:

- Movement from tactical assembly areas to the LD or attack position.
- Movement from the LD to the PLD or assault position.
- Actions at the PLD or assault position.
- Conduct of the assault or actions on the objective.
- Consolidation on the objective.

Avenue in depth technique. This method is most effective during war-gaming of a defensive COA, especially when there are several avenues of approach to consider. Using the enemy's most probable COA, the commander and subordinate leaders analyze friendly and enemy actions along one avenue of approach at a time.

Additional war-gaming considerations. In addition to the selected war-gaming technique, several other factors will have an impact on how the commander and subordinate leaders carry out the war game. The following discussion focuses on the participants, procedures, and other considerations for conducting the process.

Participants. As noted, the company team's subordinate leaders should assist the commander in conducting the war game. Participants may include the XO, 1SG, platoon leaders, PSGs, FSO, engineer platoon leader, ADA section leader, and company team master gunner. Ensure that everyone who takes part thoroughly understands all projected friendly and enemy COAs and is ready to contribute to the process. At a minimum, the commander should conduct the war game with the XO playing the role of the enemy commander. (**NOTE:** Based on the team's priorities of work, some leaders listed here may not be available for the war-gaming session.)

Terrain. Incorporate the results of the leader's reconnaissance into the MCOO. Reevaluate the terrain to ensure that the classification (severely restricted, restricted, or unrestricted) is correct.

Enemy capabilities. Update the SITEMP with new enemy information. Ensure that each participant thoroughly understands the enemy's capabilities and limitations and that each knows the difference between known and suspected enemy positions. One technique is to make leaders of the team's CS attachments responsible for learning and reporting their enemy counterparts' capabilities; for example, the FSO is responsible for threat artillery systems, the ADA section leader (if task organized to the team) for threat ADA, and so forth. Evaluate how and when the enemy can affect the company team using the seven forms of contact:

- Visual contact.
- Physical contact (direct fire contact).
- Indirect fire contact.
- Contact with obstacles of enemy or unknown origin.
- Contact with enemy or unknown aircraft.
- Situations involving NBC conditions.
- Situations involving electronic warfare tactics (such as jamming, interference, and imitative deception).

NOTE: For a detailed discussion of actions on contact, refer to

Chapter 3 of this manual.

Friendly forces. Assess current maintenance and personnel status reports to determine whether the combat power of any adjacent units will affect the company team plan. For example, if the breach force (another task force element) has two inoperative plows while the team's are operational, the commander can assume that the task force will direct him to cross-attach two of his plows.

Assumptions. Specify assumptions that were made during the COA development process so that participants understand the underlying doctrinal principles and objectives.

Complete the plan

Step 3 - Finalize the plan

After concluding the war-gaming process, the commander takes the actions outlined in the following paragraphs to complete the plan (including any branch plans) and wrap up preparations for the upcoming operations. He includes any additional activities that he and the team's subordinate leaders believe will contribute to unit readiness.

Begin bottom-up refinement. This process includes developing refinements, additions, and deletions to the task force plan and submitting them to the appropriate member of the task force staff. For example, if the task force fire support plan allocates a smoke target to screen company team movement, the commander may discover during war-gaming that the target is not in a correct position to support the team. He would then direct the team FSO to submit a change to the target list.

Finalize CSS integration. After estimating how many casualties and disabled vehicles the company team will incur and pinpointing expected locations for these losses, the commander integrates the team's CSS requirements into paragraph 4 of the OPORD. This includes (but is not limited to) such factors as the location of unit casualty and maintenance collection points, times when company team assets will occupy them, routes to task force CSS sites, and security procedures for CSS assets. Refer to Chapter 7 of this manual for a more detailed discussion of CSS planning.

Identify command and control requirements. Based on their visualization of the fight, the commander and subordinate leaders identify other command and control requirements that will be necessary to ensure the success of the mission. Covered in paragraph 5 of the OPORD, these include graphic control measures, signals, locations of the commander and XO, and communications during the fight with other units and/or commanders.

Finalize graphics. The commander must be sure to add company team graphics to the task force overlay. (**NOTE:** One technique is to use a different color to distinguish the team's operational graphics from existing task force graphics.) Most of these additions should have been made during war-gaming. Examples could include the following:

- A designated PLD where the team will change to the bounding

overwatch movement technique based on the location of an enemy combat security outpost (CSOP).

- A dismount point and corresponding entry point into a trench line.
- Additional direct fire control measures, such as TRPs.
- Additional key intervisibility lines identified during war-gaming. These may be designated as company team phase lines.

Complete the plan
Step 4 - Prepare the OPORD

The company team commander begins this step by finalizing his orders products. Examples include the following items:

- The SITEMP.
- Supporting plans, including those covering maneuver, fire support, engineer support, and CSS.
- Operational graphics.
- "Visualization" products, such as maps, overlays, sketches, models, and matrices.

The commander must decide how these products will be produced and distributed to the company team's subordinate elements. One technique is to employ personnel from the team headquarters in production and distribution tasks, such as building terrain models and copying graphics or matrices. The commander must also establish a quality control system to ensure that all products are complete and accurate. (**NOTE:** Refer to the discussion of the functions of the company team CP.)

When time is short, the commander must weigh the need for a lengthy, thoroughly detailed written OPORD against the value of a relatively brief, but still well-developed, plan that he can explain orally and visualize through the use of maps and models. At the company team and platoon levels, there often is not enough time to write out every single detail of a thorough five-paragraph OPORD. Also, subordinates will find it difficult to copy pertinent information and still listen as the commander issues the order. It is advisable, therefore, to provide a detailed, but concise, document that summarizes the essentials of the order. Subordinates can then listen carefully as the commander explains (and illustrates) the details of the order, writing down only the most essential items.

Step 7 - Issue the order

The OPORD should precisely explain, both verbally and visually, the commander's intent, providing enough information to ensure that all subordinate elements work toward the desired end state. When the commander has finished issuing the order, subordinate leaders should walk away with a clear mental picture of what he expects their elements to do.

OPORD format

The format of the five-paragraph OPORD is organized to help the commander paint a picture of all aspects of the operation, from the terrain to the enemy and finally to the unit's own actions from higher to lower. The format assists him in deciding what relevant details he must include and in providing subordinates with a smooth flow of information from beginning to end. At the same time, the commander must ensure that the order is not only clear and complete but also as brief as possible. If he has already addressed an item adequately in a previous warning order, he then can simply state "no change" or provide any necessary updates. Refer to Appendix A of this manual for a discussion of OPORD format.

Location and time

The commander should select a location from which to issue the OPORD that is secure and will help enhance understanding of the order. An ideal site, when time and security factors allow, is one that overlooks the battlefield. Whenever possible, the commander should avoid issuing the order during hours of darkness. If he must issue the order at night, he chooses a location (such as inside a well-lighted tent) that allows subordinates to see visual materials clearly. In daylight hours, he then takes the order group to a favorable vantage point to clarify the plan.

Presentation techniques

During the orders briefing, the commander may make use of the visual materials developed earlier to help paint the picture of how the fight will unfold. Subordinates will better comprehend complex ideas and situations with the aid of a sketch, diagram, or model. The commander should further ensure that subordinates keep their maps, with graphics posted, on hand for reference. As noted, he may furnish copies of the written order (or a summary of key details). He then must present the plan clearly and logically, providing only updates (not complete restatement) of items he has covered in earlier warning orders or FRAGOs.

Confirmation brief techniques

At the conclusion of the OPORD briefing, the commander answers any questions, then conducts a walk-through confirmation brief (this is not a rehearsal) on a terrain model that provides accurate representations of the terrain, the enemy, and friendly graphics. The focus of the confirmation brief is on the elements of **what**, **why**, and **how** for execution of the company team's mission; it covers subordinates' specific tasks within the plan. The commander should avoid questioning subordinates specifically **how** they will execute their tasks because they have not yet formulated their own plans. Rather, he uses the confirmation brief to further clarify the scheme of maneuver for them and to give them a feel for how they will work in concert with one another to achieve the unit purpose. Subordinate leaders should use the confirmation brief to discuss issues related to the company team timeline and their own timelines.

Step 8 - Supervise and refine

The best plan may fail if it is not managed effectively and efficiently. Throughout the troop-leading process, the commander must continue to refine the plan, conduct coordination with adjacent units, and supervise combat preparation and execution. Inspections and rehearsals are critical elements of this step.

Precombat training During continuous combat operations, units at all levels should have either formal or informal combat zone training programs to convert new ideas into actual practice. This allows soldiers to practice a variety of skills that will enhance their protection and endurance during extended combat. For example, after receiving his mission, the company team commander should assess the team's proficiency in the individual, leader, and collective tasks required for the upcoming mission. If he feels the team, or a subordinate element, cannot perform a task properly, he can then conduct precombat training during the planning and preparation phases.

Inspections Inspections allow the commander to check the company team's operational readiness. The key goal is to ensure that soldiers and vehicles are fully prepared to execute the upcoming mission. Inspections also contribute to improved morale.

It is essential that the entire company team chain of command know how to conduct precombat checks (PCC) and precombat inspections (PCI) in accordance with applicable unit SOPs and guidelines from FM 7-7J, ARTEP 71-1-MTP, and ARTEP 17-237-10-MTP. Leaders should focus on the readiness of mission-essential equipment and ammunition and on the mission understanding of all subordinate leaders and individual soldiers. Procedures for a comprehensive program of checks and inspections include the following:

- Perform before-operation maintenance checks; report or repair deficiencies.
- Perform prepare-to-fire checks for all weapons; report or repair deficiencies. Weapons are boresighted, and all sights are referred. Machine guns and individual weapons are test-fired, if possible.
- Perform communications checks of voice and digital systems.
- Ensure soldiers in each subordinate element understand the plan, have posted current graphics, and are in the correct uniform and MOPP level.
- Upload vehicles in accordance with unit SOP. The standardization of load plans allows the commander, XO, 1SG, or subordinate leader to quickly check accountability of equipment. It also ensures standard locations of equipment in each vehicle; this can be an important advantage when a leader is forced to switch to a different vehicle during an operation.
- Review the supply status of rations, water, fuel, oil, all types of ammunition, pyrotechnics, first-aid kits, combat lifesaver bags, MOPP suits, and batteries (for such items as flashlights, night vision devices, and NBC alarms). Direct resupply operations as necessary.
- Ensure vehicles are correctly camouflaged so they match the area of operations.

Each leader should observe his element throughout the process of preparation for combat. The commander should conduct the final inspection of each element once the leader reports that soldiers, vehicles, and equipment are prepared.

Rehearsals Rehearsals are practice sessions conducted to prepare units for an upcoming operation or event. They are essential in ensuring thorough preparation, coordination, and understanding of the commander's plan and intent. Company team commanders should never underestimate the value of rehearsals.

Effective rehearsals require leaders and, when time permits, other company team soldiers to **perform** required tasks, ideally under conditions that are as close as possible to those expected for the actual operation. At their best, rehearsals are interactive; participants maneuver their actual vehicles or use vehicle models or simulations while verbalizing their elements' actions. During every rehearsal, the focus is on the **how** element, allowing subordinates to practice the actions called for in their individual scheme of maneuver. (**NOTE:** A rehearsal is different from the process of talking through what is supposed to happen. For example, in a rehearsal, platoon leaders should actually send SPOTREPs when reporting enemy contact, rather than simply saying, "I would send a spot report now.")

Purposes of rehearsals. The commander uses well-planned, efficiently run rehearsals to accomplish the following:

- Reinforce training and increase proficiency in critical tasks.
- Reveal weaknesses or problems in the plan, leading to further refinement of the plan or development of additional branch plans.
- Integrate the actions of subordinate elements.
- Confirm coordination requirements between the company team and adjacent units.
- Improve each soldier's understanding of the concept of the operation, the direct fire plan, anticipated contingencies, and possible actions and reactions for various situations that may arise during the operation.

Rehearsal scope and techniques. The company team commander can choose among several approaches in conducting rehearsals. He must decide on the scope of the rehearsal in terms of participation and on the specific rehearsal technique to be used. As a general guideline, rehearsals should follow the crawl-walk-run training methodology to prepare the team and subordinate elements for increasingly difficult conditions.

Scope. The company team can prepare for operations using reduced-force rehearsals and/or full-force rehearsals. These considerations apply:

- The commander conducts reduced-force rehearsals when time is limited or when the tactical situation does not permit everyone to attend. Team members who can take part practice their actions on mock-ups, sand tables, or actual terrain (usually over a smaller area than in the actual operation).
- The full-force rehearsal is the most effective, but consumes the most time and resources. It involves virtually every

soldier who will participate in the operation. If possible, it should be conducted under the same conditions (such as weather, time of day, and terrain) that the team can expect to encounter during actual operations.

Techniques. Rehearsal techniques include the following:

- **Special rehearsal.** This rehearsal covers tasks that will be critical to the success of the operation at individual, crew, or element level. The commander may initiate special rehearsals when he issues the warning order early in the troop-leading process.
- **Map rehearsal.** This is usually conducted as part of a confirmation brief involving subordinate leaders and/or portions of their elements. The leader uses the map and overlay to guide participants as they brief their role in the operation. If necessary, he can use a sketch map.
- **Communications rehearsal.** This is a reduced-force or full-force rehearsal conducted when the situation does not allow the company team to gather at one location. Subordinate elements check their communications systems and rehearse key elements of the company team plan.
- Key leader rehearsal. In this rehearsal, leaders discuss the mission while moving over the key terrain in vehicles.
- **Sand table or terrain model.** This reduced-force or full-force technique employs a small-scale table or model that depicts graphic control measures and important terrain features for reference and orientation. Participants walk or move "micro" armor around the table or model to practice the actions of their own elements or vehicles in relation to other members of the company team.
- **Full mounted rehearsal.** This is used during a full-force rehearsal. Rehearsals begin in good visibility over open terrain, then become increasingly realistic until conditions approximate those expected in the area of operations. This technique presents several options:

  - The company team may rehearse with platoons or other team elements going "force on force" against each other.

  - The company team trains can portray enemy forces to prompt action by the platoons or other team elements.

  - The entire team may go against another task force element.

Rehearsal guidelines. The company team commander is responsible for most aspects of the team's rehearsals. The following paragraphs outline procedures and considerations that affect the rehearsal process.

General. The commander will select the tasks to be practiced and will control execution of the rehearsal. He will usually designate someone to role-play the enemy elements he expects to face during the operation.

Conditions. Rehearsal situations should be as close as possible to those expected during the actual operation. This includes the physical aspects of the rehearsal site as well as such factors as light and weather conditions.

Actions before the OPORD is issued. Initial warning orders should provide subordinate leaders with sufficient detail to allow them to schedule and conduct rehearsals before the company team OPORD is issued. For example, if breach, support, and assault elements are identified in an early warning order, leaders can begin rehearsing mission-specific tasks, drills, and SOPs for each element early in the troop-leading process. Rehearsals after the OPORD can then focus on tasks that cover integration of the entire team.

Progression of rehearsal activities. Rehearsals begin with soldier and leader confirmation briefs to ensure understanding of individual and unit tasks. Individual elements and the company team as a whole then use sand tables or sketches to talk through the execution of the plan. This is followed by walk-through exercises and full-speed mounted rehearsals.

Rehearsal priorities. The company team commander establishes a priority of rehearsals based on the time available and the relative importance of the actions to be rehearsed. As with COA development, the priority should begin at the decisive point of the operation and move on to actions that are less critical to the plan. As an example, the commander's priorities could call for rehearsal of tasks and drills in this order: actions on the objective, actions on contact, reaction to an air attack, movement formations and techniques, medical treatment and evacuation, and resupply operations.

Refinement

At all times, the company team commander must ensure that the team has an accurate picture of the enemy situation and that the plan to defeat the enemy is relevant to the enemy's current disposition. This means that the company team plan must continue to evolve as the enemy situation develops.

As discussed previously, the team will receive a constant stream of additional information about the enemy before the operation starts through a combination of team-, task force-, and brigade-level reconnaissance and security operations. The commander uses this information to continually adjust the plan as necessary. Changes to the plan and the enemy situation must be disseminated down to the lowest organizational level. Although these constant updates may cause some disruption of troop-leading procedures at the platoon level, the refinement process is critical to the success of the company team plan.

> **NOTE:** Refinement of the plan does not stop when the company team crosses the LD. Once the operation is under way, the commander continues to adjust the plan based on the enemy's actions and the terrain on which the team is operating. The commander gains additional information through reports and the company team's own development of the situation. He uses FRAGOs to update the team on refinements to the plan.

Additional preparation tasks

To assure himself of adequate time to focus on his own critical troop-leading tasks, the company team commander must effectively delegate the numerous preparation tasks that are part of the troop-leading process. One technique is to use members of the company team headquarters to assist in completion of these activities. Available personnel may include the company team master gunner, NBC NCO, and communications specialist and the crews from the commander's, XO's, and 1SG's vehicles. (**NOTE:** Refer to the discussion of company team CP functions in this chapter.) Additional preparations delegated by the commander may include, but are not limited to, the following tasks:

- Build terrain models.
- Create visualization products such as sketches, strip maps, and overlays.
- Copy orders, graphics, and matrices.
- Create digital products based on other materials (including the SITEMP, orders, overlays, and reports).
- Record incoming information such as status reports, warning orders, and FRAGOs.
- Continuously refine the SITEMP using the latest intelligence.
- Distribute the updated SITEMP to all company team elements.
- Enforce the company team timeline.
- Receive standard reports from company team elements.
- Pass required reports to the task force.
- Track unit battle preparations and logistical and maintenance status.

Abbreviated troop-leading procedures

When there is not enough time to conduct all eight troop-leading steps in detail, such as when a change of mission occurs after an operation is in progress, the company team commander must understand how to trim the procedures to save time. Most steps of these abbreviated troop-leading procedures are done mentally, but the commander skips none of the steps. Once the order is received, he conducts a quick map reconnaissance, analyzes the mission using the factors of METT-TC, and sends for the subordinate leaders. He makes sure each leader posts the minimum required control measures on his maps, then issues a FRAGO covering the key elements of the enemy and friendly situations, mission, commander's intent, and concept of the operation. The service support and command and signal paragraphs can be deleted if they are unchanged or covered by SOP. The commander and subordinate leaders may also conduct a quick walk-through rehearsal of critical elements of the maneuver plan using a hastily prepared terrain model or sand table.

In some cases, there may not be enough time even for these shortened procedures. The company team may have to move out and receive FRAGOs from the task force by radio or at the next scheduled halt. It then becomes critical for the team commander to send FRAGOs of his own to the subordinate leaders explaining the team's purpose within the overall task force maneuver plan.

At all times, the commander, XO, 1SG, and subordinate leaders share the responsibility for keeping the team informed of the ever-changing enemy and friendly situations. They accomplish this by monitoring the task force net and issuing frequent updates to their elements using available communications assets. Digital information systems (such as IVIS, DBCS, EPLRS, and appliqué) and global positioning systems (GPS) are valuable tools when the company team is forced to use abbreviated troop-leading procedures and FRAGOs. These systems allow the commander to communicate information quickly and accurately; he can also use them to designate waypoints to assist in navigation and TRPs to assist in weapons orientation.

Other keys to success when abbreviated procedures are in effect include a well-trained company team; clearly developed, thoroughly understood SOPs; and an understanding by all members of the team of the current tactical situation (situational awareness). Whenever time is available, however, there is no substitute for effective, thorough troop-leading procedures. The odds of success increase still further when detailed planning and rehearsals are conducted prior to an operation, even if time is limited. Successful commanders and leaders make the most of every available minute.

SUCCESSION OF COMMAND

The company team must treat the succession of command as a type of drill. The commander must ensure that all leaders understand the procedures required for a smooth succession; ideally, he should conduct rehearsals of the succession process. The normal succession of command in a company team is the following:

- Commander.
- XO.
- Platoon leaders.
- FSO.
- 1SG.
- NCOs by seniority.

When casualties or other battlefield factors necessitate succession, the new commander acts quickly to reestablish the chain of command. He establishes communications with the task force and all elements of the company team and

informs them of the situation. (**NOTE:** All elements of the company team should have preset their radios to facilitate a smooth transition in case a change of command becomes necessary.) The new commander compiles status reports within the company team, receives and analyzes any new orders from the task force, and continues operations. He issues FRAGOs as required.

> **NOTE:** In most situations, the leader in the best position to control the company team fight should assume command. For example, the platoon leader of the assault force may have a better understanding of a critical part of the battle than does the XO and would be better suited to take command until the XO is in position to do so.

COMMAND AND SUPPORT RELATIONSHIPS

Nonorganic combat and CS assets can significantly enhance the company team’s combat capability. These elements support the company team under established command and support relationships. Regardless of the nature of the relationship, the company team commander is responsible for the integration and synchronization of these assets within the team’s scheme of maneuver.

Command relationships

The command relationship defines the degree to which a command owns, controls, and supports various elements of another unit, such as the company team. There are four types of command relationships:

- **Organic.** The subordinate unit is listed in the higher unit's TOE or MTOE.
- **Assigned.** Units or personnel are placed in an organization on a relatively permanent basis. The gaining headquarters controls, administers, and provides logistical support to the subordinate units.
- **Attached.** This is the temporary placement of units or personnel in an organization. The gaining headquarters exercises the same degree of command and control as it does for organic units. This responsibility also includes logistical support, but rarely covers administrative actions.
- **Operational control (OPCON).** OPCON authority allows the gaining commander to direct units or personnel to accomplish specific missions or tasks, usually limited by function, time, or location. The commander can deploy these units and retain or assign tactical control. OPCON does not include administrative or logistical support.

Support relationships

Supporting and supported units share specific relationships and responsibilities. For example, the assigning headquarters retains both logistical support responsibility and the authority to reorganize or reassign all or part of a supporting force. Although support relationships usually do not occur at the company team level, it is important to understand how they affect the type of support the task force or brigade provides and/or receives. The following paragraphs discuss the four types of support relationships.

Direct support The DS unit provides support in response to a direct request from another unit. It is not attached to or under the command of the supported unit, but it is required to report directly to that unit and provide any requested support. DS units also must provide or arrange their own support. An example of this type of support unit during defensive operations is a task force DS engineer company. In the offense, operating system assets may be tasked to provide DS to the company team (normally when it is the task force main effort). In light/heavy operations, tank sections, platoons, and companies may serve as DS elements.

Reinforcing In this type of support, a unit provides reinforcing fires or support for another unit; as a secondary mission, it remains responsive for DS requests.

General support The GS unit provides support to the supported force as a whole and not to any particular subunit. GS units are responsible for their own logistical support. From the company team perspective, these units provide area, not unit, support. An example of a GS unit would be BSFVs or Bradley Linebackers attached to the brigade but positioned in the task force area of operations to cover air avenues of approach into the brigade rear.

General support reinforcing

In addition to performing its primary support tasks, the supporting unit in this type of relationship has the secondary mission of providing reinforcing fires to another force. This relationship usually pertains to artillery units.

SECTION 2 - CONTROL

Control, the counterpart of command, is the process by which the commander follows up a decision and minimizes deviation from his concept. It entails supervision of all aspects of the operation, including synchronization of all systems and activities.

SITUATIONAL AWARENESS

Situational awareness is the ability to maintain a constant, clear mental "picture" of the tactical situation. This picture includes an understanding of relevant terrain and of the relationship between friendly and enemy forces in time and space. It also includes the ability to correlate battlefield events as they develop.

Decision-making

For the company team commander and all subordinate leaders, situational awareness is the key to making sound, quick tactical decisions. It allows them to form logical conclusions and to make decisions that anticipate future events and information. A critical benefit of situational awareness on the part of all leaders is a reduction in fratricide incidents. Situational awareness also gives leaders the ability to compress the time necessary to conduct troop-leading procedures; this is especially critical when there is limited time to plan and prepare for an operation.

Structure of the battlefield

The commander structures the battlefield based on his intent and the factors of METT-TC. How he does this affects his subordinate leaders' mission planning and their ability to maintain situational awareness. The framework of the battlefield can vary from a highly rigid extreme, with obvious front and rear boundaries and closely tied adjacent units, to a dispersed and decentralized structure with few secure areas and unit boundaries and no definable front and/or rear boundary.

Between these extremes is an unlimited number of possible variations. Maintaining situational awareness becomes more difficult as the battlefield becomes less structured. Modern, highly mobile operations involving small forces lend themselves to a less rigid framework that challenges the leader's ability to maintain an accurate picture of the battlefield.

"Seeing" the battlefield

To "see" the battlefield accurately, the commander and subordinate leaders must have virtually perfect knowledge of the friendly situation one level higher than their own (the task force or company team/troop situations). It is also vital that the commander update subordinates periodically on the higher situation. The commander must also have a relatively complete knowledge of the terrain and the enemy situation. He must be able to visualize enemy and friendly elements through time and to picture how terrain will affect their actions. (**NOTE:** This requirement to maintain a real-time awareness of the battlefield one level higher does not relieve the commander of his responsibility to understand the situation and commander's intent two levels higher than his own. The difference is that his understanding of the situation two levels higher does not have to be as specific or as timely.)

Most of the information the commander requires comes from what he can observe from his tank or BFV and receive through his communications systems, which he monitors both from reports addressed specifically to him and by eavesdropping. He then can track enemy and friendly elements and plot all movement on his map and/or digital display (IVIS, DBCS, or appliqué). This allows him to adjust movement so the company team makes contact with the enemy from positions of advantage.

How effectively the commander can keep track of events on the battlefield is, to some degree, experience-dependent. No matter what his experience level, however, he is responsible for learning techniques that allow him to relate the information he is receiving to his map or display and thereby track the tactical situation. Personal preparation is absolutely critical to any leader's performance during operational execution. The commander must carefully evaluate what he will be required to do during the battle and then take the necessary actions to prepare for the upcoming operation.

Battle space

The ability to see the battlefield provides the commander with important tactical information, including friendly and enemy positions and relevant terrain. In turn, complete understanding of the military significance of this picture requires knowledge of the concept of battle space; this is the key element in the intellectual process of visualizing the battlefield.

At the most fundamental level, battle space is the three-dimensional area in which the company team and its subordinate elements can acquire enemy forces and influence them with effective fires. This space is defined by several battlefield factors: the locations of friendly forces, including the team's individual elements and OPs; the effects of terrain, weather, and movement; and the ranges of all available weapons and sensing systems. Each subordinate element has its own battle space. The company team's total battle space is the sum of the individual elements' battle spaces. The team battle space is not restricted by boundaries; it can overlap the battle space of adjacent units.

Battle space has applications in all phases of mission planning, preparation, and execution. During the planning process, it is a critical

factor in the selection of the movement axis as well as tentative positions and potential engagement areas. In the preparation phase, battle space information aids leaders in determining where vehicle positions will be sited and to what level they will be prepared (dug). Once mission execution begins, the commander's knowledge of his battle space is critical to his ability to issue timely and effective orders as the situation changes.

The importance of battle space demands that the company team commander direct much of his battle command effort toward managing and enhancing his space. He must be aware at every moment of how battle space is changing as friendly and enemy forces move and as terrain and visibility conditions change. As the operation progresses, the commander must take active measures to shape the battle space to his best advantage.

One vital step in this process is to eliminate or reduce any gaps, or dead space, within the company team's battle space. The commander can accomplish this in several ways. In the offense, for example, he can maintain an overwatch element during movement through a choke point or a danger area. In the defense, he can emplace OPs or reposition elements or individual vehicles to cover potential gaps in the team's battle space. In all cases, the company team's position in relation to other friendly elements is an important factor in defining and enhancing the battle space. The commander can shape his space more effectively if he applies the principles of mutual support and thorough coordination with adjacent units.

REPORTS

Reports exist to support the commander and to assist him in assessing his critical information requirements. Their format and use is normally mandated by unit SOP. With some exceptions, reports are not tied to a fixed schedule. Rather, they are submitted in these circumstances:

- On request or on order.
- When a change in the situation warrants.
- As necessary to keep the higher commander informed.

Cycle of reporting

In serving their primary purpose of keeping higher headquarters and adjacent units informed of changes in the situation, reports must be complete and accurate; at the same time, leaders must ensure that their reports are neither overly complex nor too frequent. As a general rule, leaders send increasingly detailed reports as the situation develops and as more information (and more time) becomes available during an operation. This concept is known as the cycle of reporting.

As an example of this cycle, a platoon leader who encounters an enemy force immediately sends a contact report to the company team commander and then initiates actions on contact. Once he has developed the situation, he sends a SITREP, which outlines the nature of the contact, his own situation, and his recommendation of a COA in

response to the contact. After executing the COA directed by the commander, the platoon leader sends an updated SITREP (in this case, a closure report) to inform the commander of the result of the operation (again covering how the situation has changed).

Report guidelines

Leaders at all levels should keep the following considerations in mind in preparing, submitting, and using reports:

- Send only the parts or lines of a report that contain new information or changes. This will help to prevent overloading of radio nets.
- Reports have prescribed formats to ensure completeness of the information that is transmitted. The company team SOP should outline the correct format for each report the unit normally uses. The SOP should also explain how each report is used and under what conditions it is to be submitted.
- At the same time, however, users must remember that timely reporting, especially of enemy activity, is critical in fast-moving tactical situations. Do not delay reports for the sole purpose of assuring the correct format; **report accurate information as quickly as possible!**
- Use the local time zone for all reports unless directed otherwise.

Types of reports

Company team commanders and other leaders receive and send reports in five general categories. Refer to the applicable SOP for unit-specific information on these groups. In general, company-level reports include the following:

- **Operations reports.** These include the following:

  - Contact report and SPOTREP, used to report enemy activity.

  - SITREP. Several variations of the SITREP are also available, including the modified SITREP, the SALT report (a modified SITREP that is used to quickly summarize the enemy situation by covering only the aspects of size, activity, location, and time), and the closure report, sent to make a final report on the end state or result of an operation or action.

  - Combat power report, which a unit uses to send assessments of friendly combat power to its higher headquarters.

  - Sensitive items report (SENSEREP), used to relay the status and accountability of sensitive items to higher headquarters.

  - Reports covering physical aspects of the area of operations. These include the report for bridges, overpasses, culverts, underpasses, or tunnels, known as the BRIDGEREP; the report for fords, ferries, and other water crossing sites, known as the CROSSREP; the route reconnaissance report, known as the ROUTEREP; the obstacle report; and the bypass report.

- **Intelligence reports.** These include the intelligence summary report and the MIJI report.
- **Logistics reports.** These include equipment status reports (known as ESTAT), battle loss SPOTREPs, ammunition status reports, ammunition requests, POL status reports, and POL requests.
- **Personnel reports.** These include personnel battle loss reports and MEDEVAC requests.
- **NBC reports.** These include observer's initial reports (NBC-1); immediate warning of expected contamination reports (NBC-3); reports of NBC hazards by monitoring, survey, or reconnaissance (NBC-4); and reports of areas of contamination (NBC-5).

STANDING OPERATING PROCEDURES

SOPs articulate how the company team will conduct certain operations (or component actions within an operation). A well-rehearsed tactical SOP ensures quick, predictable actions by members of the team. It standardizes procedures for tactical road marches, assembly areas, communications, maneuver, engagement area development, CS, and CSS, as well as any other operations designated as critical by the commander. An effective SOP normally delegates responsibility for specific tasks to specific subordinate elements or individuals. Examples of SOPs are discussed throughout this manual.

The maneuver portion of the company team SOP helps leaders to make quick, accurate decisions; in turn, this enhances the team's ability to maintain the initiative, even when unexpected contact occurs. A maneuver SOP normally consists of a series of maneuver plans, sometimes referred to as plays, that can be executed with slight modifications based on a timely METT-TC analysis. Unlike platoon battle drills (discussed in Chapter 3 of this manual), plays allow the commander to account for friendly task organization, specific terrain, and a specific enemy. As a result, the maneuver SOP for a unit whose primary mission is to fight an infantry-based enemy in restricted terrain must be significantly different from that of a unit that must fight a mechanized enemy force in desert terrain. An effective technique in development of maneuver plays is to develop a sketch and statement similar to the COA sketch and statement, which were discussed earlier in this chapter. Figure 2-14 illustrates an example of a play from a company team maneuver SOP.

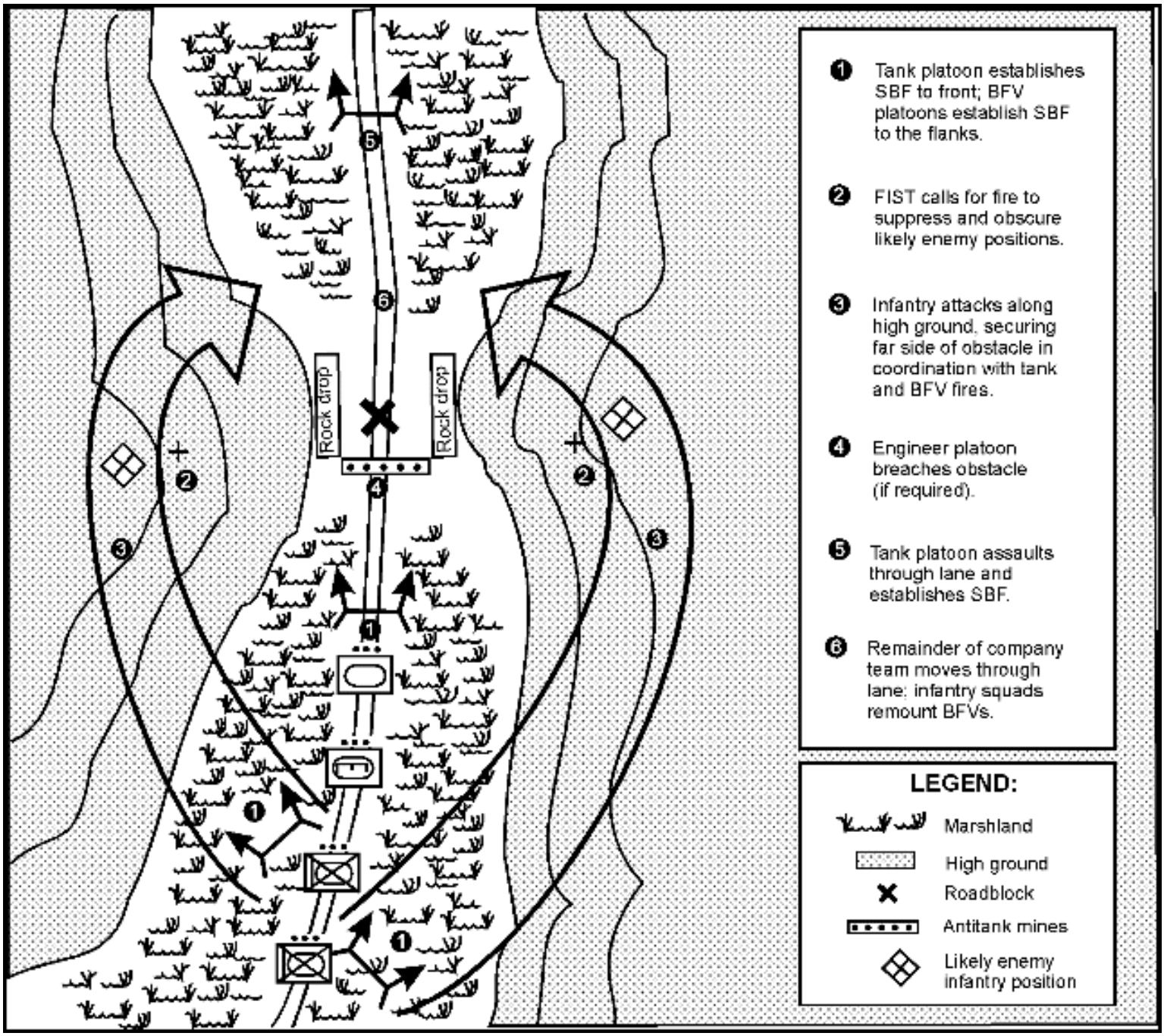


Figure 2-14. Example SOP maneuver play for securing a choke point.

COMMUNICATIONS

Introduction

The company team communicates to control subordinate elements and weapons, to gather and pass information, and to call for fires. The commander must carefully plan the use of the team's communications resources to ensure that he maintains redundancy and flexibility. He must understand the capabilities and limitations of the various means of communications available to the company team and the role that METT-TC factors play in determining which means will be used in a given situation.

SOPs are a critical element of company team communications. They may prescribe when to use certain methods or establish priorities for reports and other types of transmissions. For units with digital capability, SOPs should standardize graphics and dictate how overlays are passed from the top down and from the bottom up.

Means of communications

The following discussion covers the capabilities, limitations, advantages, and disadvantages of the various means of communications available to the company team.

Messengers

When security conditions, resources, and time permit, the use of messengers is the preferred means of communications for the company team. It is the most secure means and generally is also very flexible and reliable. Messengers can deliver fire plans, status reports, and various types of messages. If possible, lengthy messages sent by messenger should be written to prevent confusion.

Wire

This method of communications is especially effective in static positions. The company team may employ a hot loop in defensive positions, OPs, and assembly areas. Wire is both secure and reliable, but it imposes strict limits on the mobility of the user. This could interfere with unit troop-leading procedures or other priorities of work. (**NOTE:** Wire can also be used on M1-series tanks and BFVs to facilitate communications with dismounted elements working with the unit. Wire is routed from inside the vehicle to an externally mounted phone.)

Visual signals

Visual communications are valuable in identifying friendly forces or transmitting prearranged messages quickly over short distances. Standard
hand-and-arm or flag signals work well during periods of good visibility.
(**NOTE:** See FM 21-60 for a description of hand-and-arm signals.)
Crews can use no-power thermal paper, flashlights, chemical lights, or other devices during periods of limited visibility, but they must exercise extreme care to avoid alerting the enemy to friendly intentions. Pyrotechnic ammunition can also be used for visual signaling. The meaning of these signals must be specified in paragraph 5 of the OPORD or by unit SOP.

Sound signals

This form of communications is mainly used to attract attention, transmit prearranged messages, and spread alarms. Sound signals, however, carry only short distances, and their range and clarity are greatly reduced by battle noise. In addition, since they are open to enemy interception, use of sound signals may be restricted for security reasons. They must be kept simple to avoid creating confusion. Prearranged meanings for sound signals must be covered in unit SOPs and SOIs.

Radio

The radio is the company team's most flexible, most frequently used means of communications. It can quickly transmit information over long distances with great accuracy. It is also the least secure means, although secure equipment and the ability of SINCGARS to frequency-hop provide the company team with protection against most enemy direction-finding, interception, and jamming capabilities. To maintain effective radio communications, leaders must strictly enforce proper radio discipline and procedures and adhere to the following guidelines:

- Keep radio transmissions short (10 seconds or less); break up longer messages into short transmissions.
- Make clear, concise transmissions.
- When direct radio contact is broken, set up relays or go to high ground.
- Submit initial contact reports immediately, then send additional information later.
- Prioritize transmissions.

Digital systems

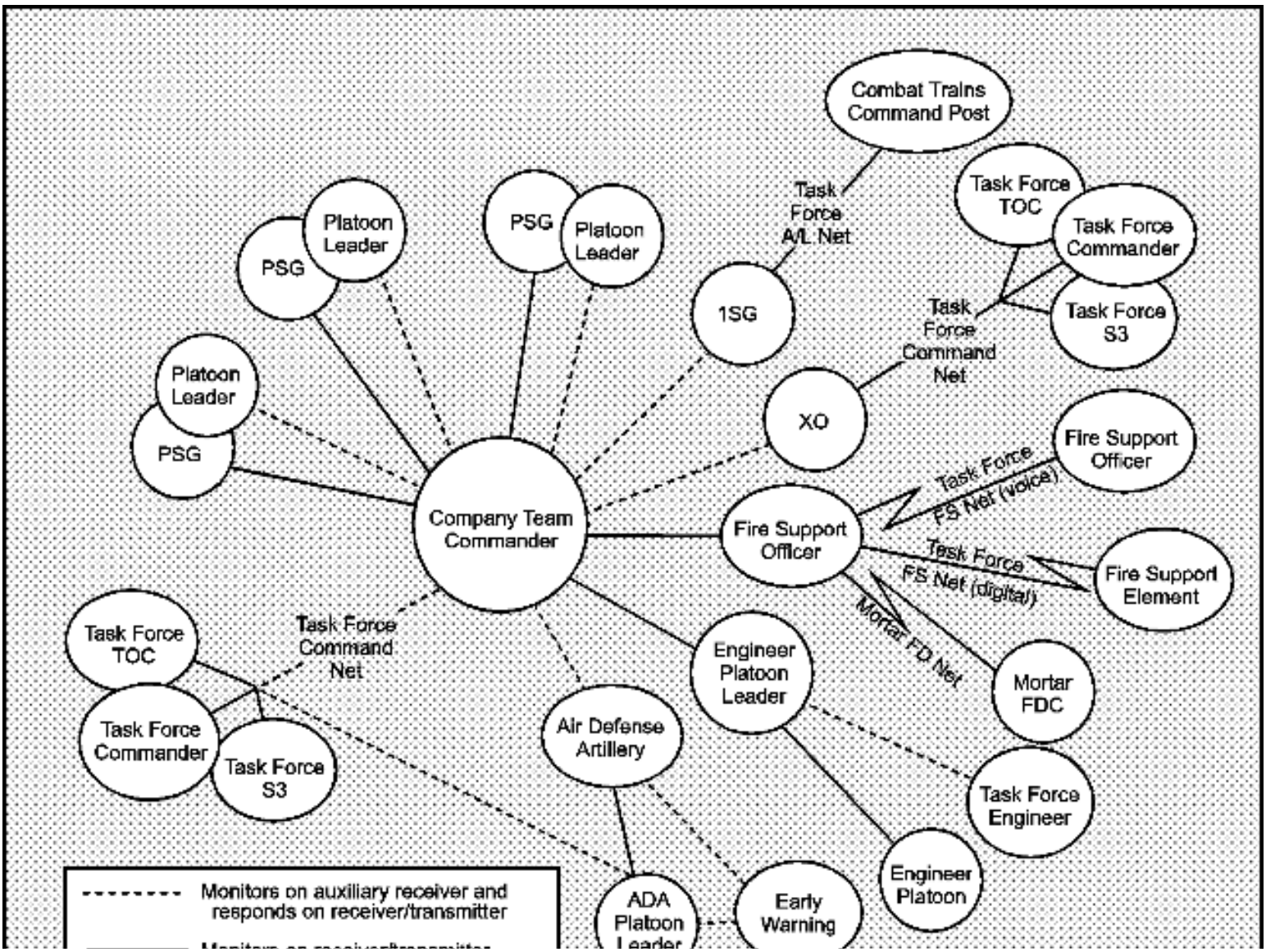
IVIS and appliqué digital systems enable users to transmit digitally encoded information over SINCGARS or EPLRS radios to similarly equipped vehicles. When digitally linked, users receive updated position information for vehicles operating on the same radio nets or within a tactical internet. Reports and overlays can be sent and received within the confines of the digital routing matrix. Units in the routing matrix must use precise SOPs to dictate how the unit and specific users will send and receive overlays from the top down and from the bottom up. SOPs must also specify digital log-on procedures and address the duties of the NCS, which are more complex within a digitized unit.

Company teram radio nets

The company team transmits and receives tactical information over a variety of radio nets. The following paragraphs outline communications equipment and procedures used by the team's leaders and its subordinate and attached elements. Figure 2-15 illustrates the organization of the company team radio net.

Commander and XO The company team commander normally operates on the company team command net and monitors the task force command net. This allows the commander to fight the team effectively while remaining responsive to the task force commander as necessary. He operates on the task force net to provide tactical assessments to the task force commander; to send critical information to the task force commander and/or other company team commanders; and to respond as required by the situation or as requested by the task force commander. The XO monitors the team net and operates on the task force net, making him responsive to both the team and task force commanders. He normally handles routine traffic on the task force net.

Platoon leader and PSG Platoon leaders normally operate on their specific platoon nets and monitor the company team command net, while each PSG monitors the platoon net and operates on the company team net. This allows platoon leaders to fight their platoons effectively while PSGs remain responsive for routine traffic. Platoon leaders must also remain responsive to the commander via the company team net; they provide tactical assessments and other critical information to the commander and other platoon leaders as required or requested.



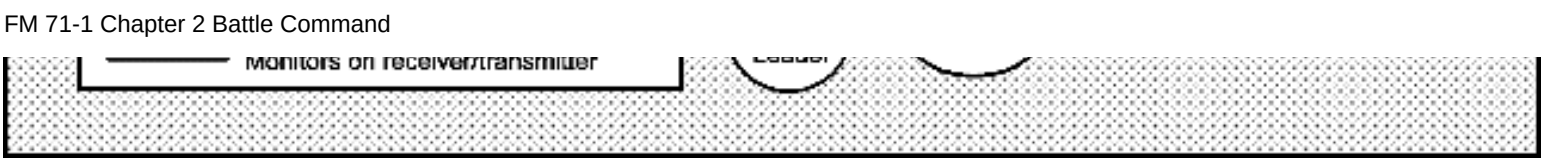


Figure 2-15. Company team command radio net.

Other leaders and elements Other factors related to the company team's radio nets include the following:

- The 1SG monitors the company team net and operates on the task force A/L net.
- The company combat trains monitor the company team net.
- BFV platoons are equipped with an additional man-portable radio as well as four hand-held radios for control of dismounted operations. Use of these assets will leave the internal platoon net nonsecure, although the platoon leader can still maintain secure communications on the company team net.
- BSFVs and/or Bradley Linebackers that are in DS or GS to the task force and are moving with the company team normally have two radios; they transmit and receive on the ADA platoon net and monitor the ADA early warning net and the company team net. The BSFV/Linebacker platoon leader has three radios; he transmits and receives on the ADA platoon net and ADA battery net and monitors the ADA early warning net and the task force command net.
- The company team FIST has four radios that transmit and receive on the following nets:

  - Tactical fire direction system. Known as TACFIRE, this digital task force net employs either of two systems, the IFSAS or the AFATDS.

  - Task force fire support net (voice net).

  - Mortar fire direction net (voice or digital net).

  - Company team command net.

- Attached engineer platoons normally have two radios that transmit and receive on internal platoon nets and on the team command net.

Preset capability SINCGARS radios offer up to eight preselected settings (manual, cue, and up to six additional preset frequencies or hopset patterns). The company team SOP should specify how leaders will configure their radios so that the frequency can be changed in response to a variety of situations and requirements, such as succession of command, cross-talk, and integration of CS and CSS assets.

COMMUNICATIONS SECURITY

Introduction

COMSEC involves measures taken to sustain and protect radio communications against enemy detection and electronic warfare attacks; it covers actions taken to protect personnel, facilities, and equipment from the effects of friendly and enemy electronic warfare that can degrade or destroy a unit's combat capability. Although the team is not usually the focus of interception, jamming, or direction-finding systems, proper COMSEC procedures are an absolute requirement for all operators. At the team level, COMSEC consists mainly of proper active protection measures and antijamming techniques for the specific equipment the unit is employing. For example, a company team with SINCGARS radios may try to avoid detection by employing its frequency-hopping capability at a low power setting (although use of a hot loop remains an option).

Active protection measures

When the company team must use nonsecure or damaged communications assets, effective use of active protection measures can delay or prevent the enemy from gaining important tactical information from the team's radio transmissions. Active protection measures include the following procedures:

- Using approved codes.
- Changing frequencies and call signs when specified.
- Restricting radio use or designating times for radio listening silence.
- Using low power when appropriate.
- Selecting radio sites from which obstructions block friendly transmissions from enemy detection.

Antijamming procedures

Company team radio operators should use the procedures outlined in the following paragraphs to defeat the enemy's jamming activities. (**NOTE:** These procedures may also apply to other types of communications interference.)

Recognition

If he detects or suspects radio interference, the operator must determine the cause. He should not immediately assume that he is being jammed; some other types of radio interference may resemble jamming "symptoms." The operator first removes the antenna to determine whether the signal is being generated internally by the receiver. If the interference decreases in intensity when the antenna is removed, interference is external, possibly the result of enemy jamming.

Continued operation

After identifying jamming as a possible cause of interference, the operator follows a simple rule: continue to operate unless ordered by the NCS to shut down or change frequencies. He must continue normal radio operations so the enemy will not learn that the interference is working; he should never mention over a nonsecure radio or frequency that he is being jammed. If the company team cannot continue to operate on the jammed net, operators should switch to the antijamming frequency and continue the mission. The commander may direct the XO to monitor the old frequency until all nodes have reestablished communications.

Reporting

Use a MIJI report, sent via a secure means of communications, to inform leaders that jamming has been detected. The MIJI report format, found in the SOI or unit SOP, usually contains the following information:

- Date and time of the jamming.
- Frequencies jammed.
- Type and strength of the jamming signal.
- Designation of the unit making the report.

NOTE: Although not related to enemy activity, "hot mikes" and unintentionally keyed radio nets can severely limit the ability of the company team and subordinate elements to communicate effectively. The team commander and subordinate leaders must develop reporting and action procedures to prevent these problems.

COMPANY TEAM COMMAND POST

Purpose

The company team CP assists the commander and his subordinate leaders in preparing for battles by providing a centralized point for information gathering and dissemination, coordination, time management, and tracking of unit status.
The tank or mechanized infantry company team is generally limited to the use of a tent or one of its organic headquarters vehicles as the CP. Tank company team options include the use of the 1SG’s M113 or the FIST-V. The 1SG’s vehicle is organic to the team and thus is more likely to be available during the preparation phase. The FIST-V is large enough to serve as the CP, but it may be retained by the task force and therefore will not be available to the company. The mechanized infantry team may use one of its headquarters BFVs, the 1SG’s M113, or the FIST-V. Disadvantages in using a BFV are that it may be required for a mounted rehearsal and that it will be required for boresighting.

The use of an additional shelter can enhance the capabilities of any type of vehicle CP. A canvas or modular extension will provide additional room to allow CP personnel to perform their functions more efficiently. Another CP technique is the use of a GP-small tent in conjunction with radio remotes.

Manning

There are several options for manning a company team CP. A senior NCO from the headquarters section or an attached element may be designated as information manager or NCOIC of the CP. Although the primary duty of this NCO may pull him away for limited periods, he can generally remain available for duty in the CP. Options include the master gunner, NBC NCO, or a senior gunner on a headquarters section BFV or tank.

Other positions in the CP can be manned on a rotational basis by the members of the headquarters section or attached elements. These may include the crews of headquarters tanks or BFVs; company team medics; the driver of the 1SG's M113; the communications specialist; and the crew of the FIST-V.

Functions

The company team CP assists the commander by reducing the number of items he must personally track and report. This further frees the commander to conduct troop-leading procedures during the preparation phase. Examples of CP operations include the following:

- Record incoming information (such as status reports, warning orders, and FRAGOs).
- Continuously refine the SITTEMP using the latest intelligence and distribute the updated SITTEMP to all company team elements.
- Post current guidance, timelines, and overlays.
- Pass required reports to the task force.
- Track unit battle preparations and logistical and maintenance status.
- Conduct required coordination with adjacent and flank units.
- Facilitate bottom-up refinement of operating system planning and preparation.

The CP may act as the point of contact for attached or OPCON units. It can further assist the commander in his troop-leading procedures by providing a variety of services: supervising and enforcing the timeline; reproducing overlays; converting acetate overlays to digital format (in digital units); constructing sand tables for company team and platoon rehearsals.

DIRECT FIRE CONTROL

Suppressing or destroying the enemy with direct fires is fundamental to success in close combat. Effective direct fires are essential to winning the close fight; they are the unique contribution of maneuver forces to the combine arms team. Because fire and movement are complementary components of maneuver, the tank or mechanized infantry company team commander must be able to effectively mass the fires of all available resources at critical points and times to be successful on the battlefield.

Unitwide surveillance and target acquisition

Acquiring the enemy is a precursor to direct fire engagement. Commanders must not assume that the unit will be able to see the enemy; they must expect him to use cover and concealed routes effectively when attacking and to make best use of flanking and concealed positions in the defense. As a result, the company team will not often have the luxury of a fully exposed enemy that can be easily seen.

Rather, the acquisition of the enemy will often be dependent on recognition of very subtle indicators that may be especially difficult to see while moving. Examples include exposed antennas, reflections from the vision blocks of enemy vehicles, small dust clouds, or smoke from vehicle engines or ATGM or tank fires. (**NOTE:** Refer to Figure 3-1 for more examples of these indicators.)

Because of the difficulty of target acquisition, the company team commander must develop unit surveillance plans to assist the team in acquiring the enemy. He must also be prepared to apply these techniques to help orient other friendly forces. Techniques for unit surveillance, target acquisition, and orientation of subordinate elements are discussed in more detail in "Orient forces to speed target acquisition" later in this chapter. Target acquisition at the crew level and crew gunnery techniques are discussed in detail in FM 17-12-1 and FM 23-1.

Principles of fire control

Effective fire control requires a unit to rapidly acquire the enemy and mass the effects of fires to achieve decisive results in the close fight. When planning and executing direct fires, the commander and subordinate leaders must know how to apply several fundamental principles. The purpose of these principles of direct fire is not to restrict the actions of subordinates. Applied correctly, they help the company team to accomplish its primary goal in any direct fire engagement: to both ***acquire first and shoot first***; they give subordinates the freedom to act quickly upon acquisition of the enemy. This discussion focuses on the following principles:

- Mass the effects of fire.
- Destroy the greatest threat first.
- Avoid target overkill.
- Employ the best weapon for the target.
- Minimize friendly exposure.
- Prevent fratricide.
- Plan for extreme limited visibility conditions.
- Develop contingencies for diminished capabilities.

Mass the effects of fire

The company team must mass its fires to achieve decisive results. Massing entails focusing fires at critical points and distributing the effects. Random application of fires is unlikely to have a decisive effect. For example, concentrating the company team's fires at a single target may ensure its destruction or suppression; however, that fire control COA will probably not achieve a decisive effect on the enemy formation or position.

Destroy the greatest threat first	The order in which the company team engages enemy forces is in direct relation to the danger they present. The threat posed by the enemy depends on his weapons, range, and positioning. Presented with multiple targets, a unit will, in almost all situations, initially concentrate fires to destroy the greatest threat, then distribute fires over the remainder of the enemy force.
Avoid target overkill	Use only the amount of fire required to achieve necessary effects. Target overkill wastes ammunition and ties up weapons that are better employed acquiring and engaging other targets. The idea of having every weapon engage a different target, however, must be tempered by the requirement to destroy the greatest threats first.
Employ the best weapon for the target	Using the appropriate weapon for the target increases the probability of rapid enemy destruction or suppression; at the same time, it saves ammunition. The company team has many weapons with which to engage the enemy. Target type, range, and exposure are key factors in determining the weapon and ammunition that should be employed, as are weapons and ammunition availability and desired targets effects. Additionally, leaders should consider individual crew capabilities when deciding on the employment of weapons. The commander task organizes and arrays his forces based on the terrain, enemy, and desired effects of fires. As an example, when he expects an enemy dismounted assault in restricted terrain, the commander would employ his infantry squads, taking advantage of their ability to best engage numerous, fast-moving targets.
Minimize friendly exposure	Units increase their survivability by exposing themselves to the enemy only to the extent necessary to engage him effectively. Natural or manmade defilade provides the best cover from kinetic-energy direct fire munitions. Crews and squads minimize their exposure by constantly seeking effective available cover, attempting to engage the enemy from the flank, remaining dispersed, firing from multiple positions, and limiting engagement times.
Prevent fratricide	The commander must be proactive in reducing the risk of fratricide and noncombatant casualties. He has numerous tools to assist him in this effort: identification training for combat vehicles and aircraft; the unit's weapons safety posture; the weapons control status; recognition markings; situational awareness. Knowledge and employment of applicable ROE are the primary means of preventing noncombatant casualties. (**NOTE:** Because it is difficult to distinguish between friendly and enemy dismounted infantry soldiers, the commander must constantly monitor the position of friendly infantry squads.)

Plan for extreme limited visibility conditions

At night, limited visibility fire control equipment enables the company team to engage enemy forces at nearly the same ranges that are applicable during the day. Obscurants such as dense fog, heavy smoke, and blowing sand, however, can reduce the capabilities of thermal and infrared (IR) equipment. The commander should therefore develop contingency plans for such extreme limited visibility conditions. Although decreased acquisition capabilities have minimal effect on area fire, point target engagements will likely occur at decreased ranges. Typically, firing positions, whether offensive or defensive, must be adjusted closer to the area or point where the commander intends to focus fires. Another alternative is the use of visual or IR illumination when there is insufficient ambient light for passive light intensification devices. (**NOTE:** Vehicles equipped with thermal sights can assist infantry squads in detecting and engaging enemy infantry forces in conditions such as heavy smoke and low illumination.)

Develop contingencies for diminished capabilities

Leaders initially develop plans based on their units' maximum capabilities; they make backup plans for implementation in the event of casualties or weapon damage or failure. While leaders cannot anticipate or plan for every situation, they should develop plans for what they view as the most probable occurrences. Building redundancy into these plans, such as having two systems observe the same sector, is an invaluable asset when the situation (and the number of available systems) permits. Designating alternate sectors of fire provides a means of shifting fires if adjacent elements are knocked out of action.

Fire control measures

Fire control measures are the means by which the commander or subordinate leaders control fires. Application of these concepts, procedures, and techniques assists the unit in acquiring the enemy, focusing fires on him, distributing the effects of the fires, and preventing fratricide. At the same time, no single measure is sufficient to effectively control fires. At the company team level, fire control measures will be effective only if the entire unit has a common understanding of what they mean and how to employ them. The following discussion focuses on the various fire control measures employed by the company team. Figure 2-16 lists the control measures; it is organized by whether they are terrain-based or threat-based.

Terrain-based Fire Control Measures	Threat-based Fire Control Measures

• Target reference point (TRP) • Engagement area • Sector of fire • Direction of fire • Terrain-based quadrant • Friendly-based quadrant • Maximum engagement line (MEL) • Restrictive fire line (RFL) • Final protective line (FPL)	• Fire patterns • Target array • Engagement priorities • Weapons ready posture • Trigger • Weapons control status • Rules of engagement (ROE) • Weapons safety posture • Engagement techniques

Figure 2-16. Common fire control measures.

Terrain-based fire control measures

The company team commander uses terrain-based fire control measures to focus and control fires on a particular point, line, or area rather than on a specific enemy element. The following paragraphs describe the TTP associated with this type of control measure.

Target reference point. A TRP is a recognizable point on the ground that leaders use to orient friendly forces and to focus and control direct fires. In addition, when TRPs are designated as indirect fire targets, they can be used in calling for and adjusting indirect fires. Leaders designate TRPs at probable enemy locations and along likely avenues of approach. These points can be natural or man-made. A TRP can be an established site, such as a hill or a building, or an impromptu feature designated as a TRP on the spot, like a burning enemy vehicle or smoke generated by an artillery round. Friendly units can also construct markers to serve as TRPs, as illustrated in Figure 2-17. Ideally, TRPs should be visible in three observation modes (unaided, passive-IR, and thermal) so they can be seen by all forces. Example of TRPs include the following features and objects:

- Prominent hill mass.
- Distinctive building.
- Observable enemy position.
- Destroyed vehicle.
- Ground-burst illumination.
- Smoke round.
- Laser point.

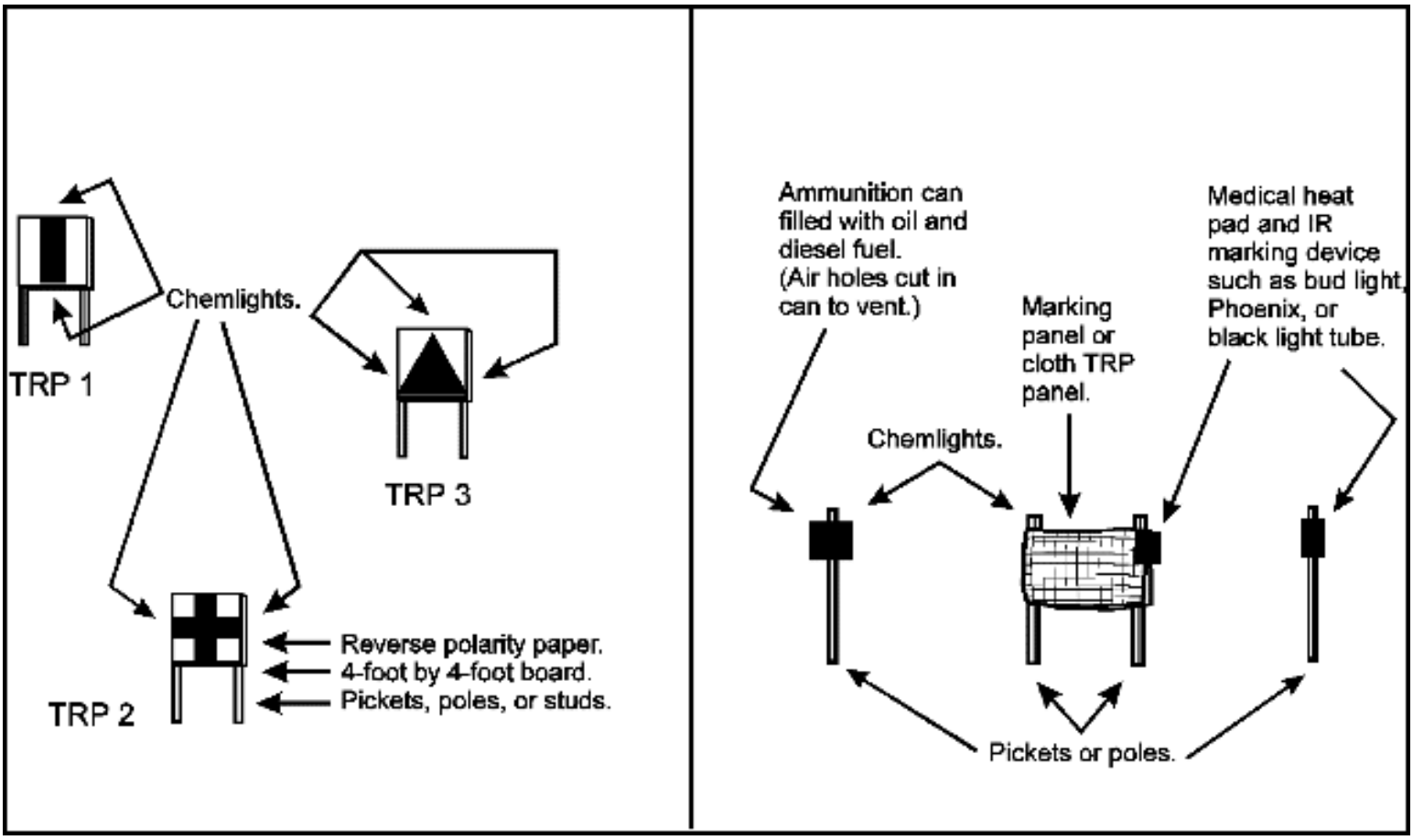


Figure 2-17. Examples of constructed TRP markers.

Engagement area. This fire control measure is an area along an enemy avenue of approach where the commander intends to mass the fires of available weapons to destroy an enemy force. The size and shape of the engagement area is determined by the degree of relatively unobstructed intervisibility available to the unit's weapon systems in their firing positions and by the maximum range of those weapons. Typically, commanders delineate responsibility within the EA by assigning each platoon a sector of fire or direction of fire; these fire control measures are covered in the following paragraphs.

Sector of fire. A sector of fire is a defined area that must be covered by direct fire. Leaders assign sectors of fire to subordinate elements, crew-served weapons, and individual soldiers to ensure coverage of an area of responsibility; they may also limit the sector of fire of an element or weapon to prevent accidental engagement of an adjacent unit. In assigning sectors of fire, commanders and subordinate leaders consider the number and types of weapons available. In addition, they must consider acquisition system type and field of view in determining the width of a sector of fire. For example, while unaided vision has a wide field of view, its ability to detect and identify targets at range and in limited visibility conditions is restricted. Conversely, most fire control acquisitions systems have greater detection and identification ranges than the unaided eye, but their field of view is narrow. Means of designating sectors of fire include the following:

- TRPs.

- Clock direction.
- Terrain-based quadrants.
- Friendly-based quadrants.

Direction of fire. A direction of fire is an orientation or point used to assign responsibility for a particular area on the battlefield that must be covered by direct fire. Leaders designate directions of fire for the purpose of acquisition or engagement by subordinate elements, crew-served weapons, or individual soldiers. Direction of fire is most commonly employed when assigning sectors of fire would be difficult or impossible because of limited time or insufficient reference points. Means of designating a direction of fire include the following:

- Closest TRP.
- Clock direction.
- Cardinal direction.
- Tracer on target.
- IR laser pointer.

Quadrants. Quadrants are subdivisions of an area created by superimposing an imaginary pair of perpendicular axes over the terrain to create four separate areas or sectors. Quadrants can be based on the terrain, on friendly forces, or on the enemy formation. (**NOTE:** The technique in which quadrants are based on the enemy formation is usually referred to as the target array; it is covered in the discussion of threat-based fire control measures.)

The method of quadrant numbering is established in the unit SOP; however, care must be taken to avoid confusion when quadrants based on terrain, friendly forces, and the enemy formation are used simultaneously.

Terrain-based quadrant. A terrain-based quadrant entails use of a TRP, either existing or constructed, to designate the center point of the axes that divide the area into four quadrants. This technique can be employed in both offensive and defensive operations. In the offense, the commander designates the center of the quadrant using an existing feature or by creating a reference point (for example, using a ground burst illumination round, a smoke marking round, or a fire ignited by incendiary or tracer rounds). The axes delineating the quadrants run parallel and perpendicular to the direction of movement. In the defense, the commander designates the center of the quadrant using an existing or constructed TRP.

In the examples shown in Figure 2-18, quadrants are marked using the letter "Q" and a number (Q1 to Q4); quadrant numbers are in the same relative positions as on military map sheets (from Q1 as the upper left-hand quadrant clockwise to Q4 as the lower left-hand quadrant).

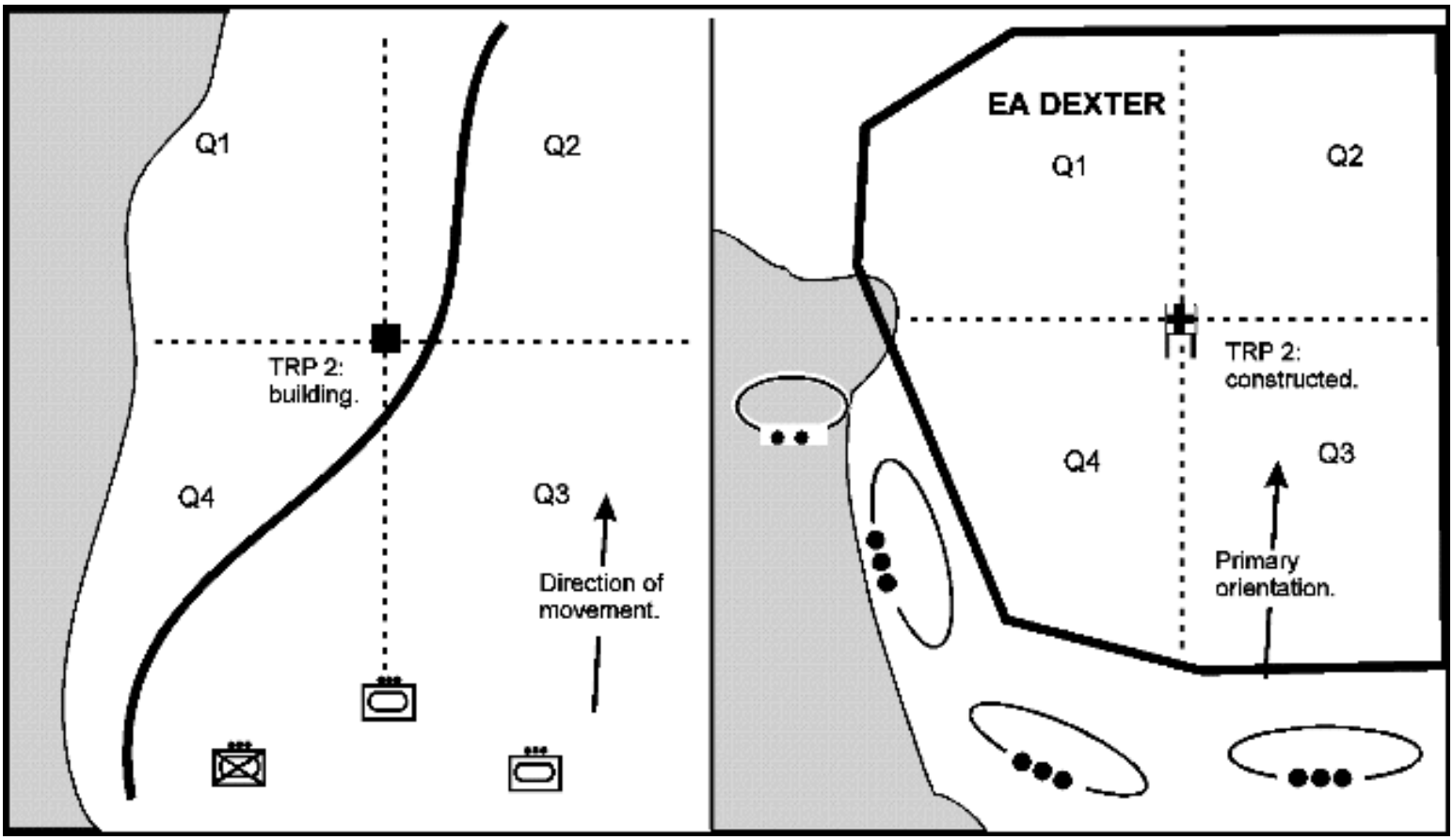


Figure 2-18. Examples of terrain-based quadrants.

Friendly-based quadrant. The friendly-based quadrant technique entails superimposing quadrants over the unit's formation The center point is based on the center of the formation, and the axes run parallel and perpendicular to the general direction of travel. For rapid orientation, the friendly quadrant technique may be better than the clock direction method; this is because different elements of a large formation are rarely oriented in the same exact direction and because the relative dispersion of friendly forces causes parallax to the target. Figure 2-19 illustrates use of friendly-based quadrants.

Maximum engagement line. An MEL is the linear depiction of the farthest limit of effective fire for a weapon or unit. This line is determined both by the weapon's or unit's maximum effective range and by the effects of terrain. For example, slope, vegetation, structures, and other features provide cover and concealment that may prevent the weapon from engaging out to the maximum effective range. An MEL serves several purposes. The commander may use it to prevent crews from engaging beyond the maximum effective range, to define criteria for the establishment of triggers, and to delineate the maximum extent of battle space on the sector sketch.

Restrictive fire line. An RFL is a linear fire control measure beyond which engagement is prohibited without coordination. In the offense, the commander may designate an RFL to prevent a base of fire element from firing into the area where an assaulting element is maneuvering.

This technique is particularly important when armored vehicles support the maneuver of infantry squads. In the defense, the commander may establish an RFL to prevent the unit from engaging a friendly rifle squad positioned in restricted terrain on the flank of an avenue of approach.

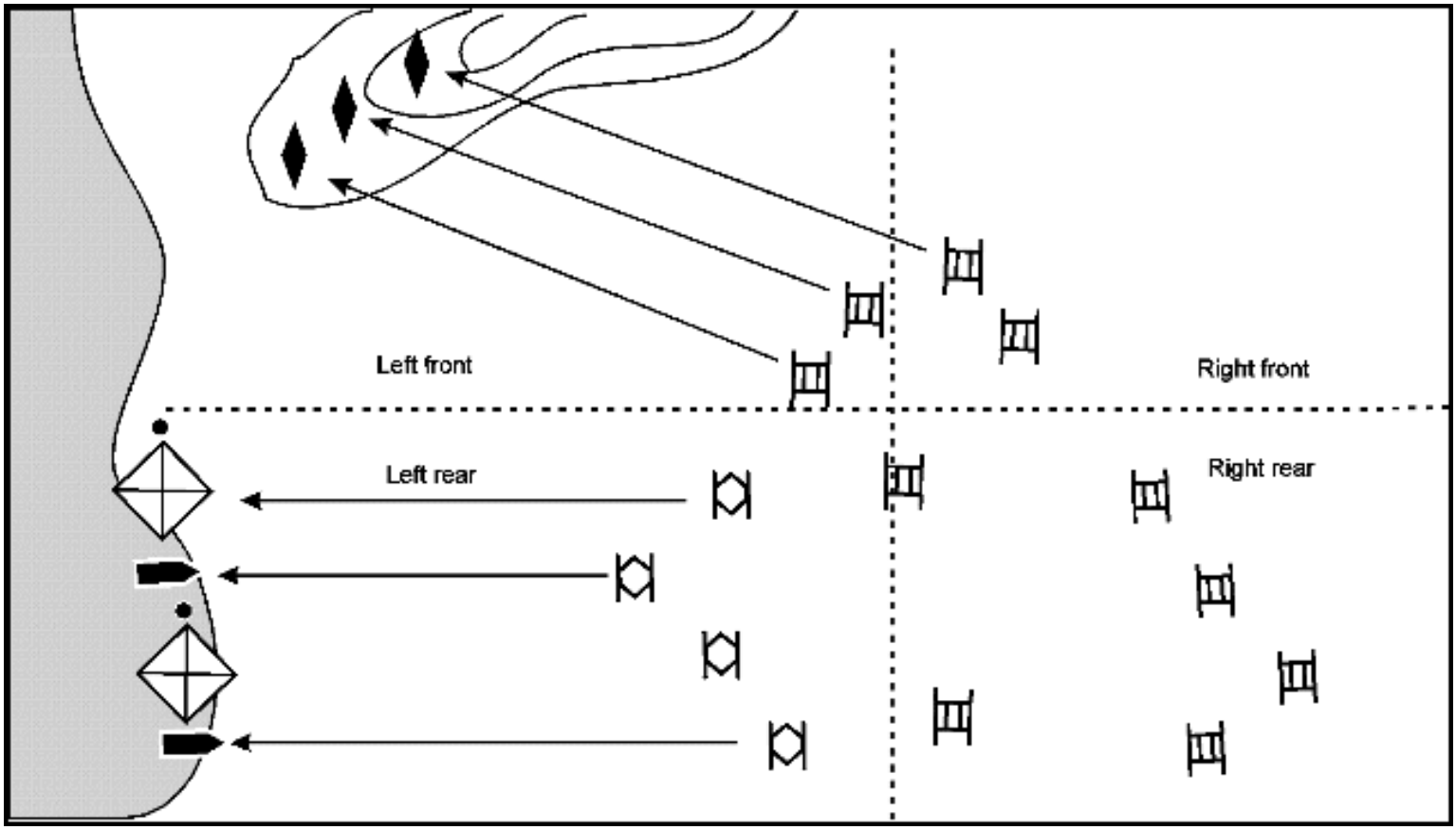


Figure 2-19. Example of friendly-based quadrants.

Final protective line. The FPL is a line of fire established where an enemy assault is to be checked by the interlocking fires of all available weapons. The unit reinforces this line with protective obstacles and with final protective fires (FPF) whenever possible. Initiation of the FPF is the signal for elements, crews, and individual soldiers to shift fires to their assigned portion of the FPL. They spare no ammunition in repelling the enemy assault, a particular concern for machine guns and other automatic weapons.

Threat-based fire control measures

The company team commander uses threat-based fire control measures to focus and control fires by directing the unit to engage a specific enemy element rather than to fire on a point or area. The following paragraphs describe the TTP associated with this type of control measure.

Fire patterns. Fire patterns are a threat-based measure designed to distribute the fires of a unit simultaneously among multiple, similar targets. They are most often used by platoons to distribute fires across an enemy formation. Leaders designate and adjust fire patterns based on terrain and the anticipated enemy formation. The basic fire patterns, illustrated in Figure 2-20, are the following:

- Frontal fire.

- Cross fire.
- Depth fire.

Frontal fire. Leaders may initiate frontal fire when targets are arrayed in front of the unit in a lateral configuration. Weapon systems engage targets to their respective fronts. For example, the left flank weapon engages the left-most target; the right flank weapon engages the right-most target. As targets are destroyed, weapons shift fires toward the center of the enemy formation and from near to far.

Cross fire. Leaders initiate cross fire when targets are arrayed laterally across the unit's front in a manner that permits diagonal fires at the enemy's flank or when obstructions prevent unit weapons from firing frontally. Right flank weapons engage the left-most targets; left flank weapons engage the right-most targets. Firing diagonally across an engagement area provides more flank shots, thus increasing the chance of kills; it also reduces the possibility that friendly elements will be detected if the enemy continues to move forward. As enemy targets are destroyed, weapons shift fires toward the center of the enemy formation.

Depth fire. Leaders initiate depth fire when targets are dispersed in depth, perpendicular to the unit. Center weapons engage the closest targets; flank weapons engage deeper targets. As the unit destroys targets, weapons shift fires toward the center of the enemy formation.

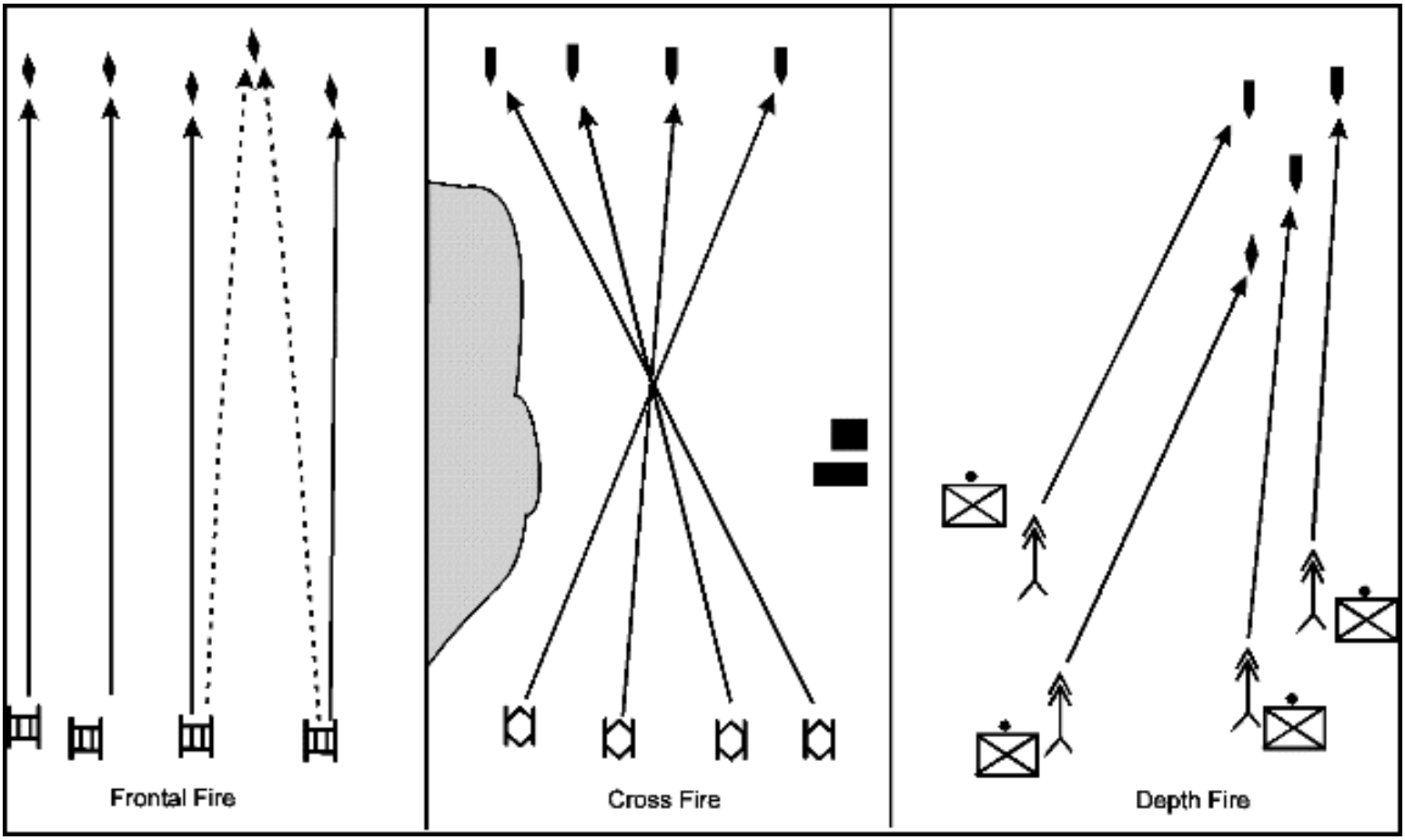


Figure 2-20. Examples of fire patterns.

Target array. Target array permits the commander to distribute fires when the enemy force is concentrated and terrain-based controls are inadequate. This threat-based distribution measure is created by superimposing a quadrant pattern over an enemy formation. The pattern is centered on the enemy formation, with the axes running parallel and perpendicular to the enemy's direction of travel. Quadrants are described using their relative locations. The examples in Figure 2-21 illustrate the target array technique.

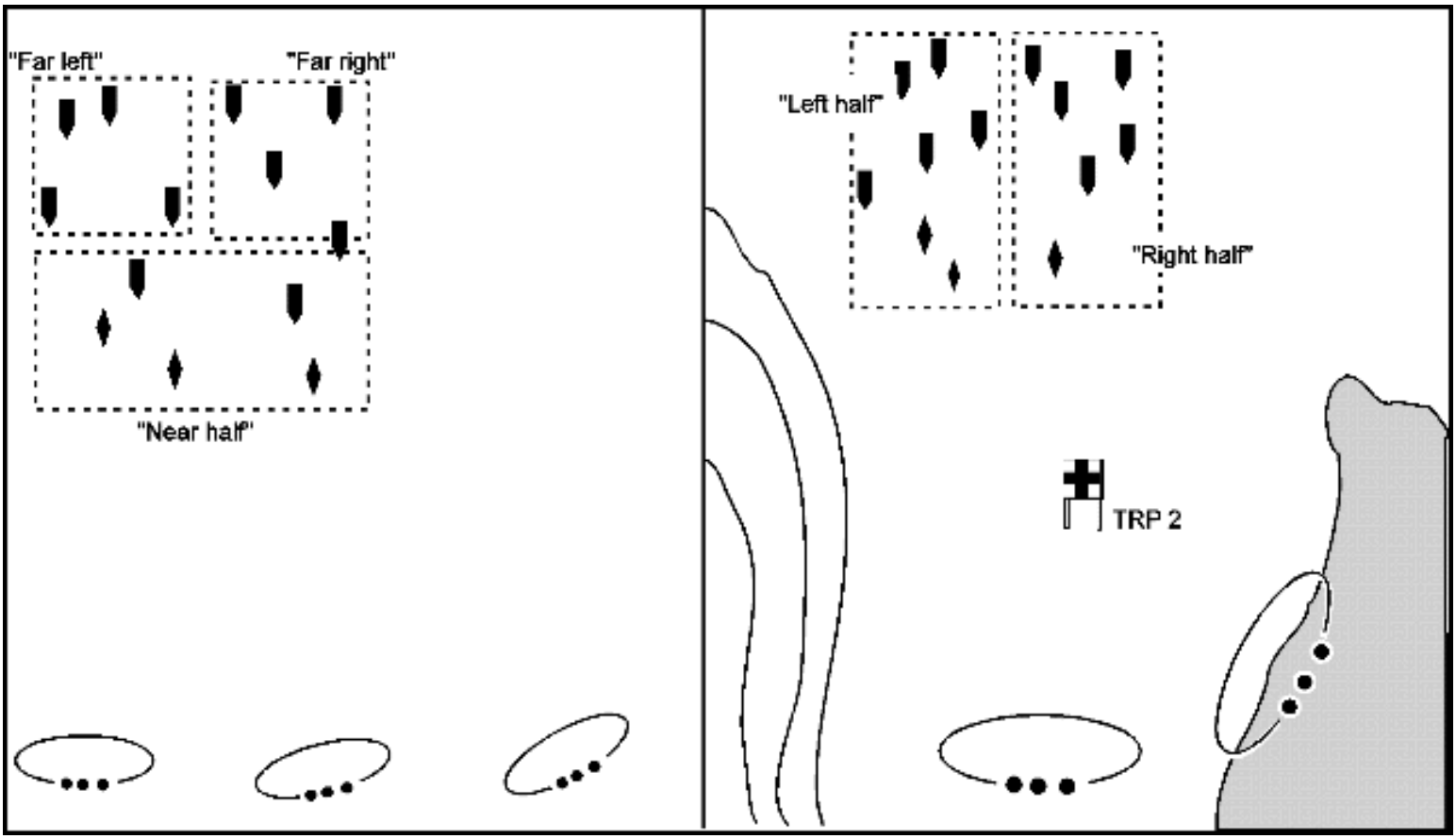


Figure 2-21. Examples of target array.

Engagement priorities. Engagement priorities, which entail the sequential ordering of targets to be engaged, can serve one or more of the following critical fire control functions:

- **Prioritize high-payoff targets.** In concert with his concept of the operation, the commander determines which target types provide the greatest payoff; he can then set these as a unit engagement priority. For example, he may decide that destroying enemy engineer assets is the best way to prevent the enemy from breaching an obstacle.
- **Employ the best weapons for the target.** Establishing engagement priorities for specific friendly systems increases the effectiveness with which the unit employs its weapons. As an example, the engagement priority for the company team's tanks could be enemy tanks first, then enemy PCs; this would decrease

the chance that the team's lighter systems will have to engage enemy armored vehicles.

- **Distribute the unit's fires.** Establishing different priorities for similar friendly systems helps to prevent overkill and achieve effective distribution of fires. For example, the commander may designate the enemy's tanks as the initial priority for one BFV platoon while making the enemy's PCs the priority for another platoon. This would decrease the chance of multiple TOWs being launched against two enemy tanks while the dangers posed by the PCs are ignored.

Weapons ready posture. The weapons ready posture is a means by which leaders use their estimate of the situation to specify the ammunition and range for the most probable anticipated engagement. The ammunition selection is dependent on the target type, but the leader may adjust it based on engagement priorities, desired effects, and effective range. Range selection is dependent on the anticipated engagement range; it is affected by terrain intervisibility, weather, and light conditions. Within the company team, weapons ready posture affects the types and quantities of ammunition loaded in ready boxes, stowed in ready racks, and carried by rifle squads. The following considerations apply:

- For tanks, weapons ready posture is defined as the battlecarry.
- For BFVs, weapons ready posture covers the selected ammunition and the indexed range.
- For infantry squads, weapons ready posture is the selected ammunition and indexed range for individual and crew-served weapons. For example, an M203 grenadier whose most likely engagement is to cover dead space at 200 meters from his position might load HEDP and set 200 meters on his quadrant sight. To prepare for an engagement in a wooded area where engagement ranges are extremely short, an antiarmor specialist might dismount with an AT4 instead of a Javelin.

Trigger. A trigger is a specific set of conditions that dictates initiation of fires. Often referred to as engagement criteria, a trigger specifies the circumstances in which subordinate elements are to engage. The circumstances can be based on a friendly or enemy event. For example, the trigger for a friendly platoon to initiate engagement could be three or more enemy combat vehicles passing or crossing a given point or line. This line can be any natural or man-made linear feature, such as a road, ridge line, or stream. It may also be a line perpendicular to the unit's orientation, delineated by one or more references points.

Weapons control status. The three levels of weapons control status outline the conditions, based on target identification criteria, under which friendly elements may engage. The commander sets and adjusts the weapons control status based on friendly and enemy disposition and the clarity of the situation. In general, the higher the probability of fratricide, the more restrictive the weapons control status. The three levels, in descending order of restrictiveness, are the following:

- **WEAPONS HOLD.** Engage only if engaged or ordered to engage.
- **WEAPONS TIGHT.** Engage only targets that are positively identified as enemy.
- **WEAPONS FREE.** Engage any targets that are not positively identified as friendly.

As an example, the commander may establish the weapons control status as WEAPONS HOLD when friendly forces are conducting a passage of lines. By maintaining situational awareness of his own elements and adjacent friendly forces, however, he may be able to lower the weapons control status. In such a case, the commander may be able to set a WEAPONS FREE status when he knows there are no friendly elements in the vicinity of the engagement. This permits his elements to engage targets at extended ranges even though it is difficult to distinguish targets accurately at ranges beyond 2,000 meters under battlefield conditions. A further consideration is that the weapons control status is extremely important for forces using combat identification systems; establishing the weapons control status as WEAPONS FREE permits leaders to engage an unknown target when they fail to get a friendly response.

Rules of engagement. ROE specify the circumstances and limitations under which forces may engage; they include definitions of combatant and noncombatant elements and prescribe the treatment of noncombatants. Factors influencing ROE are national command policy, the mission and commander's intent, the operational environment, and the law of war. ROE always recognize a soldier's right of self-defense; at the same time, they clearly define circumstances in which he may fire.

Weapons safety posture. Weapons safety posture is an ammunition handling instruction that allows the commander to precisely control the safety of his unit's weapons. Leaders' supervision of the weapons safety posture, as well as soldiers' adherence to it, minimizes the risk of accidental discharge and fratricide. Table 2-4 outlines procedures and considerations for the company team in using the four weapons safety postures, listed in ascending order of restrictiveness:

- **AMMUNITION LOADED.**
- **AMMUNITION LOCKED.**
- **AMMUNITION PREPARED.**
- **WEAPONS CLEARED.**

In setting and adjusting the weapons safety posture, the commander must weigh the desire to prevent accidental discharges against the requirement for immediate action based on the enemy threat. If the threat of direct contact is high, for example, the commander may establish the weapons safety posture as AMMUNITION LOADED. If the requirement for action is less immediate, he may lower the posture to AMMUNITION LOCKED or AMMUNITION PREPARED. Additionally, the commander may designate different weapons safety

postures for different elements of the unit. For example, in the attack position, tanks and BFVs may switch to AMMUNITION LOADED while rifle squads riding in BFVs remain at AMMUNITION LOCKED.

Table 2-4. Weapons safety posture levels.

ELEMENT SAFETY POSTURE	TANK WEAPONS AND AMMUNITION	BFV WEAPONS AND AMMUNITION	INFANTRY SQUAD WEAPONS AND AMMUNITION
AMMUNITION LOADED	Main gun ammunition loaded. Machine gun ammunition on feed tray; bolt locked to rear. Smoke grenades in launchers. Weapons on electrical safe.	25-mm rounds cycled to bolt. Coax rounds on feed tray; bolt locked to rear. TOW missiles in launchers. Smoke grenades in launchers. Weapons on electrical safe.	Rifle rounds chambered. Machine gun and SAW ammunition on feed tray; bolt locked to rear. Grenade launcher loaded. Weapons on manual safe.
AMMUNITION LOCKED	Main gun ammunition in ready rack. Machine gun ammunition on feed tray; bolt locked forward. Smoke grenades in launchers. Weapons on electrical safe.	25-mm rounds loaded into feeder, but not cycled to bolt TOW missiles in launchers. Smoke grenades in launchers. Weapons on electrical safe.	Magazines locked into rifles. Machine gun and SAW ammunition on feed tray; bolt locked forward Grenade launcher unloaded.
AMMUNITION PREPARED	Main gun ready rack filled. Machine gun ammunition boxes filled. Smoke grenades in launchers.	25-mm ready boxes filled. Coax ammunition boxes filled. TOW missiles in launchers. Smoke grenades in launchers.	Magazines, ammunition boxes, launcher grenades, and hand grenades prepared but stowed in pouches/vests.

WEAPONS CLEARED	Main gun ready rack filled. Machine gun cleared, with bolts locked to the rear.	25-mm feeder removed; feeder and chamber cleared. Coax bolt group removed and chamber cleared.	Magazine, ammunition boxes, and launcher grenades removed; weapons cleared.

Engagement techniques. Engagement techniques are effects-oriented fire distribution measures. The following engagement techniques, the most common in company team operations, are covered in this discussion:

- Point fire.
- Area fire.
- Volley fire.
- Alternating fire.
- Observed fire.
- Sequential fire.
- Time of suppression.
- Reconnaissance by fire.

Point fire. Point fire entails concentrating the effects of a unit's fire against a specific, identified target such as a vehicle, machine gun bunker, or ATGM position. When leaders direct point fire, all of the unit's weapons engage the target, firing until it is destroyed or the required time of suppression has expired. Employing converging fires from dispersed positions makes point fire more effective because the target is engaged from multiple directions. The unit may initiate an engagement using point fire against the most dangerous threat, then revert to area fire against other, less threatening point targets. (**NOTE:** Use of point fire is fairly rare because a unit seldom encounters a single, clearly identified enemy weapon.)

Area fire. Area fire involves distributing the effects of a unit's fire over an area in which enemy positions are numerous or are not obvious. If the area is large, leaders assign sectors of fire to subordinate elements using a terrain-based distribution method such as the quadrant technique. Typically, the primary purpose of the area fire is suppression; however, sustaining effective suppression requires judicious control of the rate of fire.

Volley fire. Units employ volley fire, also referred to as simultaneous fire, to rapidly mass the effects of their fires or to gain fire superiority. For example, a unit may initiate a support by fire operation with volley fire, then revert to alternating or sequential fire to maintain suppression. Volley fire is also employed to negate the low probability of hit and kill of certain antiarmor weapons. As an example, a rifle squad may employ volley fire with its AT4s to ensure rapid destruction of a BMP

that is engaging a friendly position.

Alternating fire. In alternating fire, pairs of elements continuously engage the same point or area target one at a time. For example, a company team may alternate fires of two platoons; a tank platoon may alternate the fires of its sections; or an infantry platoon may alternate the fires of a pair of machine guns. Alternating fire permits the unit to maintain suppression for a longer duration than does volley fire; it also forces the enemy to acquire and engage alternating points of fire.

Observed fire. Observed fire is normally used when the company team is in protected defensive positions with engagement ranges in excess of 2,500 meters. It can be employed between elements of the company team, such as the tank platoon lasing and observing while the BFV platoon fires, or between sections of a platoon. The commander or platoon leader directs one element or section to engage. The remaining elements or section observes fires and prepares to engage on order in case the engaging element consistently misses its targets, experiences a malfunction, or runs low on ammunition. Observed fire allows for mutual observation and assistance while protecting the location of the observing elements.

Sequential fire. Sequential fire entails the subordinate elements of a unit engaging the same point or area target one after another in an arranged sequence. For example, a mechanized infantry platoon may sequence the fires of its four BFVs to gain maximum time of suppression. Sequential fire can also help to prevent the waste of ammunition, as when an infantry rifle platoon waits to see the effects of the first Javelin before firing another. Additionally, sequential fire permits elements that have already fired to pass on information they have learned from the engagement. An example would be an infantryman who missed a BMP with AT4 fires passing range and lead information to the next soldier preparing to engage the BMP with an AT4.

Time of suppression. Time of suppression is the period, specified by the commander, during which an enemy position or force is required to be suppressed. Suppression time is typically dependent on the time it will take a supported element to maneuver. Normally, a unit suppresses an enemy position using the sustained rate of fire of its automatic weapons. In planning for sustained suppression, leaders must consider several factors: the estimated time of suppression, the size of the area being suppressed, the type of enemy force to be suppressed, range to the target, rates of fire, and available ammunition quantities. The following example lists steps that a unit might take in calculating time of suppression capabilities:

- The BFVs in a mechanized infantry platoon are given the task of suppressing an area to support the assault of another element.

- One BFV, firing 25-mm HEI-T ammunition at a sustained rate of 60 rounds per minute, expends 180 rounds (capacity of the large ready box, minus sufficient rounds for easy reloading) in three minutes.
- Given an adjusted basic load of 720 rounds of HE, a single BFV can sustain fire for four periods of three minutes, requiring three reloads of 180 rounds into the large ready box.
- A BFV crew, using a loader in the troop compartment, can reload the large ready box with 180 rounds in about three minutes if the ammunition is already prepared for loading.
- Using an individual BFV's sustained rate of fire of 60 rounds per minute and alternating the fire of sections to permit reloading (one section fires for three minutes while the other reloads), the platoon can sustain 120 rounds per minute for 24 minutes.

Reconnaissance by fire. Reconnaissance by fire is the process of engaging possible enemy locations to elicit a tactical response, such as return fire or movement. This response permits the commander and subordinate leaders to make accurate target acquisition and then to mass fires against the enemy element. Typically, the commander directs a subordinate element to conduct the reconnaissance by fire. For example, he may direct an overwatching platoon to conduct the reconnaissance by fire against a probable enemy position before initiating movement by a bounding element.

Fire commands

Fire commands are oral orders issued by commanders and leaders to focus and distribute fires as required to achieve decisive effects against the enemy. They allow leaders to rapidly and concisely articulate their firing instructions using a standard format. Unit fire commands include these elements, which are discussed in detail in the following paragraphs:

- Alert.
- Weapon or ammunition (optional).
- Target description.
- Orientation.
- Range (optional).
- Control (optional).
- Execution.

Alert

The alert specifies the elements that are directed to fire. It does not require the leader initiating the command to identify himself. Examples of the alert element (call signs and code words based on unit SOP) include the following:

- "GUIDONS" (all subordinate elements).
- "RED" (1st Platoon only).

Weapon or ammunition (optional) This element identifies the weapon and/or ammunition to be employed by the alerted elements. Leaders may designate the type and number of rounds to limit expenditure of ammunition. Examples of this element include the following:

- "TOW."
- "TWO ROUNDS SABOT."

Target description Target description designates which enemy elements are to be engaged. Leaders may use the description to focus fires or achieve distribution. Examples of target description include the following:

- "THREE PCs."
- "THREE TANKS AND TEN PCs."
- "TROOPS IN TRENCH."

Orientation This element identifies the location of the target. There are numerous ways to designate the location of target, including the following:

- Closest TRP. Example: "TRP 13."
- Clock direction. Example: "ONE O'CLOCK."
- Terrain quadrant. Example: "QUADRANT ONE."
- Friendly quadrant. Example: "LEFT FRONT."
- Target array. Example: "FRONT HALF."
- Tracer on target. Example: "ON MY TRACER."
- Laser pointer. Example: "ON MY POINTER."

Range (optional) The range element identifies the distance to the target. Announcing range is not necessary for systems that are range finder-equipped or that employ command-guided or self-guided munitions. For systems that require manual range settings, leaders have a variety of means for determining range, including the following:

- Predetermined ranges to TRPs or phase lines.
- An M1A1/M1A2 tank crew announcing the range for an M2A2-equipped platoon.
- Hand-held range finders.
- Range stadia.
- Mil reticle.

Control (optional) The commander may use this optional element to direct desired target effects, distribution methods, or engagement techniques. Subordinate leaders may include the control element to supplement the commander's instructions and achieve effective distribution. Examples of information specified in the control element include the following:

- Target array. Example: "FRONT HALF."
- Fire pattern. Example: "FRONTAL."
- Terrain quadrant. Example: "QUADRANT ONE."
- Engagement priorities. Example: "TANKS ENGAGE TANKS; BFVs ENGAGE PCs."
- Engagement technique. Example: "VOLLEY."
- Target effect. Example: "AREA."

Execution

The execution element specifies when fires will be initiated. The commander may wish to engage immediately, delay initiation, or delegate authority to engage. Examples of this element include the following:

- "FIRE."
- "AT MY COMMAND."
- "AT YOUR COMMAND."
- "AT PHASE LINE ORANGE."

Fire control process

To successfully bring direct fires against an enemy force, commanders and leaders must continuously apply the steps of the fire control process. At the heart of this process are two critical actions: rapid, accurate target acquisition and the massing of fire to achieve decisive effects on the target. Target acquisition is the detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons. Massing entails focusing fires at critical points and then distributing the fires for optimum effect. The following discussion examines target acquisition and massing of fires using these basic steps of the fire control process:

- Identify probable enemy locations and determine the enemy scheme of maneuver.
- Determine where and how to mass (focus and distribute) fire effects.
- Orient forces to speed target acquisition.
- Shift fires to refocus or redistribute their effects.

Identify probable enemy locations and determine the enemy scheme of maneuver

The commander and subordinate leaders plan and execute direct fires based on their estimate of the situation. An essential part of this estimate is the analysis of the terrain and the enemy force, which aids the commander in visualizing how the enemy will attack or defend a particular piece of terrain. A defending enemy's defensive positions or an attacking enemy's support positions are normally driven by intervisibility. Typically, there are limited points on a piece of terrain that provide both good fields of fire and adequate cover for a defender. Similarly, an attacking enemy will have only a limited selection of avenues of approach that provide adequate cover and concealment. Coupled with available intelligence, an understanding of the effects of a specific piece of terrain on maneuver will assist the commander in identifying probable enemy locations and likely avenues of approach both before and during the fight. Figure 2-22 illustrates the commander's analysis of enemy locations and scheme of maneuver; he may use any or all of the following products or techniques in developing and updating the analysis:

- A SITEMP based on the analysis of terrain and enemy.
- A spot or contact report on enemy locations and activities.
- Reconnaissance of the area of operations.

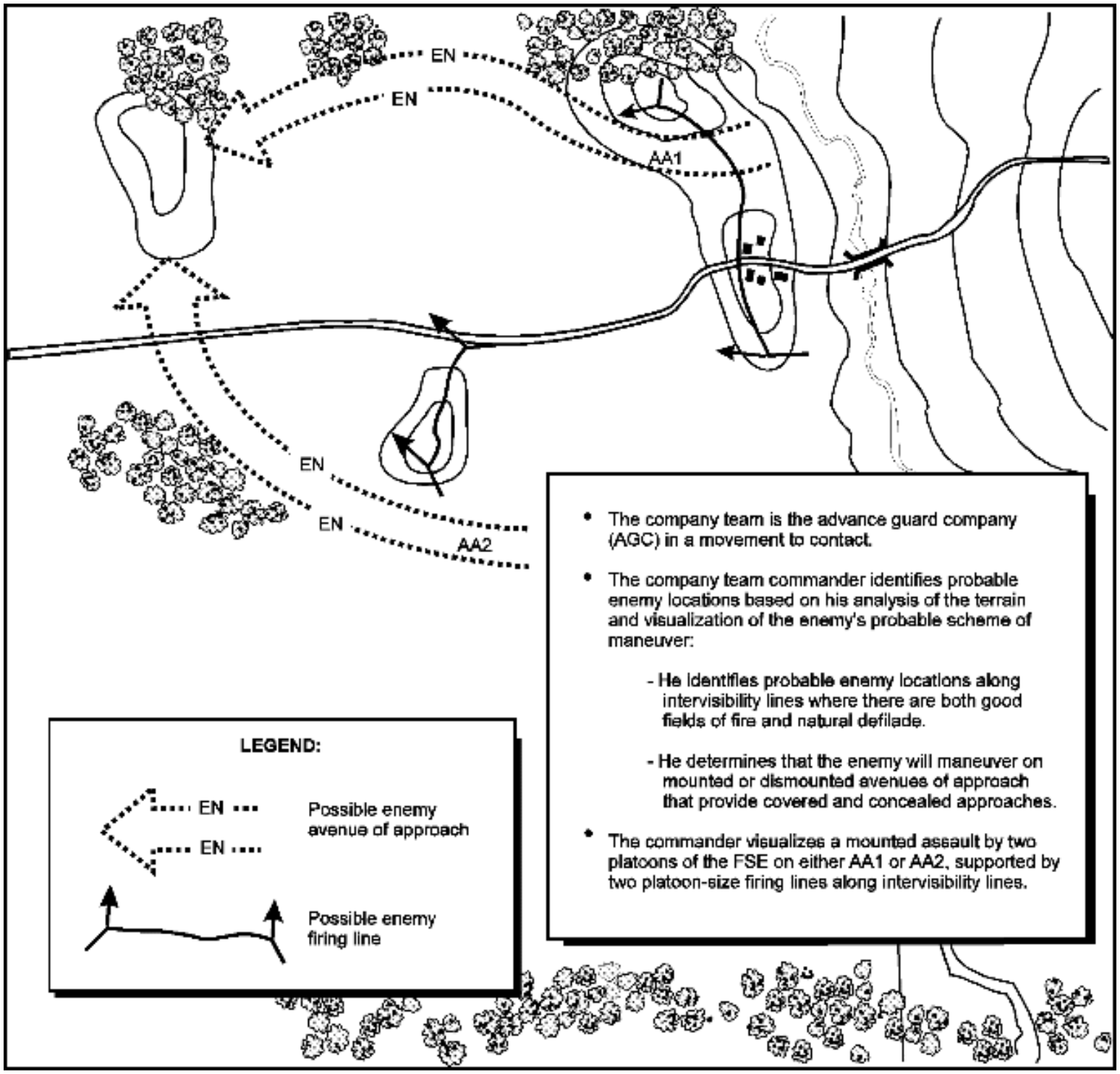


Figure 2-22. Example of identifying probable enemy locations and determining enemy scheme of maneuver.

Determine where and how to mass fires

To achieve decisive effects, friendly forces must mass their fires. Effective massing requires the commander both to focus the fires of subordinate elements and to distribute the effects of the fires. Based on his estimate of the situation and his concept of the operation, the commander identifies points where he wants to, or must, focus the unit's fires. Most often, these are locations he has identified as probable enemy positions or points along likely avenues of approach where the unit can mass fires. Because subordinate elements may not initially be oriented on the point where the commander wants to mass fires, he may issue a fire command to focus the fires. At the same time, the commander must use direct fire control measures to effectively distribute the fires of his elements, which are now focused on the same point. Figure 2-23 illustrates how the commander masses fires against the enemy.

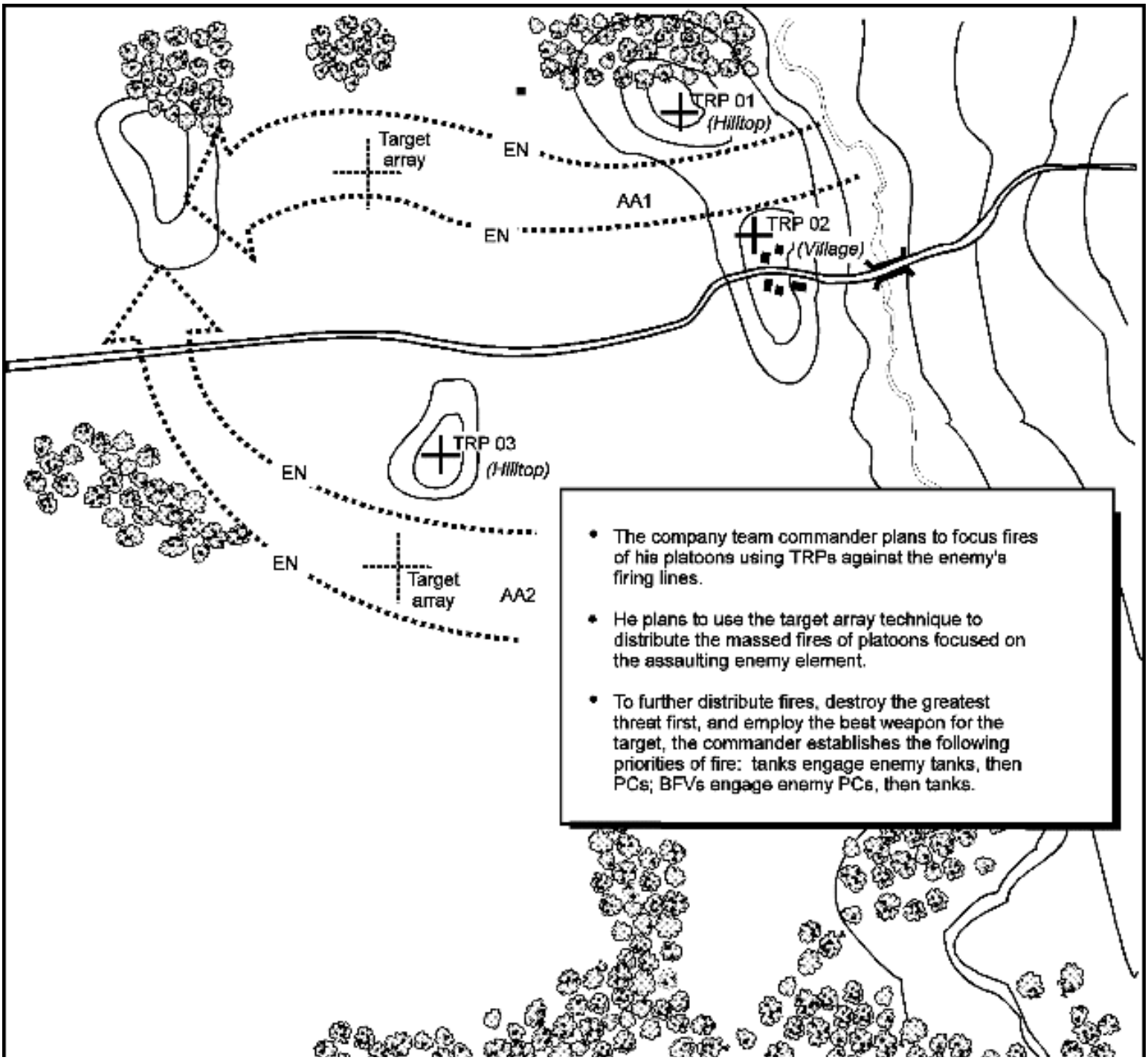
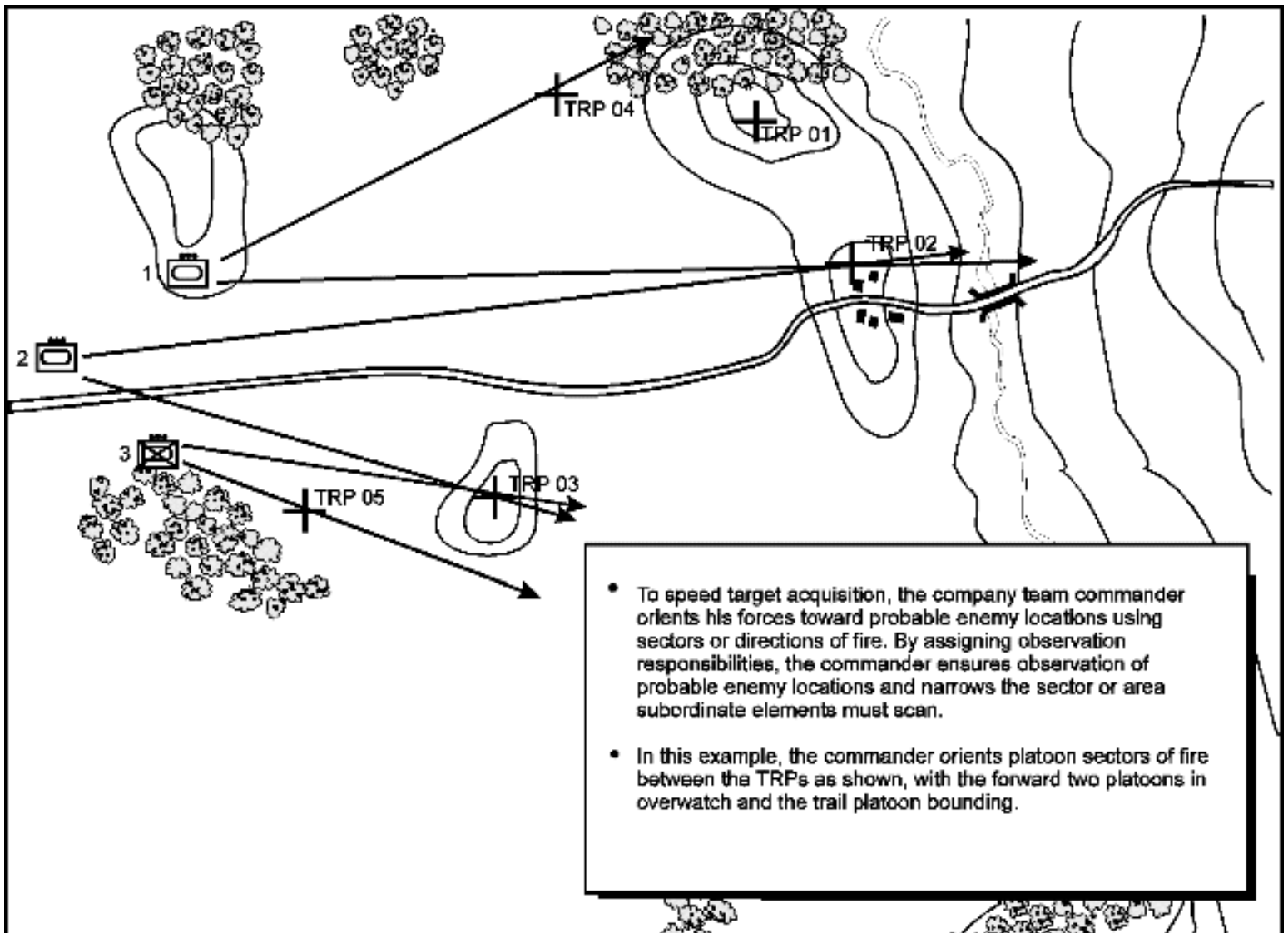


Figure 2-23. Example of determining where and how to mass (focus and distribute) fire effects to kill the enemy.

Orient forces to speed target acquisition

To effectively engage the enemy with direct fires, friendly forces must rapidly and accurately acquire enemy elements. Orienting friendly forces on probable enemy locations and on likely avenues of approach will speed target acquisition. Conversely, failure to orient subordinate elements will result in slower acquisition; this greatly increases the likelihood that enemy forces will be able to engage first. The clock direction orientation method, which is prescribed in most unit SOPs, is good for achieving all-around security; however, it does not ensure that friendly forces are most effectively oriented to detect the enemy. To achieve this critical orientation, the commander typically designates TRPs on or near probable enemy locations and avenues of approach; he orients his subordinate elements using directions of fire or sectors of fire. Normally, the gunners on crew-served weapons scan the designated direction, sector, or area while other crewmen observe alternate sectors or areas to provide all-around security. Figure 2-24 illustrates how the commander orients the company team for quick, effective acquisition of the enemy force.



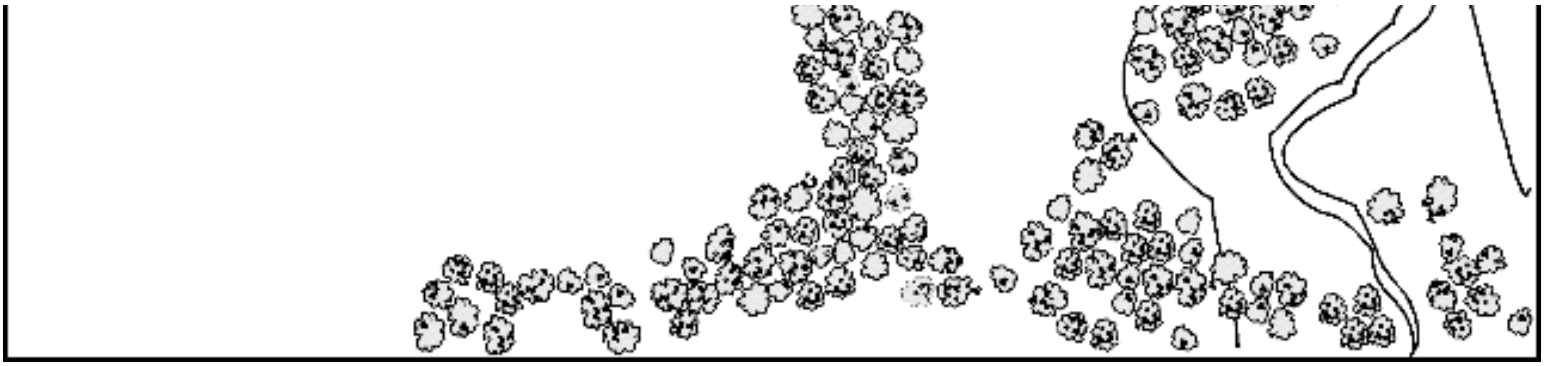


Figure 2-24. Example of orienting forces to speed target acquisition.

Shift fires to refocus and redistribute

As the engagement proceeds, leaders must shift fires to refocus and redistribute the effects based on their evolving estimate of the situation. See Figure 2-25 for an illustration of this process. Situational awareness becomes an essential part of the fire control process at this point. The commander and subordinate leaders apply the same techniques and considerations, including fire control measures, that they used earlier to focus and distribute fires. A variety of situations will dictate shifting of fires, including the following:

- Appearance of an enemy force posing a greater threat than the one currently being engaged.
- Extensive attrition of the enemy force being engaged, creating the possibility of target overkill.
- Attrition of friendly elements that are engaging the enemy force.
- Change in the ammunition status of the friendly elements that are engaging the enemy force.
- Maneuver of enemy or friendly forces resulting in terrain masking.
- Increased fratricide risk as a maneuvering friendly element closes with the enemy force being engaged.

Direct fire planning

The commander plans direct fires in conjunction with development of his estimate of the situation and completion of the plan. Determining where and how the company team can and will mass fires is also an essential step as the commander develops his concept of the operation.

After identifying probable enemy locations, the commander determines points or areas where he will focus combat power. His visualization of where and how the enemy will attack or defend will assist him in determining the volume of fires he must focus at particular points to have a decisive effect. In addition, if he intends to mass the fires of more than one subordinate element, the commander must establish the means for distributing fires effectively.

Based on where and how they want to focus and distribute fires, the commander and subordinate leaders can then establish the weapons ready postures for company team elements as well as triggers for initiating fires. Additionally, the commander must evaluate the risk of fratricide and establish controls to prevent it; these measures include designation of recognition markings, weapons control status, and

weapons safety posture.

Having determined where and how they will mass and distribute fires, the commander and subordinate leaders then must orient elements so they can rapidly and accurately acquire the enemy. They also can war-game the selected COA or concept of the operation to determine probable requirements for refocusing and redistributing fires and to establish other required controls. Also during mission preparation, the commander plans and conducts rehearsals of direct fires (and of the fire control process) based on his estimate of the situation.

The commander and his subordinate leaders must continue to apply planning procedures and considerations throughout execution. They must be able to adjust direct fires based on a continuously updated estimate of the situation, combining situational awareness with the latest available intelligence. When necessary, they must also apply effective direct fire SOPs, which are covered in the following discussion.

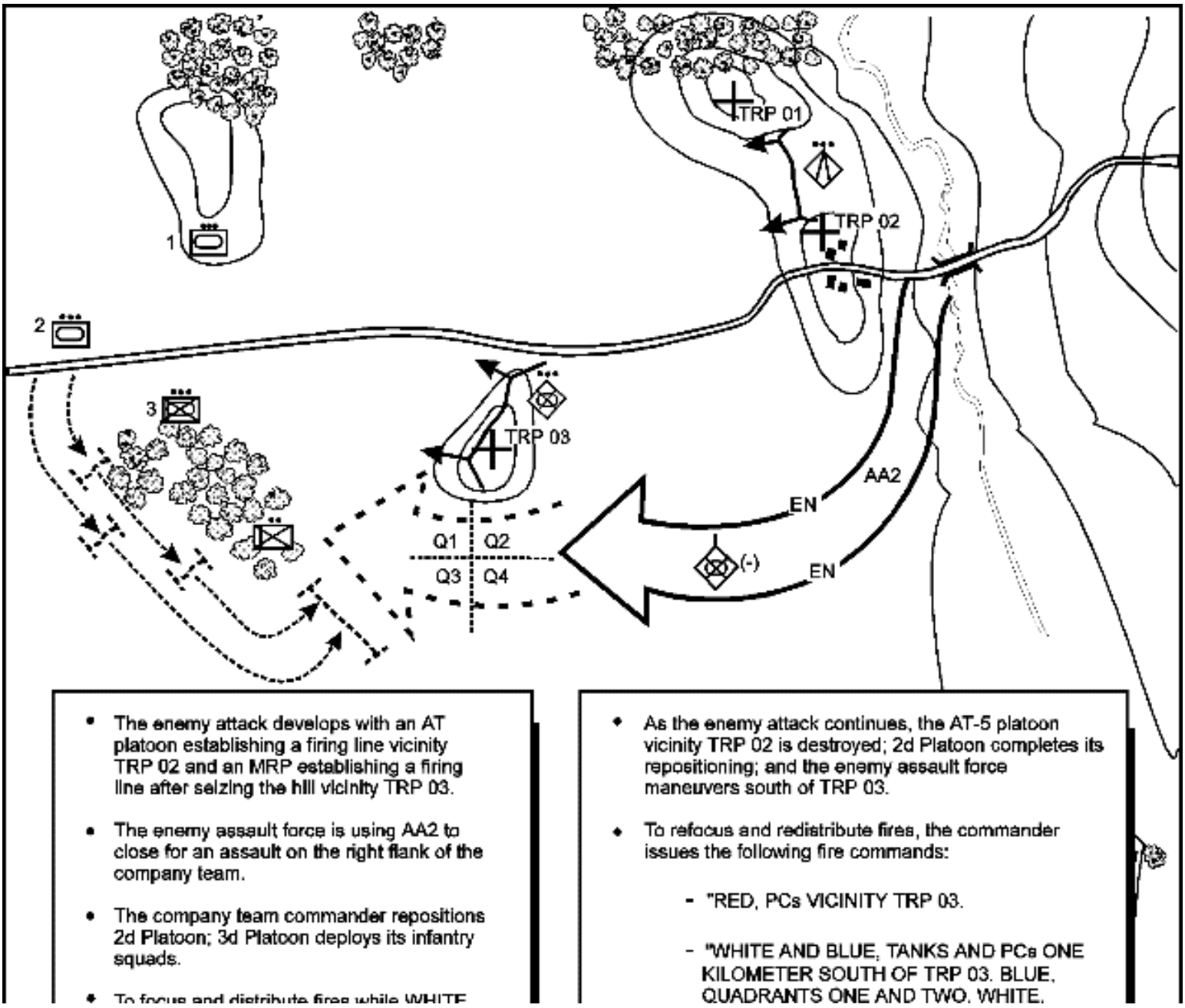


Figure 2-25. Example of shifting to refocus and redistribute fires.

Direct fire SOP

A well-rehearsed direct fire SOP ensures quick, predictable actions by all members of the company team. The commander bases the various elements of the SOP on the capabilities of his force and on anticipated conditions and situations. SOP elements should include standing means for focusing fires, distributing their effects, orienting forces, and preventing fratricide; these elements are examined later in this discussion. The commander should adjust the direct fire SOP whenever changes to anticipated and actual METT-TC factors become apparent.

If the commander does not issue any other instructions, the company team begins the engagement using the SOP. The commander can subsequently use a fire command to refocus or redistribute fires.

The following paragraphs discuss specific SOP provisions for focusing fires, distributing fires, orienting forces, and preventing fratricide.

SOP element for focusing fires

TRPs are a common means of focusing fires. One technique is to establish a standard respective position for TRPs in relation to friendly elements and then to consistently number the TRPs, such as from left to right. This allows leaders to quickly determine and communicate the location of the TRPs.

SOP element for distributing fires

Two useful means of distributing the company team's fires are engagement priorities and target array. One technique is to assign an engagement priority, by type of enemy vehicle or weapon, for each type of friendly weapon system. The target array technique can assist in distribution by assigning specific friendly elements to engage enemy elements of approximately similar capabilities. The following are example SOP elements for distributing the fires of a mechanized infantry company team (one tank platoon, two mechanized infantry platoons) moving in a wedge or line formation with the tank platoon in the center:

- Tanks engage tanks first, then PCs.
- BFVs engage PCs first, then other antitank weapons.
- If the company team masses fires at the same target, the tank platoon engages tanks; the left flank platoon engages the left half of the enemy formation; and the right flank platoon engages the right half of the enemy formation.

SOP element for orienting forces

A standard means of orienting friendly forces is to assign a primary direction of fire, using a TRP, to orient each element on a probable enemy position or likely avenue of approach. To provide all-around security, the SOP can supplement the primary direction of fire with sectors using a friendly-based quadrant. The following example SOP elements illustrate the use of these techniques:

- The center (front) platoon's primary direction of fire is TRP 2 (center) until otherwise specified; the platoon is responsible for the front two quadrants.
- The left flank platoon's primary direction of fire is TRP 1 (left) until otherwise specified; the platoon is responsible for the left two friendly quadrants (overlapping with the center platoon).
- The right flank platoon's primary direction of fire is TRP 3 (right) until otherwise specified; the platoon is responsible for the right two friendly quadrants (overlapping with the center platoon)

SOP element for preventing fratricide

A primary means of minimizing fratricide risk is to establish a standing weapons control status of WEAPONS TIGHT, which requires positive enemy identification prior to engagement. The SOP must also cover means for identifying friendly rifle squads and other dismounted elements; techniques include using arm bands, medical heat pads, or an IR light source or detonating a smoke grenade of a designated color at the appropriate time.

At the bottom line, the SOP must address the most critical requirement of fratricide prevention: maintaining situational awareness. It must direct subordinate leaders to inform the commander, adjacent elements, and subordinates whenever a friendly force is moving or preparing to move.

CHAPTER 3

Offensive Operations

Offense is the decisive form of war. With offensive action comes the ability to create and maintain the initiative and choose the time and place of decisive action. Because of their ability to move quickly and employ devastating amounts of firepower with a high level of protection, armor and mechanized infantry company teams are ideally suited to perform a variety of critical offensive operations on the modern battlefield. Company team operations accomplish the following purposes:

- Defeat, destroy, or neutralize an enemy force.
- Protect friendly forces by suppressing the enemy.
- Seize or secure key or decisive terrain.
- Develop the situation and gain critical tactical information.
- Deprive the enemy of resources.
- Hold the enemy in position.
- Disrupt an enemy attack.
- Set conditions for future operations.

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SECTION 1 - PLANNING CONSIDERATIONS

FIRE SUPPORT

As part of the top-down fire planning system, the company team commander must refine the fire plan from higher headquarters to meet his mission requirements. He incorporates the results of his METT-TC analysis and makes key locations and targets from the fire plan an integral part of the company team rehearsal. Additionally, he works with the FSO to develop a corresponding observation plan as well as triggers for initiating or shifting fires.

The commander employs supporting fires in the offense to achieve a variety of operational goals:

- Suppress enemy antitank systems that inhibit movement.
- Fix or neutralize bypassed enemy elements.
- Prepare enemy positions for an assault. Preparatory fires are normally used during a deliberate attack, with fires placed on key targets before the assault begins. Fires are initiated on call or at a prearranged time. The commander must weigh the benefits of preparatory fires against the potential loss of surprise.
- Obscure enemy observation or screen friendly maneuver. The company team can take advantage of smoke in various maneuver situations, such as during a bypass or in deception operations.
- Support breaching operations. Fires can be used to obscure or suppress enemy elements that are overwatching reinforcing obstacles. They can also obscure or suppress enemy forces on an objective area

during the conduct of an assault breach.

- Illuminate enemy positions. Illumination fires are always included in contingency plans for night attacks.

AVIATION COMBAT MISSIONS

Reconnaissance Like their ground-based counterparts, air reconnaissance operations obtain information by visual observation and other detection methods; they employ assets that must have the ability to develop the situation, process the information, and provide it to the commander in near real time. The company team commander can take advantage of the supporting aviation element's OH-58D Kiowa Warrior and AH-64 Apache helicopters to dramatically improve his 24-hour reconnaissance capability. These assets complement and extend the zone covered by the team's tank and mechanized infantry platoons. Under favorable conditions, they can furnish early information concerning the enemy's general disposition and movements to considerable depth beyond the FEBA.

Security Aviation assets can extend the company team's security area, providing the commander with enhanced situational awareness and battle-tracking capability. They can expand the team's maneuver space, provide additional reaction time, and assist in protection of the team.

Attack The primary purpose of attack helicopter operations is the destruction of enemy ground forces at decisive points of the battle. Attack helicopter units can be used in conjunction with tank and mechanized infantry elements during close operations. Helicopters are normally most effective when used in mass in continuous operations on the enemy's flanks and rear. Night operations are preferred.

Support by fire When assigned a support by fire mission, attack helicopters establish a base of fire or overwatch position. They then can engage enemy targets while tank or mechanized infantry elements move to or bypass the target area. The helicopters' role may range from suppression to complete destruction of the enemy force; their most common mission is to fix targets so other friendly elements can maneuver.

Attack by fire When the enemy situation is vague, as in a movement to contact, and the attack helicopter battalion commander has been assigned his own sector, he may establish attack by fire positions. From these positions, the attack helicopters engage their targets, but do not maneuver over them, with the intent of inflicting a specified level of damage. Attack by fire positions are best suited to a fluid battlefield. The aviation commander often has the best vantage point from which to synchronize the combat multipliers, clear fires, and prevent fratricide.

Air assault Heavy forces should always consider the use of air assault to assist them in overcoming obstacles during the seizure of critical terrain and in executing follow and support missions to preserve the momentum of the attack. Refer to FM 90-4 or FM 7-10 for a detailed discussion of air assault operations.

Communications All Army helicopters have SINCGARS radios, and the OH-58D(I) and AH-64 can transmit digital information to vehicles equipped to receive such data (currently the M1A2 tank). While the radio is the primary means of tactical communications, however, face-to-face contact is still the best method of passing information between air and ground elements. Whenever the situation permits, aviation leaders should land their aircraft, link up with their ground counterparts (such as the company team commander), and directly communicate the battlefield situation as gathered from the air.

Coordination

Aviation scout assets can easily identify enemy targets and then coordinate with the company team FIST to facilitate destruction of the targets with direct and indirect fires. In addition, prior coordination between air and ground elements, identifying friendly positions and planned movements, can eliminate a significant number of factors that contribute to fratricide, a vital concern during combined arms missions.

AIR DEFENSE ARTILLERY

BSFVs, Bradley Linebackers, or HMMWV-mounted Stinger sections may be attached to or travel with the company team. Their security must be a consideration in planning for offensive operations. The company team commander must plan for and rehearse internal air security and active air defense measures. ADA requirements and procedures are normally dictated by SOP. The commander must anticipate possible contact with enemy air assets by templating enemy helicopter and fixed-wing air corridors and avenues of approach.

MOBILITY AND SURVIVABILITY

The task force may task organize the company team with engineers as part of a deliberate or in-stride breaching operation in the offense. If the company team is tasked to serve as the advance guard or breach force for the task force, it will normally receive additional mobility assets (such as MICLICs, ACEs, or AVLBs) based on METT-TC. (**NOTE:** Refer to FM 90-13-1 and/or FM 90-7 for a more detailed discussion of mobility and survivability operations and support.)

COMBAT SERVICE SUPPORT

The main purpose of CSS in the offense is to assist maneuver elements in maintaining the momentum of the attack. Key CSS planning considerations for company team offensive operations include the following:

- Increased consumption of Class III supplies.
- Higher casualty rates.
- Vehicle maintenance requirements.

In the offense, CSS functions are performed as far forward as the tactical situation allows. Team trains remain one terrain feature (or about 1 kilometer) behind the combat formations. CSS elements move forward as required to evacuate casualties and conduct resupply. The 1SG reports the team's combat status to the task force combat trains CP and requests resupply of Class III and V as needed.

SECTION 2 - TACTICAL MOVEMENT

INTRODUCTION

The purpose of tactical movement is to move units on the battlefield and prepare them for contact. This section focuses on the movement techniques and formations that, in combination, provide the commander with options for moving his unit. The various techniques and formations have unique advantages and disadvantages. Some movement techniques are secure yet slow, while others are faster but less secure. Some formations work well in certain types of terrain or tactical situations, but are less effective in others.

The task force may dictate which movement techniques and formations the company team will use in a particular situation. This decision, however, normally falls to the team commander. His primary goals are to balance the requirements of speed and security and to conduct movement so the smallest possible element of the team makes contact with the enemy.

In developing the company team movement plan, the commander must assess METT-TC factors to determine which techniques and formations will allow him to maintain the correct balance of speed and security to best accomplish his mission. He also must determine how and when the unit will transition to more secure or more rapid techniques and/or formations based on the situation. None of the movement techniques or formations discussed in this section should be considered inflexible or immutable. The commander must always be prepared to adapt them to the situation at hand.

MOVEMENT TECHNIQUES

The company team commander selects from the three movement techniques (traveling, traveling overwatch, and bounding overwatch) based on several battlefield factors:

- The likelihood of enemy contact.
- The type of contact expected.
- Availability of an overwatch element.
- The terrain over which the moving element will pass.
- The balance of speed and security required during movement.

Traveling

Traveling is characterized by continuous movement by all company team elements. It is best suited to situations in which enemy contact is unlikely and speed is important.

> **NOTE:** Organization of the company team in both traveling overwatch and bounding overwatch consists of a lead element (also called the bounding element in bounding overwatch) and a trail (or overwatch) element. The commander constitutes these elements using varying combinations of company team elements; his decision must be based on the results of his METT-TC analysis. As an example, the lead element might be one platoon and the XO’s vehicle, overwatched by the remaining two platoons, the commander, and the FSO.

Traveling overwatch

This is an extended form of traveling that provides additional security when speed is desirable but contact is possible. The lead element moves continuously. The trail element moves at various speeds and may halt periodically to overwatch movement of the lead element.

Dispersion between the two elements must be based on the trail element's ability both to see the lead element and to provide immediate suppressive fires in case the lead element is engaged. The intent is to maintain depth, provide flexibility, and maintain the ability to maneuver even if contact occurs, although a unit ideally should make contact while moving in bounding overwatch rather than traveling overwatch.

Bounding overwatch

Bounding overwatch is used when contact is expected. It is the most secure, but slowest, movement technique. The purpose of bounding overwatch is to deploy prior to contact, giving the unit the ability to protect a bounding element by immediately suppressing an enemy force.

In all types of bounding, the overwatch element is assigned sectors to scan while the bounding element uses terrain to achieve cover and concealment. The bounding element should avoid masking the fires of the overwatch element; it must never move beyond the range at which the overwatch element can effectively suppress likely or suspected enemy positions. The company team can employ either of two bounding methods, alternate bounds and successive bounds; these are discussed in the following paragraphs.

Alternate bounds

Covered by the rear element, the lead element moves forward, halts, and assumes overwatch positions. The rear element advances past the lead element and takes up overwatch positions. This sequence continues as necessary, with only one element moving at a time. This method is usually more rapid than successive bounds.

Successive bounds

In the successive bounding method, the lead element, covered by the rear element, advances and takes up overwatch positions. The rear element then advances to an overwatch position roughly abreast of the lead element and halts. The lead element then moves to the next position, and so on. Only one element moves at a time, and the rear element avoids advancing beyond the lead element. This method is easier to control and more secure than the alternate bounding method, but is slower.

INFILTRATION

Infiltration is a form of maneuver that infantry units can employ in a variety of situations. During an attack, for example, the company team may encounter strong enemy defensive positions. To avoid the enemy's strength, the company team commander may use stealth to move infantry elements through gaps or around the enemy positions to conduct operations in the enemy's rear area. The team's infantry may also infiltrate to conduct attacks to seize key terrain, such as a choke point that will facilitate movement of the rest of the company team, or it can infiltrate to conduct an ambush. Infiltration can also be used in many other types of operations, such reconnaissance and covert breaching.

Infiltration is normally conducted in five phases:

- **Patrol.** Locate enemy positions, and find gaps or weak areas in the enemy defense.
- **Prepare.** Conduct troop-leading procedures.
- **Infiltrate.** The primary goal is to avoid enemy contact, normally by moving in the smallest elements possible.
- **Consolidate.** Link up with other infiltrating elements, and prepare for actions on the objective.
- **Execute.** Complete the mission.

For a more detailed discussion of infiltration, refer to FM 7-10.

OVERWATCH

Overwatch is the component of tactical movement in which an element observes and, if necessary, provides direct fire support for a friendly moving element. Situational awareness is crucial for the overwatch unit, whose objective is to prevent the enemy from surprising and engaging the moving unit. The overwatch force must maintain communications with the moving element and provide early warning of enemy elements that could affect it. The overwatch must be able to support the moving element with immediate direct and indirect fires; it can do this either while stationary (as in bounding overwatch) or on the move (as in traveling overwatch). (**NOTE:** The overwatch element must also maintain 360-degree observation and security for itself.)

The key to successful overwatch is aggressive scanning of gaps and dead space within the moving element's formation and on surrounding terrain. If the overwatch is unable to scan gaps and dead space and effectively engage the enemy, it must alert the moving element of the lapse in coverage. The moving element will normally adjust its movement speed and/or formation and initiate its own overwatch until the overwatch force completes movement to a position from which it can continue the overwatch mission.

Figure 3-1 illustrates what the overwatch element must look (and listen) for as well as locations where the enemy can often be found.

Company team role

The company team may be tasked to perform an overwatch mission in support of the task force or a portion of it. In general, because of organic weapons capabilities and normal operational intervals, one company team will not normally provide overwatch for another. At this level, overwatch is usually performed by platoons, sections, or individual vehicles.

Stationary overwatch

If possible, the stationary overwatch element occupies hull-down firing positions that afford effective cover and concealment, unobstructed observation, and clear fields of fire. The leader of the overwatch element (such as the commander or the platoon or section leader) will assign sectors of observation and fire. As noted, the overwatch element is responsible for its own security during both occupation of the overwatch position and execution of the operation. A common security measure is to dismount infantry squads or loaders from the tanks to clear the overwatch position before the rest of the element occupies it.

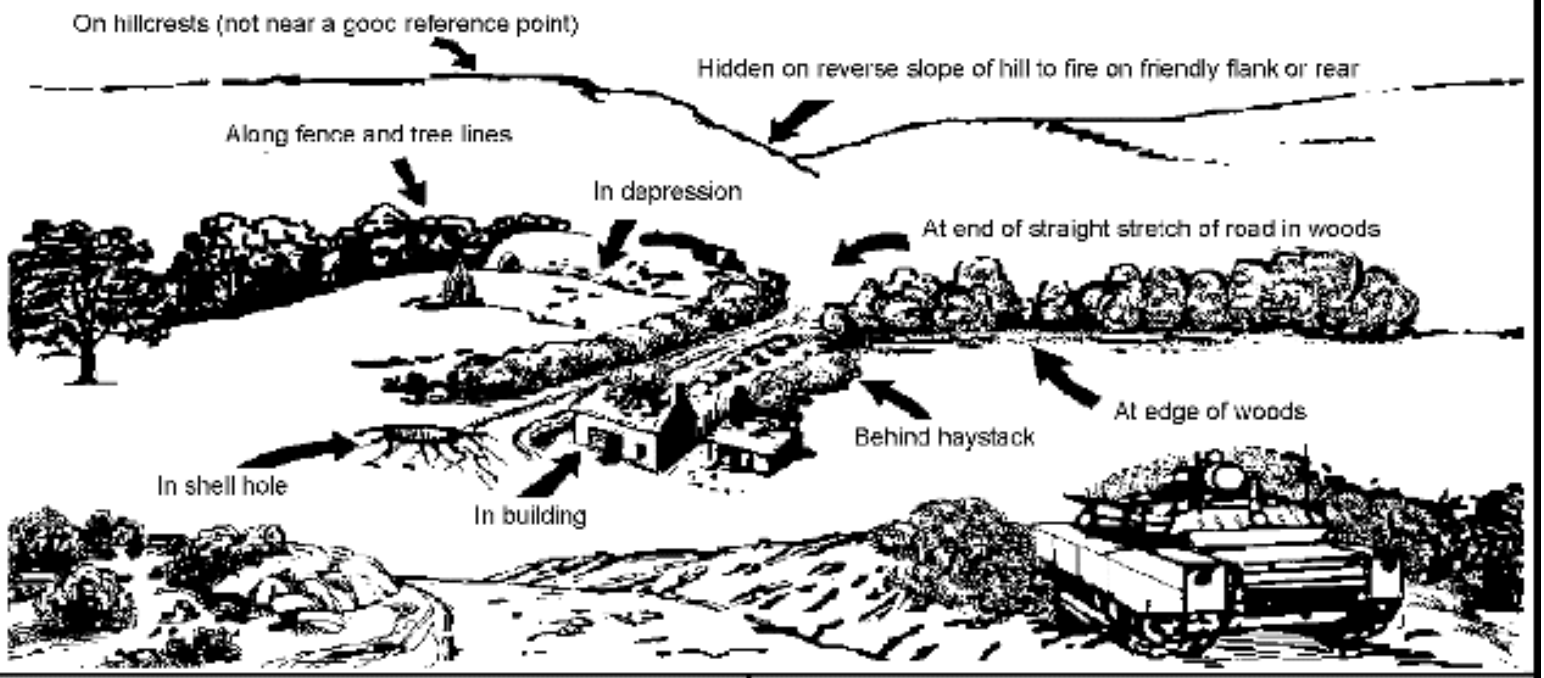
Crews aggressively scan their sectors to identify enemy elements and positions. The leader must structure the mission so the overwatch element can effectively scan for known or likely enemy positions, paying close attention to possible gaps and dead space. The element must have a clear understanding of the enemy situation so crewmen know what to look for and where to look. They use applicable search techniques and employ all available sights and other visual devices (such as binoculars and night vision goggles).

If contact is made, the overwatch element initiates a high volume of direct and indirect suppressive fires. It moves as necessary between primary and alternate positions to avoid being decisively engaged by the enemy.

Overwatch on the move

This type of overwatch is used in conjunction with the traveling overwatch movement technique. While maintaining its location in the overall unit formation, the overwatch element (usually a platoon or section) continuously scans the lead element’s battle space and closely monitors all potential gaps and dead space.

The overwatch maintains a specified interval from the lead element; this is dictated by weapons capabilities and the effects of such factors as terrain and movement speed. As needed, the overwatch can execute short halts to provide more effective observation, facilitating acquisition of enemy forces.



WHAT TO LOOK AND LISTEN FOR:	WHERE TO LOOK (see figure above):
TANKS • Engine noise, track clatter. • Exhaust smoke. • Antenna masts. • Engine, suspension heat sources. • Dust and reflections. • Firing signature (flash, blast).	• Within 2,000 meters of moving element. • Near crests, next to buildings, in tree lines.
ATGM • Smoke signature of missile in flight. • Missile controller may be up to 100 meters from launch site. • Human heat sources.	• 400 to 4,000 meters from moving element. • May be launched from behind hilltops and ridge lines. • Roofs.
OTHER ANTITANK WEAPONS • Usually well-camouflaged. • Firing signature. • Handheld and crew-served weapon systems. • Human heat sources.	• Within 1,000 meters of moving element. • 360-degree observation needed to protect against tank ambush teams using handheld weapons. • Two or more may be employed on reverse slopes, protected by mines. • Usually on a flank.

Figure 3-1. Overwatch locations and techniques.

MOVEMENT FORMATIONS

The company team commander uses formations for several purposes:

- Establish the relationship of one platoon to another on the ground.
- Allow the team to position firepower where it is needed in support of the direct fire plan.
- Establish responsibilities for sector security among platoons.
- Facilitate the execution of battle drills and directed COAs.

Like movement techniques, formations are planned based on where enemy contact is expected and how the higher commander expects to react to the contact. The company team commander must evaluate the situation and determine which formation best suits the mission and the situation.

It is not necessary for the team formation to be the same as the task force formation. It is critical, however, for the team commander to coordinate his formation with those of other elements moving in the main body task force formation. A parallel consideration is that while the company team formation establishes the relationship between the team's platoons, the actual positioning of vehicles within each platoon is dictated by the platoon formation. In some cases, the platoon may use the same formation as the company team (for example, the platoons may use the column formation within a team column). In other situations, however, platoon and team formations may be different as a result of METT-TC factors (such as the platoons moving in wedge formations within a team vee.)

An important consideration in movement planning and execution is that formations are not rigid. Spacing requirements, as well as other METT-TC considerations, will require the company team commander and subordinate leaders to adapt the basic formations as necessary. They must be ready to adjust the distance between platoons and individual vehicles based on terrain, visibility, and mission requirements.

As a rule, the company team will move in formation when using traveling or traveling overwatch. When the team is using bounding overwatch, the bounding element makes the best use of the terrain, rather than adopting a precise formation, to move effectively while maintaining adequate security.

> **NOTE: The formations shown in illustrations in this chapter are examples only; they generally are depicted without consideration of the terrain and. other METT-TC is always the deciding factors, which are always the most crucial element in the selection and execution of a formation. and Lleaders must be prepared to adapt theseir choice of formation guidelines to the specific situation.**

Column

The column is used when speed is critical, when the company team is moving through restricted terrain on a specific route, and/or when enemy contact is not likely. Each platoon normally follows directly behind the platoon in front of it. If the situation dictates, however, vehicles can disperse laterally to enhance security; Figure 3-2 illustrates this type of column movement. The column formation has the following characteristics, advantages, and limitations:

- It provides excellent control and fires to the flanks.
- It permits only limited fires to the front and rear.
- It is easy to control.
- It provides extremely limited overall security.
- Normally,Iit is normally used for traveling only.

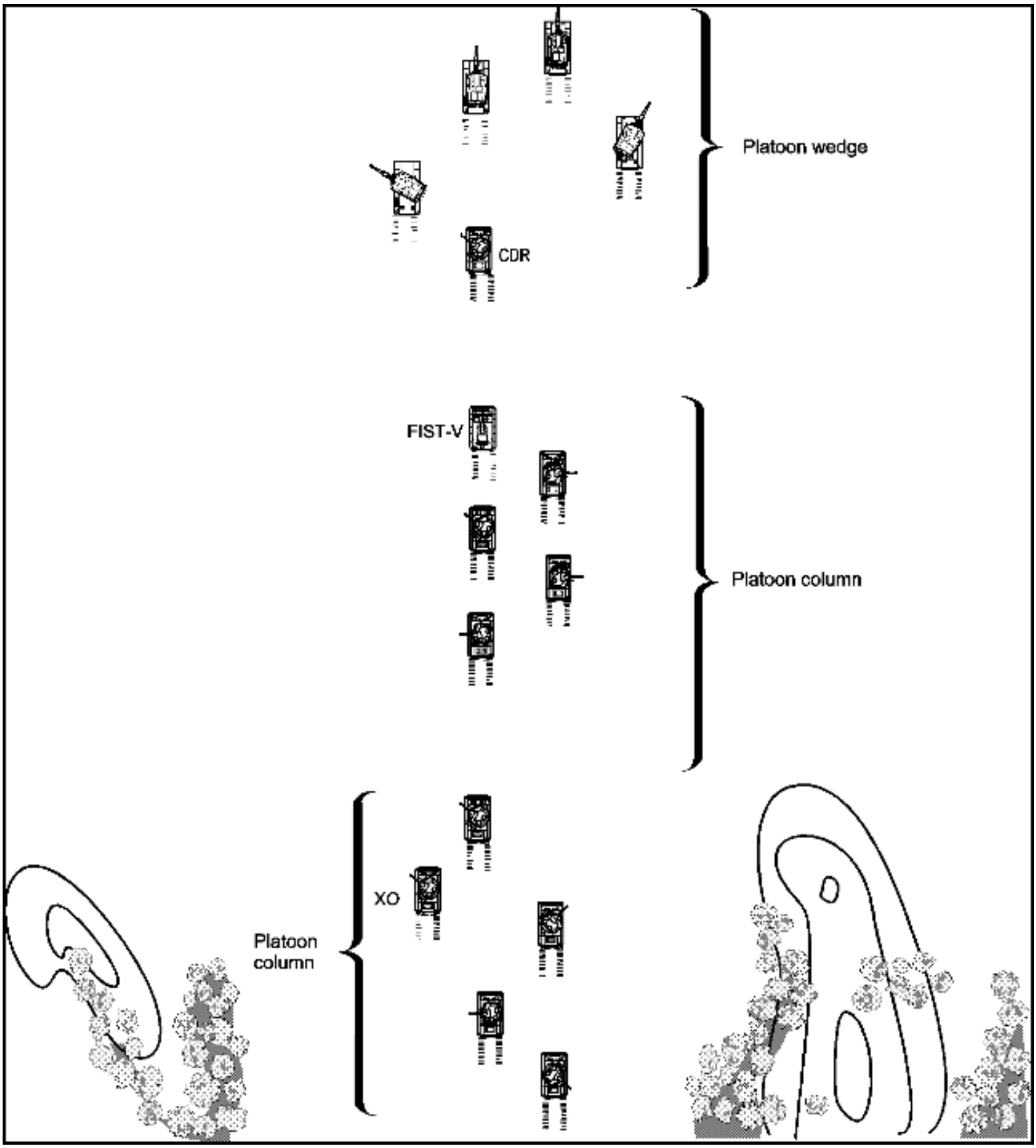


Figure 3-2. Company team in column formation with dispersal for added security.

Wedge The wedge formation, illustrated in Figure 3-3, is often used when the enemy situation is unclear or contact is possible. In the company team wedge, the lead platoon is in the center of the formation, with the remaining platoons located to the rear of and outside the lead platoon. The wedge has the following characteristics, advantages, and limitations:

- It permits excellent fires to the front and good fires to the flanks.
- It is easy to control.
- It provides good security to the flanks.
- It can be used with the traveling and traveling overwatch techniques.
- It allows rapid transition to bounding overwatch.

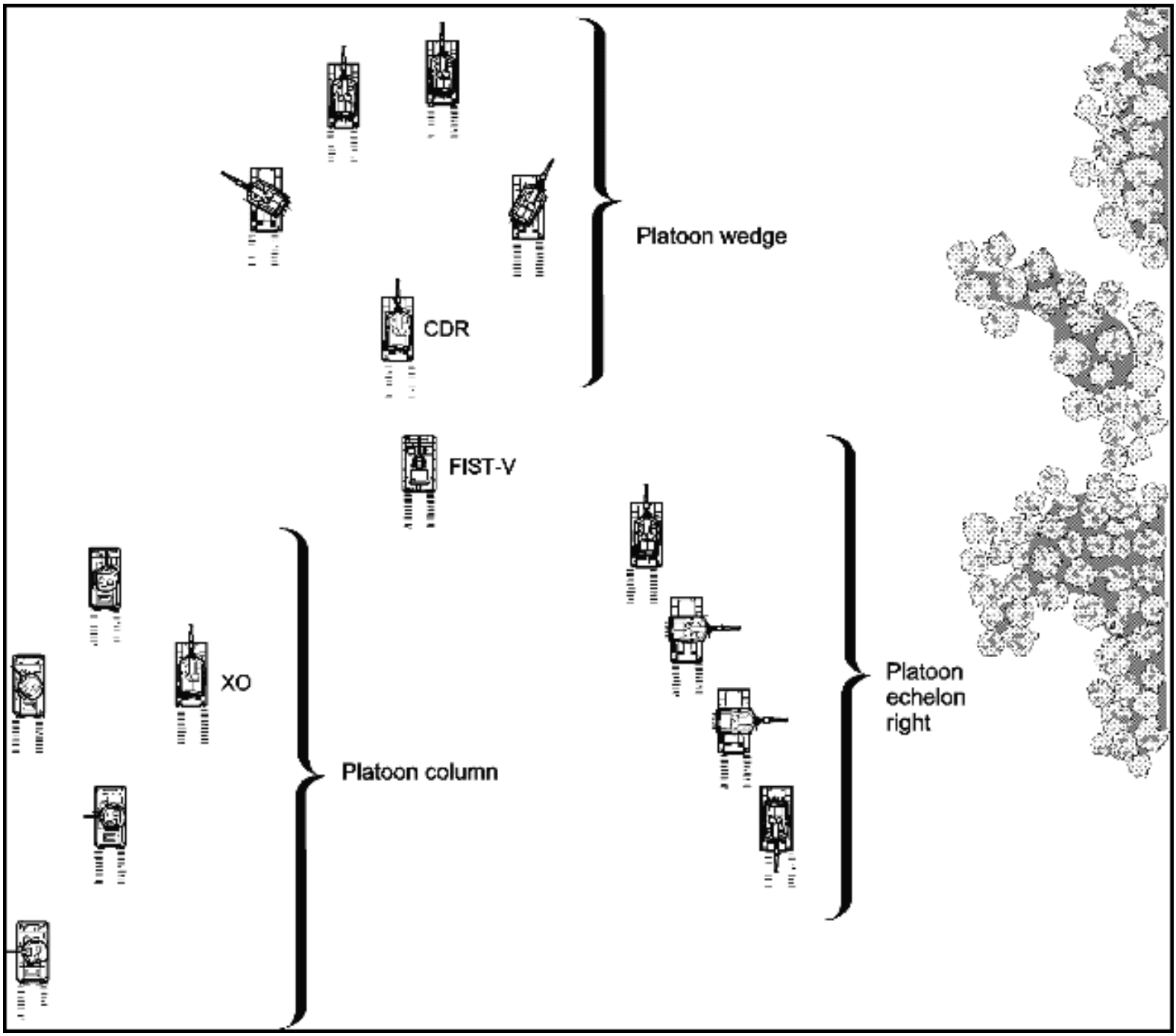


Figure 3-3. Company team in wedge formation (with different platoon formations).

Vee The vee formation, illustrated in Figure 3-4, is used when enemy contact is possible. In the company team vee, the center platoon is located in the rear of the formation, while the remaining platoons are to the front of and outside the center platoon. The vee has the following characteristics, advantages, and limitations:

- It permits more firepower to the front than the wedge and affords good fires to the flanks.
- It is more difficult to control than the wedge and makes it more difficult for vehicles to maintain proper orientation.
- It allows one platoon in the formation to maintain freedom of maneuver when contact occurs.
- It facilitates rapid deployment into any other formation.
- It can be used with the traveling and traveling overwatch techniques.
- It allows rapid transition to bounding overwatch.

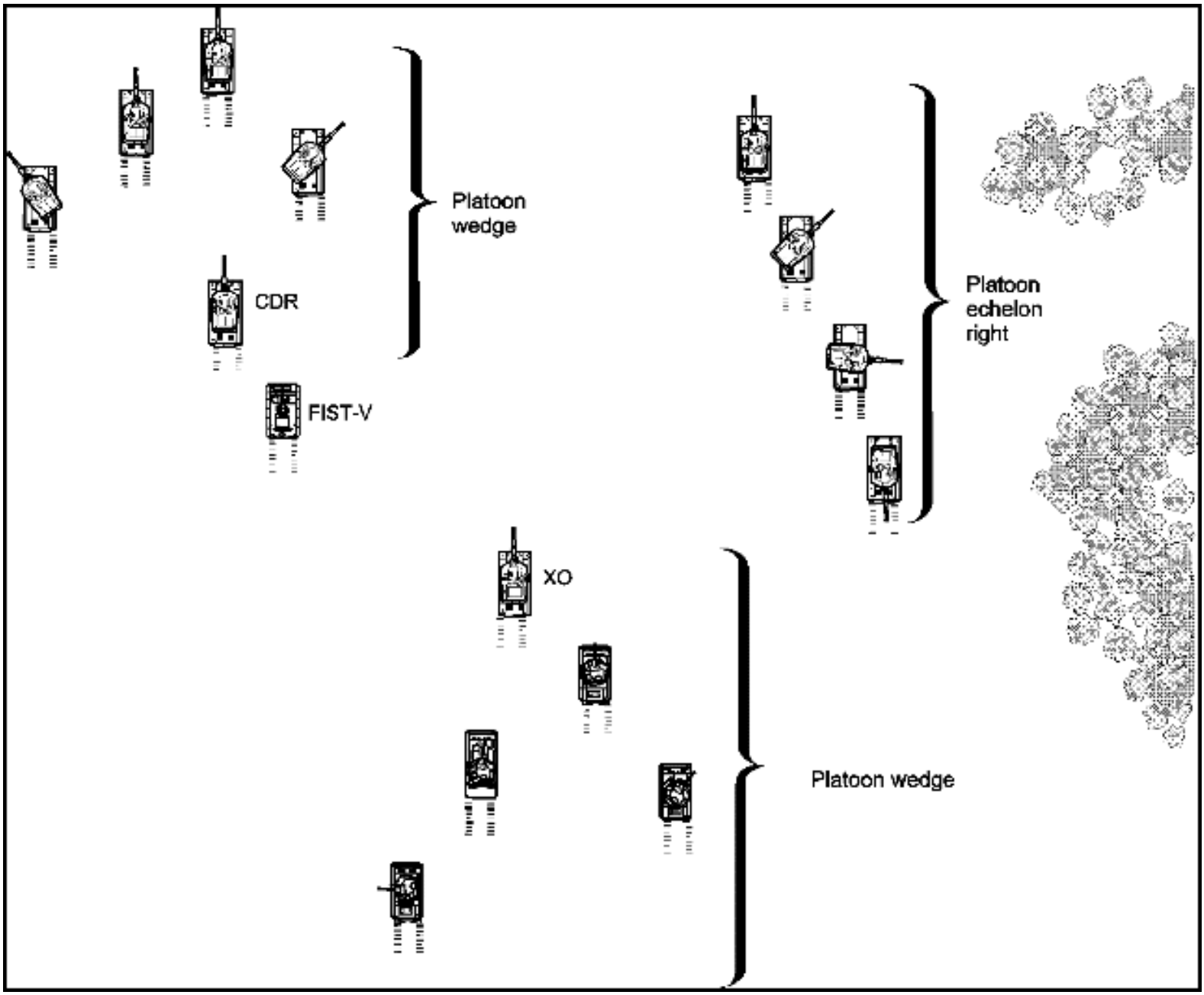


Figure 3-4. Company team in vee formation (with different platoon formations).

Line The line formation, illustrated in Figure 3-5, is primarily used when a unit or element is crossing a danger area or needs to maximize firepower to the front. In the company team line, platoons move abreast of one another and are dispersed laterally. The line formation has the following characteristics, advantages, and limitations:

- It permits maximum fires to the front or rear, but minimum fires to the flanks.
- It is difficult to control.
- It is less secure than other formations because of the lack of depth.
- It is the most difficult formation from which to make the transition to other formations.
- It may be used in the assault to maximize the firepower and/or shock effect of the heavy company team. This is normally done when there is no more intervening terrain between the unit and the enemy, when antitank systems are suppressed, and/or when the unit is exposed to artillery fire and must move rapidly.

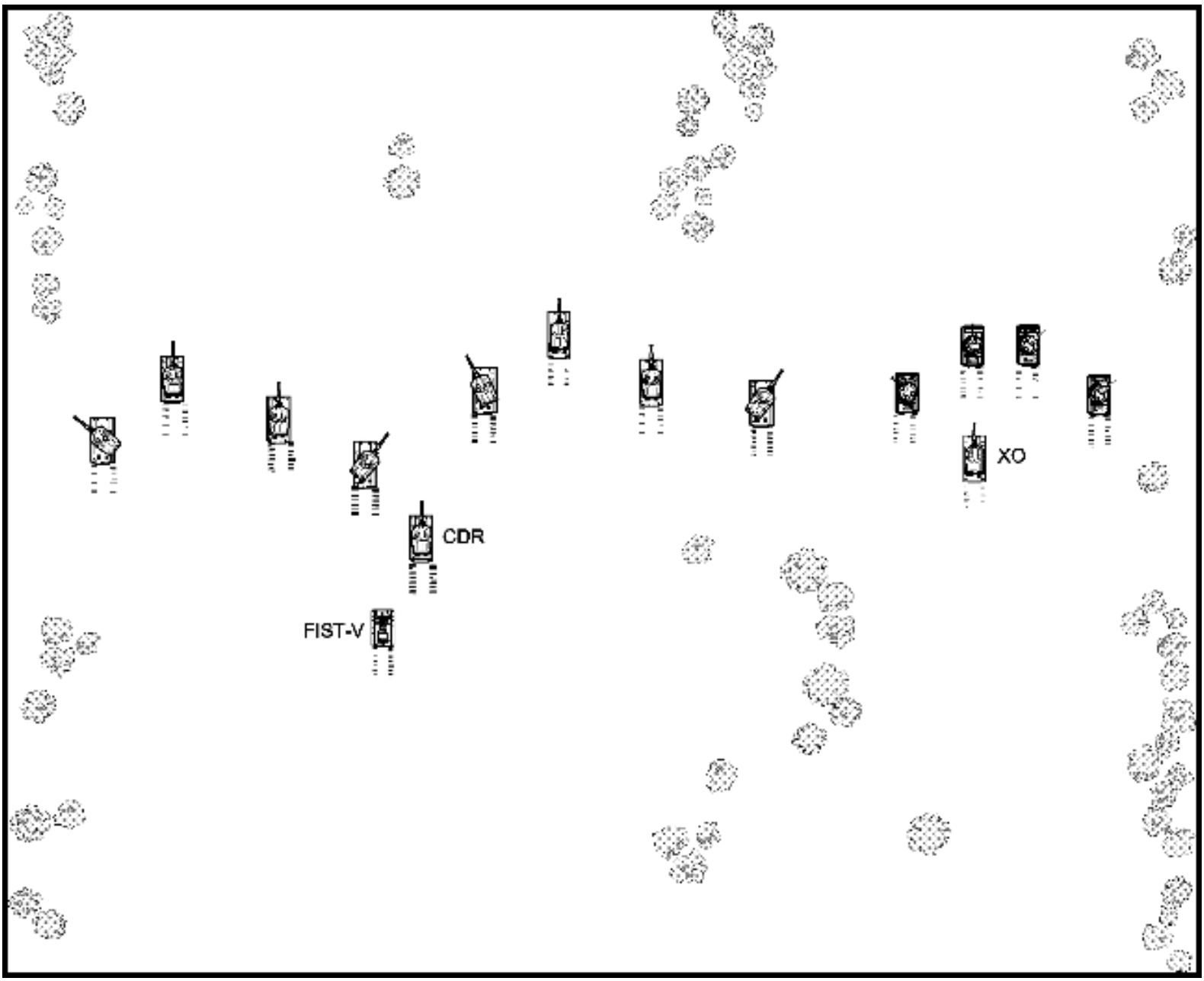


Figure 3-5. Company team in line formation (with platoons in wedge formations).

Echelon

The echelon formation, illustrated in Figure 3-6, is used when the task force wants to maintain security and/or observation of one flank and enemy contact is not likely. The company team echelon formation (either echelon left or echelon right) has the lead platoon positioned farthest from the echeloned flank, with each subsequent platoon located to the rear of and outside the platoon in front of it. The echelon formation has the following characteristics, advantages, and limitations:

- It is difficult to control.
- It affords excellent security for the higher formation in the direction of the echelon.
- It facilitates deployment to the echeloned flank.

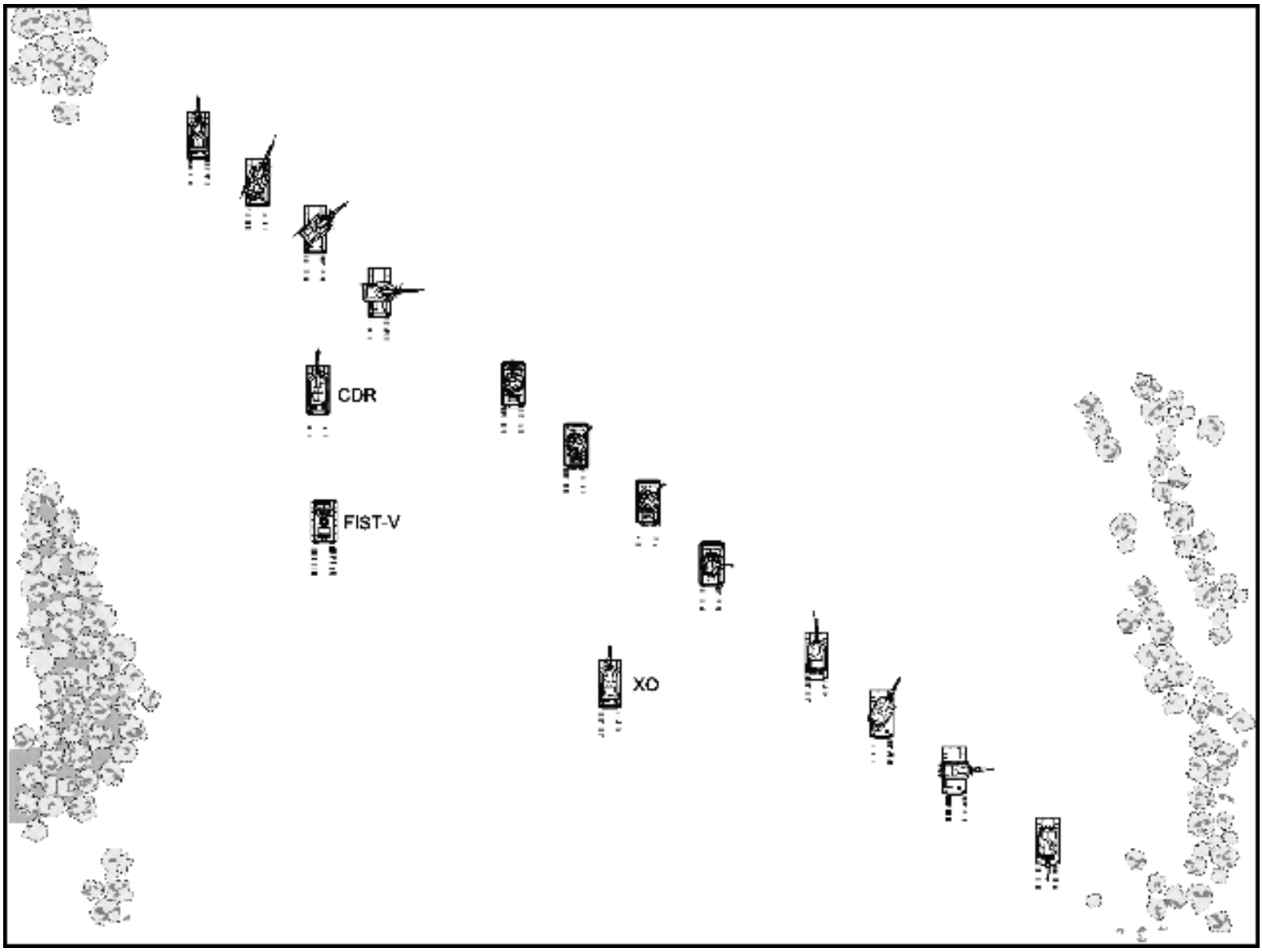


Figure 3-6. Company team in echelon right formation (with platoons in echelon formations).

Coil and herringbone

The coil and herringbone are platoon-level formations, employed when elements of the company team are stationary and must maintain 360-degree security. Refer to FM 17-15 or FM 7-7J for more information on these formations.

SECTION 3 - MANEUVER

Maneuver is the foundation for the employment of forces on the battlefield. It is defined as the use of movement in combination with fire (or fire potential), employed to achieve a position of advantage with respect to the enemy and to facilitate accomplishment of the mission. At the company team level, maneuver is the essence of every tactical operation and task. The company team commander maneuvers his mounted and dismounted elements to close with the enemy, to gain positional advantage over him, and ultimately to destroy him.

BASE OF FIRE ELEMENT

The combination of fire and movement first requires a base of fire, in which some elements of the company team remain stationary and provide protection for bounding elements by suppressing or destroying enemy elements. The base of fire element occupies hull-down firing positions (when possible) that afford effective cover and concealment, unobstructed observation, and clear fields of fire. Once it is in position, the base of fire has the responsibility both for suppressing known enemy elements and for aggressively scanning assigned sectors of observation; it identifies previously unknown elements and then suppresses them. The protection provided by the base of fire element allows the bounding unit to continue its movement and to retain the initiative even when it is both under enemy observation and within range of enemy weapons.

Because maneuver is decentralized in nature, decisions on where and when to establish a base of fire must be made at the appropriate level. They normally fall to the leader on a specific part of the battlefield who knows what enemy elements can engage the moving element and what friendly forces are available to serve as the base of fire. Within the company team, these decisions may be made at team level (with the base of fire provided by a platoon), within platoons (with base of fire by a section), or within sections (with an individual vehicle or squad as the base of fire).

BOUNDING ELEMENT

Movement in a maneuver situation is inherently dangerous. It is complicated not only by the obvious potential for harm posed by enemy weapons but also by the uncertainty caused by unknown terrain and other operational factors. The following considerations apply for movement in maneuver situations:

- The bounding element must take full advantage of whatever cover and concealment is provided by the terrain. Leaders and drivers can enhance security by enforcing or applying the principles of terrain driving; among these important actions are use of intervening terrain and avoidance of skylining.
- All crews involved in the maneuver must maintain 360-degree security at all times. Crewmen in the bounding element must continuously scan their assigned sectors of observation.
- Although METT-TC factors will ultimately dictate the length of the bounds, the bounding element should never move beyond the range at which the base of fire element can effectively suppress known, likely, or suspected enemy positions. This will minimize the bounding element’s exposure to enemy fires.
- In severely restricted terrain, bounds will generally be much shorter than in more open areas.
- The bounding element may have to dismount infantry squads or individual crewmen to observe intervening gaps or dead space. Although this will usually force the element to make a tactical pause, it will not slow the operation as much as the loss of a vehicle and crew to a hidden enemy antitank system.
- The bounding element must remain focused on its ultimate goal of gaining a positional advantage, which it

can then use to destroy the enemy by direct and indirect fires.

POSITIONING OF PLATOONS AND OTHER ELEMENTS

Based on his evaluation of METT-TC factors, the company team commander should establish the role of each platoon and support asset within the company team scheme of maneuver. These considerations apply:

- Tanks lead in maneuver against automatic weapons, antipersonnel mines, wire obstacles, and enemy armored units.
- Tanks, BFVs, and dismounted infantry maneuver in concert in the following situations:

  - In assaults against entrenched infantry, jungle positions, heavily fortified areas, and towns and villages.

  - During periods of limited visibility.
- Dismounted infantry squads and engineers lead in maneuver against constructed antitank defenses (such as antitank ditches and abatises), across defended water obstacles, through heavy woods, within built-up areas, and in mountainous terrain. In such situations, tanks and BFVs provide a base of fire.

RELATIONSHIP OF TACTICAL MOVEMENT, ACTIONS ON CONTACT, MANEUVER, AND TACTICAL TASKS

The purpose of tactical movement is to move units on the battlefield and to prepare them for contact with the enemy. The process by which units transition from tactical movement to maneuver is actions on contact, which are covered in Section 4 of this chapter. Properly executed, maneuver allows units to move on the battlefield while in contact. Maneuver is an integral part of tactical tasks, all of which require the combination of fire and movement. At the same time, it is the action that allows a unit to advance while in contact to reach the point on the battlefield from which it executes its next tactical task. Tactical tasks, in turn, have specific effects in relation to the enemy, the terrain, and other friendly forces. (**NOTE:** Section 6 of this chapter examines the tactical tasks most frequently executed by the company team.)

This complex relationship can be illustrated using the example of a company team with the mission of conducting support by fire as part of a task force attack.

The company team conducts tactical movement from its assembly area (changing movement techniques as appropriate) and makes initial contact with the enemy. The team then conducts actions on contact and transitions to maneuver. It maneuvers by establishing a base of fire and using bounding techniques to "fight" its way to a position from which it can conduct its support by fire task. While conducting that tactical task, the company team continues to maneuver as necessary. Figure 3-7 illustrates the transitions that affect tactical movement (changes in movement technique) and the relationship on the battlefield of tactical movement, actions on contact, maneuver, and tactical tasks.

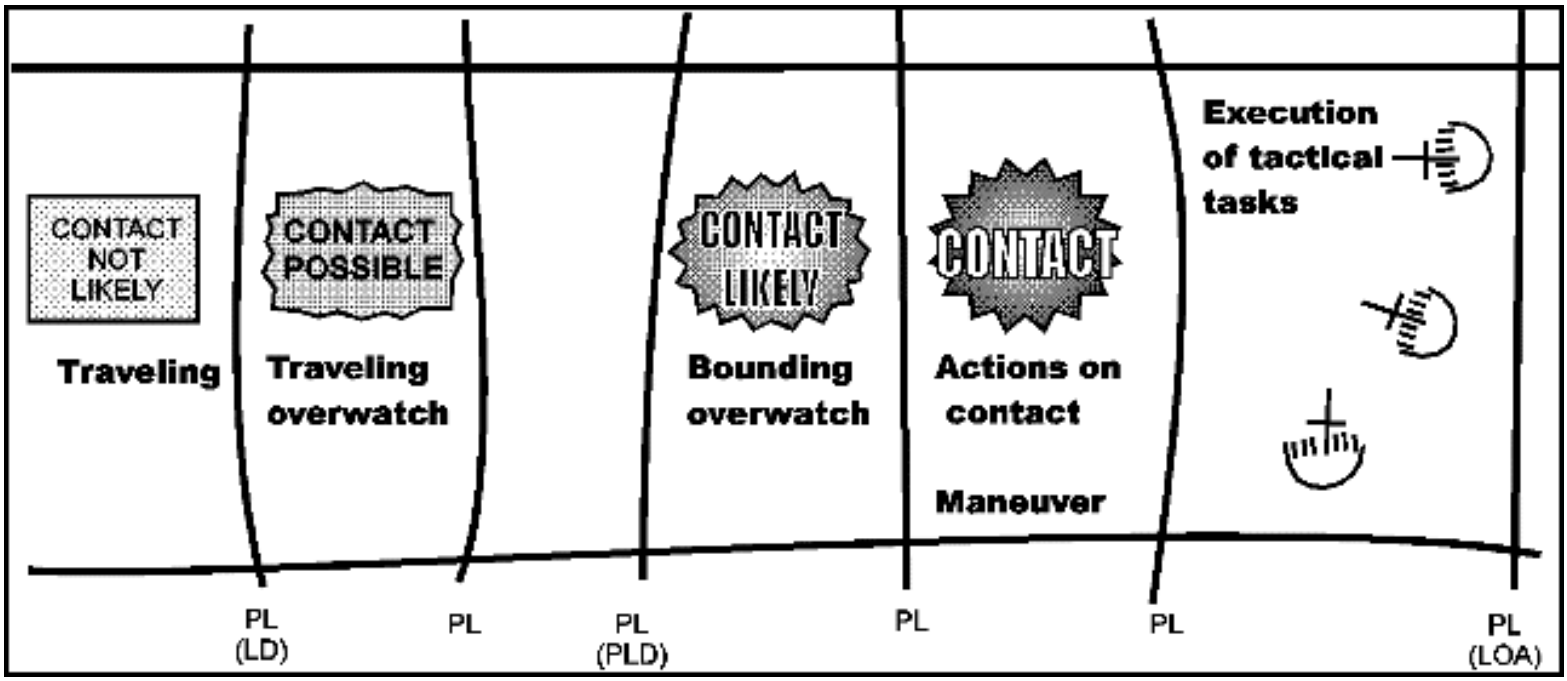


Figure 3-7. Battlefield relationship of tactical movement, actions on contact, maneuver, and tactical tasks.

SECTION 4 - ACTIONS ON CONTACT

INTRODUCTION

In both offensive and defensive operations, contact occurs when a member of the company team encounters any situation that requires an active or passive response to the enemy. These situations may entail one or more of the following forms of contact:

- Visual contact (friendly elements may or may not be observed by the enemy).
- Physical contact (direct fire) with an enemy force.
- Indirect fire contact.
- Contact with obstacles of enemy or unknown origin.
- Contact with enemy or unknown aircraft.
- Situations involving NBC conditions.
- Situations involving electronic warfare tactics.

Leaders at echelons from platoon through task force conduct actions on contact when they or a subordinate element recognizes one of the forms of contact or receives a report of enemy contact. The company team may conduct actions on contact in response to a variety of circumstances, including the following:

- Subordinate platoon(s) conducting actions on contact.
- Reports from the task force or another higher unit.
- Reports from or actions of an adjacent unit.

DEVELOPING ACTIONS ON CONTACT

Company team commanders and platoon leaders analyze the enemy throughout the troop-leading process to identify all likely contact situations that may occur during an operation. Through the planning and rehearsals conducted during troop-leading procedures, they develop and refine COAs to deal with the probable enemy actions. The COAs will eventually become the foundation for the company team's scheme of maneuver.

During the troop-leading process, the leaders must evaluate a number of factors to determine their impact on the unit's actions on contact. For example, the commander needs to consider how the likelihood of contact will affect his choice of movement techniques and formations. In doing this, he can begin preparing the team for actions on contact; for example, he may outline procedures for the transition to more secure movement techniques before a contact situation. An example of a commander's assessment and corresponding selection of movement techniques is illustrated in Figure 3-7.

TIME REQUIREMENTS FOR ACTIONS ON CONTACT

Commanders must understand that properly executed actions on contact require time at both platoon and company team levels. To fully develop the situation, a platoon or team may have to execute extensive lateral movement, dismount and remount infantry squads, conduct reconnaissance by fire, and/or call for and adjust indirect fires. Each of these activities requires time. The commander must balance the time required for subordinate elements to conduct actions on contact with the need of the company team or task force to maintain tempo and momentum. In terms of slowing the tempo of an operation, however, the loss of a platoon or team is normally much more costly than the additional time required to allow the subordinate element to properly develop the situation.

THE FOUR STEPS OF ACTIONS ON CONTACT

The company team should execute actions on contact using a logical, well-organized process of decision-making and action entailing these four steps:

- Deploy and report.
- Evaluate and develop the situation.
- Choose a COA.
- Execute the selected COA.

The four-step process is not intended to generate a rigid, lockstep response to the enemy. Rather, the goal is to provide an orderly framework that enables the company team and its platoons to survive the initial contact, then apply sound decision-making and timely actions to complete the operation. Ideally, the team will acquire the enemy (visual contact) before being sighted by the enemy; it then can initiate physical contact on its own terms by executing the designated COA.

Actions on contact Step 1 - Deploy and report

Events that occur during the first step of actions on contact depend in great measure on whether the contact is expected or unexpected. The following discussion examines some of the variables the company team commander faces in expected and unexpected contact situations and discusses the role of platoon battle drills and reporting in the deploy and report step.

Expected contact If the commander expects contact, he will already have deployed the company team by transitioning to the bounding overwatch movement technique. If the team is alert to the likely presence of the enemy, it has a better chance of establishing first visual contact and then physical contact on its own terms. Contact, either visual or physical, is usually made by an overwatching or bounding platoon, which initiates the team's actions on contact. In a worst-case scenario, the platoon may be engaged by a previously undetected (but expected) enemy element. The platoon in contact would conduct a battle drill Rfor its own survival and then initiate actions on contact.

Unexpected contact In some cases, the company team will make unexpected contact with the enemy while using traveling or traveling overwatch. The element in contact or, if necessary, the entire company team may have to deploy using battle drills to survive the initial contact.

Battle drills Battle drills provide virtually automatic responses to contact situations, in which immediate and, in many cases, violent execution of an action is critical both to the unit's initial survival and to its ultimate success in combat. Drills are not a substitute for carefully planned COAs; rather, they buy time for the unit in contact and provide a framework for development of the situation.

When contact occurs, the company team's platoons deploy immediately, executing the appropriate battle drills under the supervision of the commander. Table 3-1 lists the drills executed during the deployment step of actions on contact. Figure 3-8 shows an example of platoons executing battle drills.

> **NOTE:** For additional information on platoon battle drills, refer to FM 17-15, FM 7-7J, ARTEP 17-237-10-MTP, and ARTEP 7-247-11-DRILL.

Table 3-1. Platoon battle drills for deployment during actions on contact.

TANK PLATOON DRILLS	MECHANIZED INFANTRY PLATOON DRILLS
• Change of Formation Drill • Contact Drill • Action Drill • React to Indirect Fire Drill • React to Air Attack Drill • React to a Nuclear Attack Drill • React to a Chemical/Biological Attack Drill	• Platoon Attack Drill • React to Contact Drill • Break Contact Drill • React to Ambush Drill • Change Formation Drill • Execute Action Right or Left Drill

Maneuver SOP An effectively written, well-rehearsed maneuver SOP helps to ensure quick, predictable actions by all members of the company team. In addition, the SOP, unlike platoon battle drills, allows leaders to take into account the friendly task organization, a specific enemy, and a specific type of terrain. As a result, the SOP can assist the company team in conducting actions on contact and in maintaining the initiative in a number of battlefield situations. For a more detailed discussion of SOPs, refer to Chapter 2 of this manual.

Reporting

Timely, accurate reports are essential throughout actions on contact. As part of the first step of the process, the company team commander must send a contact report to the task force as soon as possible after contact occurs. He provides subsequent reports updating the situation as necessary. (**NOTE:** Refer to the discussion of reports in Chapter 2 of this manual.)

NOTE: Whether contact is expected or unexpected, the first step of actions on contact concludes with the unit deployed (into base of fire and bounding elements), the enemy suppressed or destroyed, and the XO sending a contact report sent to task force headquarters.

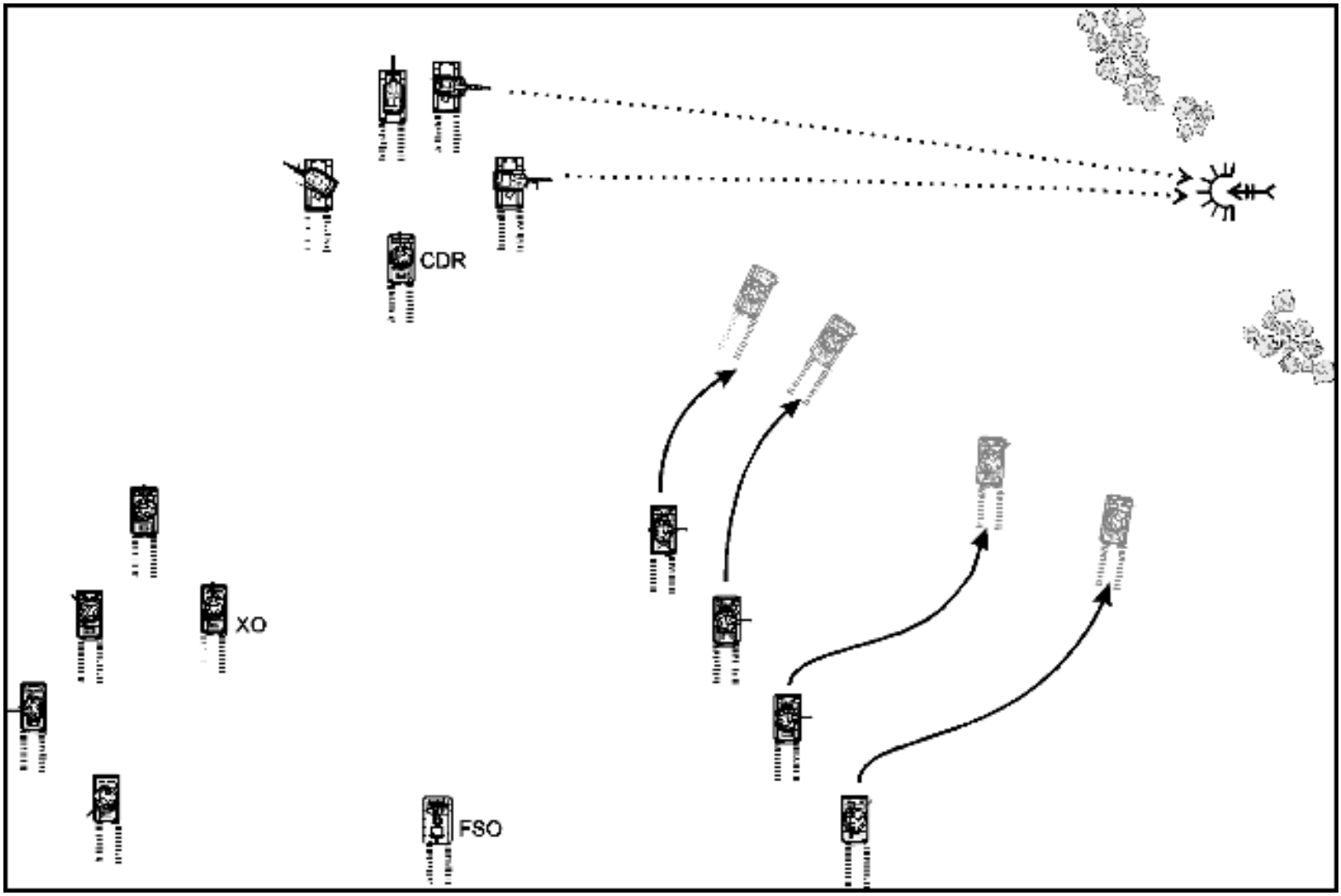


Figure 3-8. Example of a tank platoon contact drill in concert with a mechanized infantry platoon action right drill.

Actions on contact Step 2 - Evaluate and develop the situation

While the company team is deploying, the commander must evaluate the situation and, as necessary, continue to maneuver to develop it. The commander quickly gathers as much information as possible, either visually or, more often, through reports of the platoon(s) in contact. He analyzes the datainformation to determine critical operational considerations, including these:

- The size of the enemy element.
- Location, composition, activity, and orientation of the enemy force.
- The impact of obstacles and terrain.
- Friendly and eEnemy capabilities (especially antiarmor capability).
- Probable enemy intentions.
- How to gain positional advantage over the enemy.
- The friendly situation (location, strength, and capabilities).
- Possible friendly COAs to achieve the specifiedfacilitate end state..

After evaluating the situation, the commander may discover that he does not have enough information to identify the necessary operational considerations. To make this determination, he canmust further develop the situation in accordance with the task force commander's intent, using a combination of these techniques:

- Surveillance, employing infantry squads, dismounted tank loaders, and/or tank and BFV commanders (using binoculars and other optical aids).
- Mounted and/or dismounted maneuver (this includes lateral maneuver to gain additional information by viewing the enemy from another perspective).
- Indirect fire.
- Reconnaissance by fire.

Once the commander determines the size of the enemy force the company team has encountered, he sends a report to the task force.

Actions on contact Step 3 - Choose a COA

After developing the situation and determining that he has enough information to make a decision, the company team commander selects a COA that both meets the requirements of the task force commander's intent and is within the company team's capabilities.

Nature of contact

The nature of the contact (expected or unexpected) may have a significant impact on how long it takes a commander to develop and select a COA. As an example, in preparing to conduct an attack, the company team commander determines that the team will encounter an enemy CSOP along its axis of advance; during troop-leading procedures, he develops a scheme of maneuver to defeat the outpost. When the team's lead platoon makes contact with two BMPs, the commander can quickly assess that this is the anticipated contact and direct the team to execute his plan. On the other hand, unexpected contact with a well-concealed enemy force may require time for development of the situation at platoon and team levels. As it "fights" for critical information that will eventually allow the commander to make a sound decision, the platoon and/or company team may have to employ several of the techniques for developing the situation.

COA procedures

The commander has several options in how he goes about the process of selecting a COA. These procedures include the following:

- The company team commander can direct the team to execute the original plan if his development of the situation reveals no need for change.
- If his analysis shows that the original plan is still valid but that some refinement is necessary, the team commander canshould inform the task force commander (prior to execution, if possible) and issue a FRAGO to refine the plan.
- If his analysis shows that the original plan needs to be changed but that the selected COA will still comply with the task force commander's intent, the team commander should inform the task force commander (prior to execution, if possible) and issue a FRAGO to retask his subordinate elements.
- If his analysis shows that the original plan deviates from the task force commander's intent and needs to be changed, the team commander mustcan report the situation and, based on knowninformation in response to an unforeseen enemy or battlefield situation, recommend an alternative COA to the task forceTF commander..
- He can direct If the battlefield picture is still vague, the team commander must direct the team or a platoon to continue to ovementdevelop the situation. This will allow him to gather the information needed to clarify a vague battlefield picture. He then uses one of the first four options to report the situation and choose a COA and/or to direct further action.

Actions on contact Step 4 - Execute a COA

In executing a COA, the company team transitions to maneuver. It then continues to maneuver throughout execution, either as part of a tactical task or to advance while in contact to reach the point on the battlefield from which it executes its tactical task. The team can employ a number of tactical tasks as COAs, any of which may be preceded (and/or followed) by additional maneuver. Refer to Chapters 3, 4, and 5 of this manual for detailed descriptions of these tasks, which include the following:

- Advance in contact.
- Support by fire.
- Attack by fire.
- Bypass.
- Clearance in restricted terrain.
- Assault.
- Breach.
- Defend.
- Delay.
- Withdraw.

As execution continues, more information will become available to the company team commander. Based on the emerging details of the enemy situation, he may have to alter his COA during execution. For example, as the company team maneuvers to destroy what appears to be a tank platoon, it discovers two additional platoons in prepared positions. The commander must analyze and develop the new situation. He then selects an alternate COA, such as establishing a support by fire position to support another company team's maneuver against the newly discovered

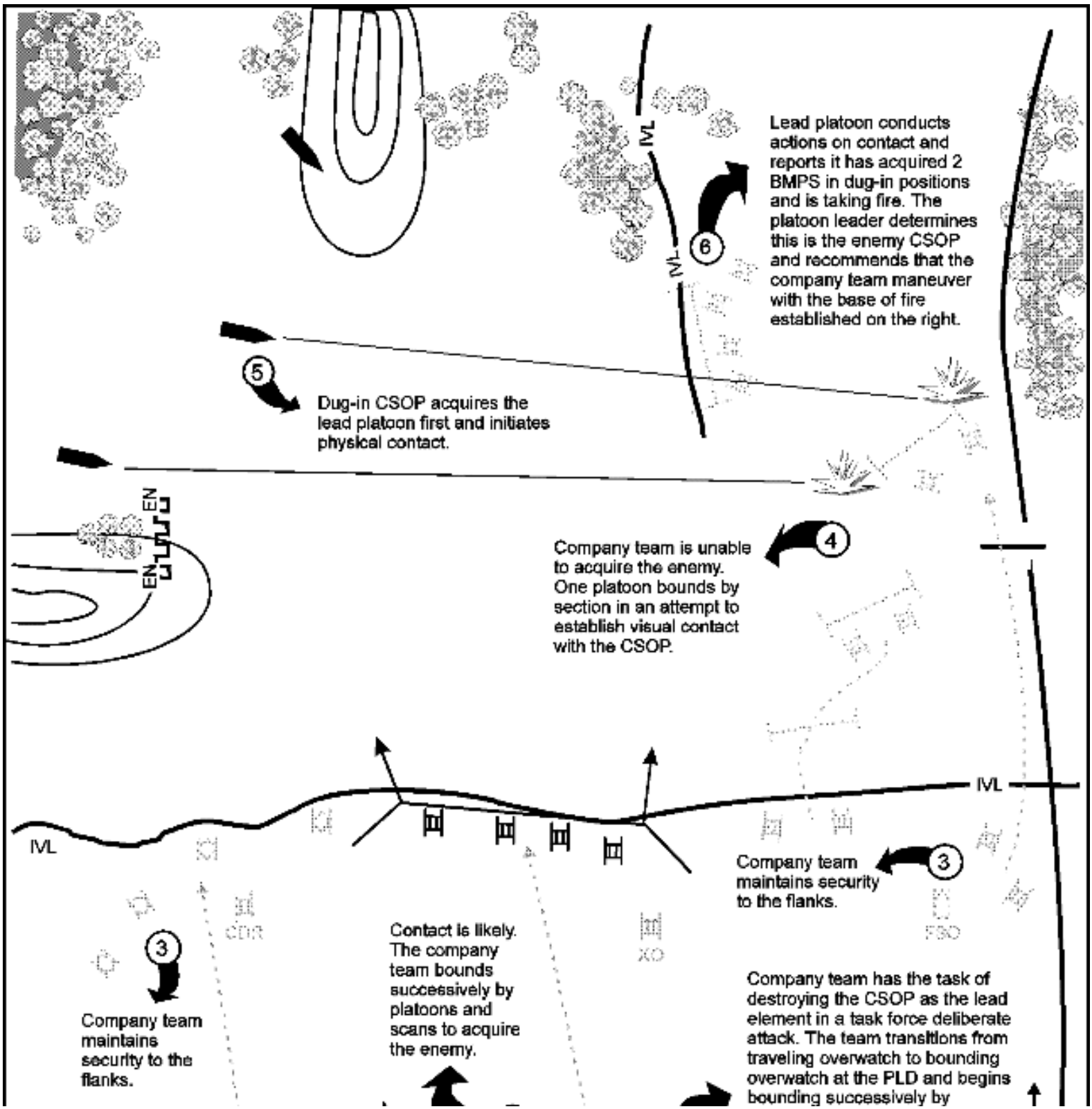
enemy force.

EXAMPLES OF ACTIONS ON CONTACT

The following examples illustrate the four-step process for executing actions on contact in two possible tactical situations.

Contact with an expected force

Figures 3-9 through 3-11 illustrate actions on contact when the company team encounters an expected enemy element.



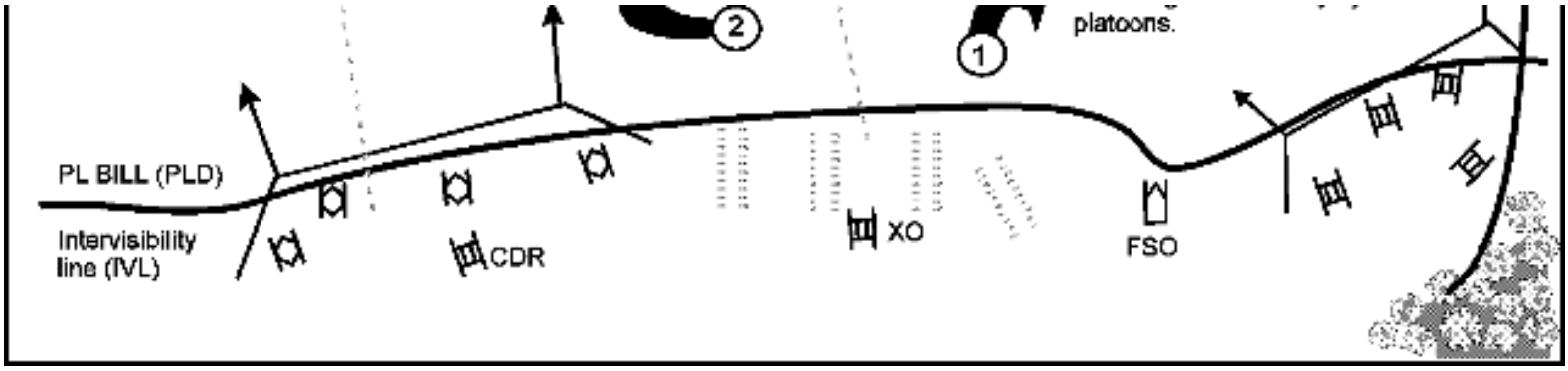


Figure 3-9. Company team deploys and reports.

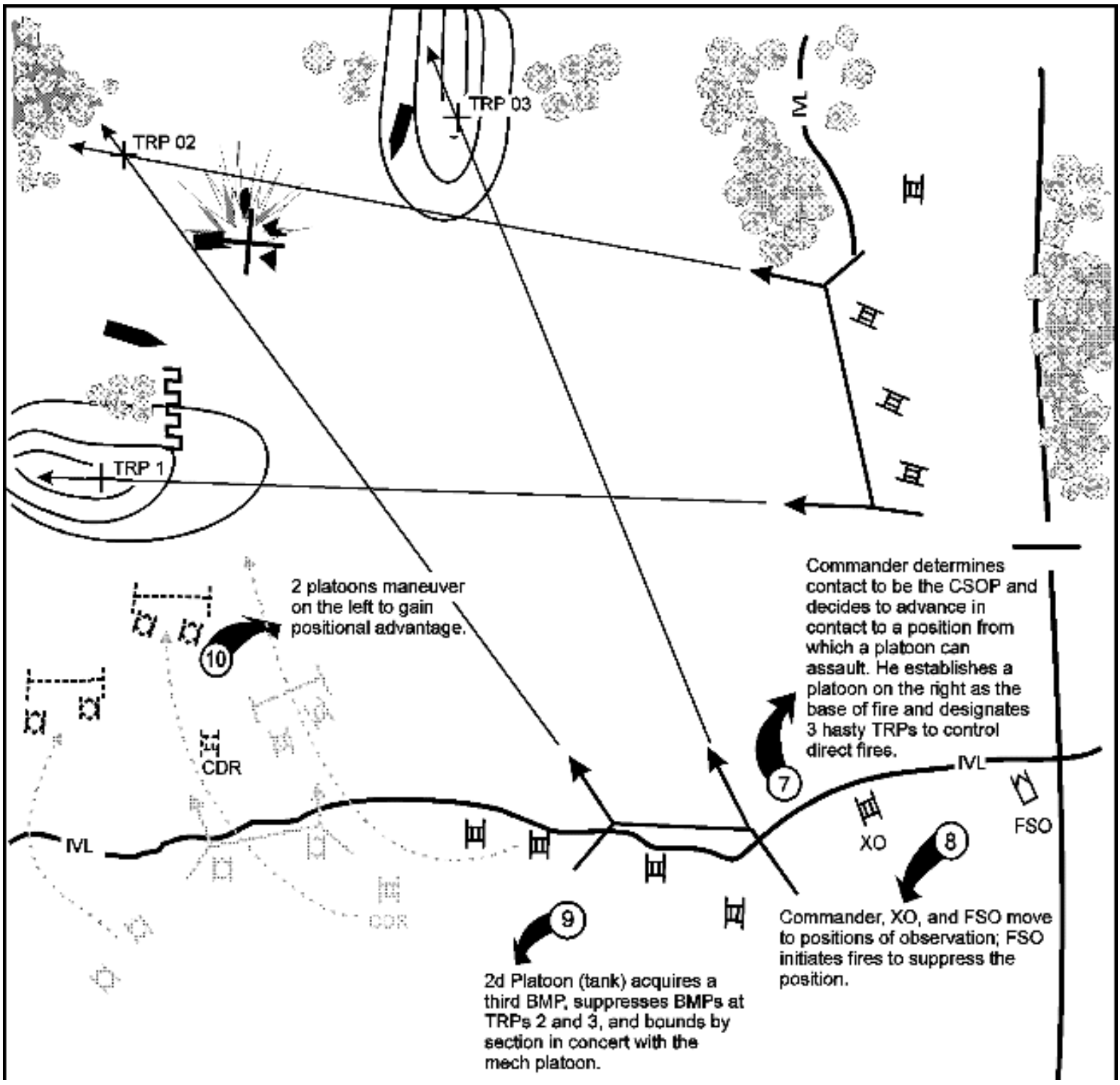
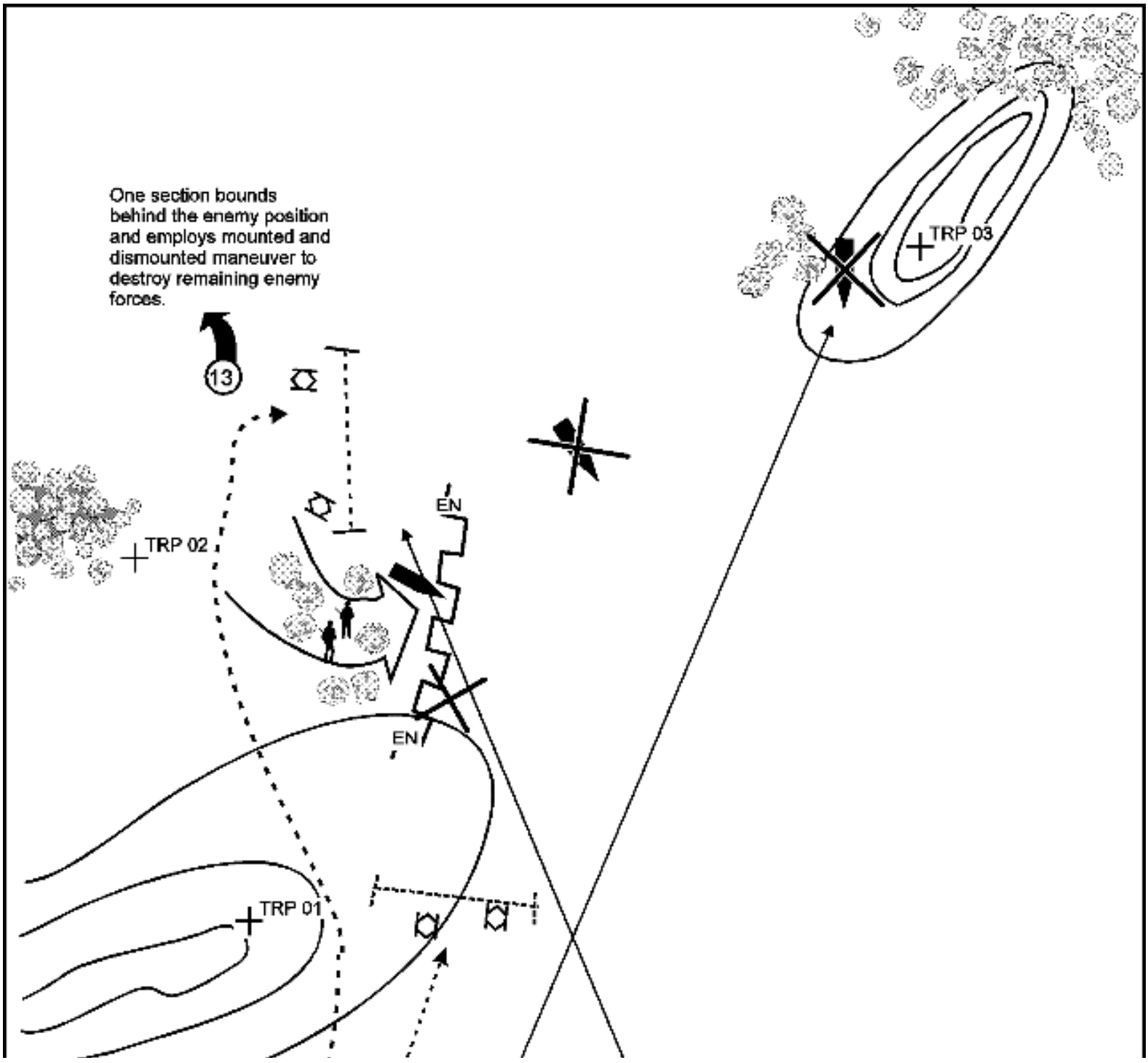


Figure 3-10. Company team develops the situation and advances in contact.



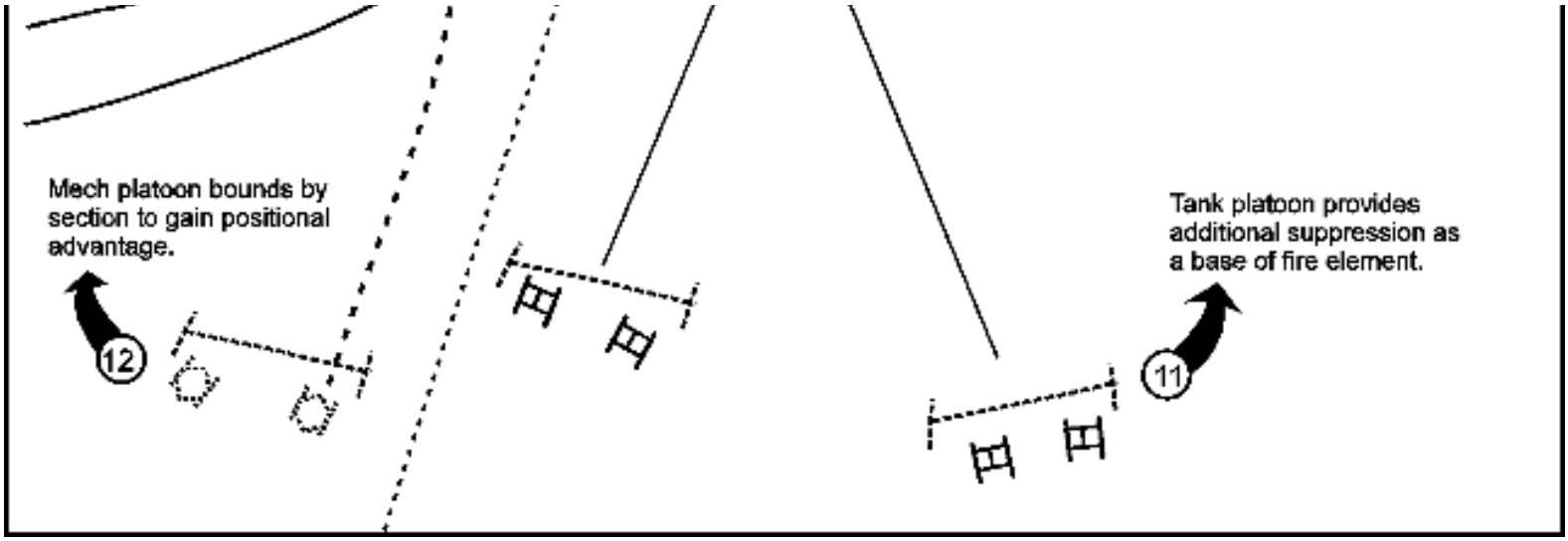
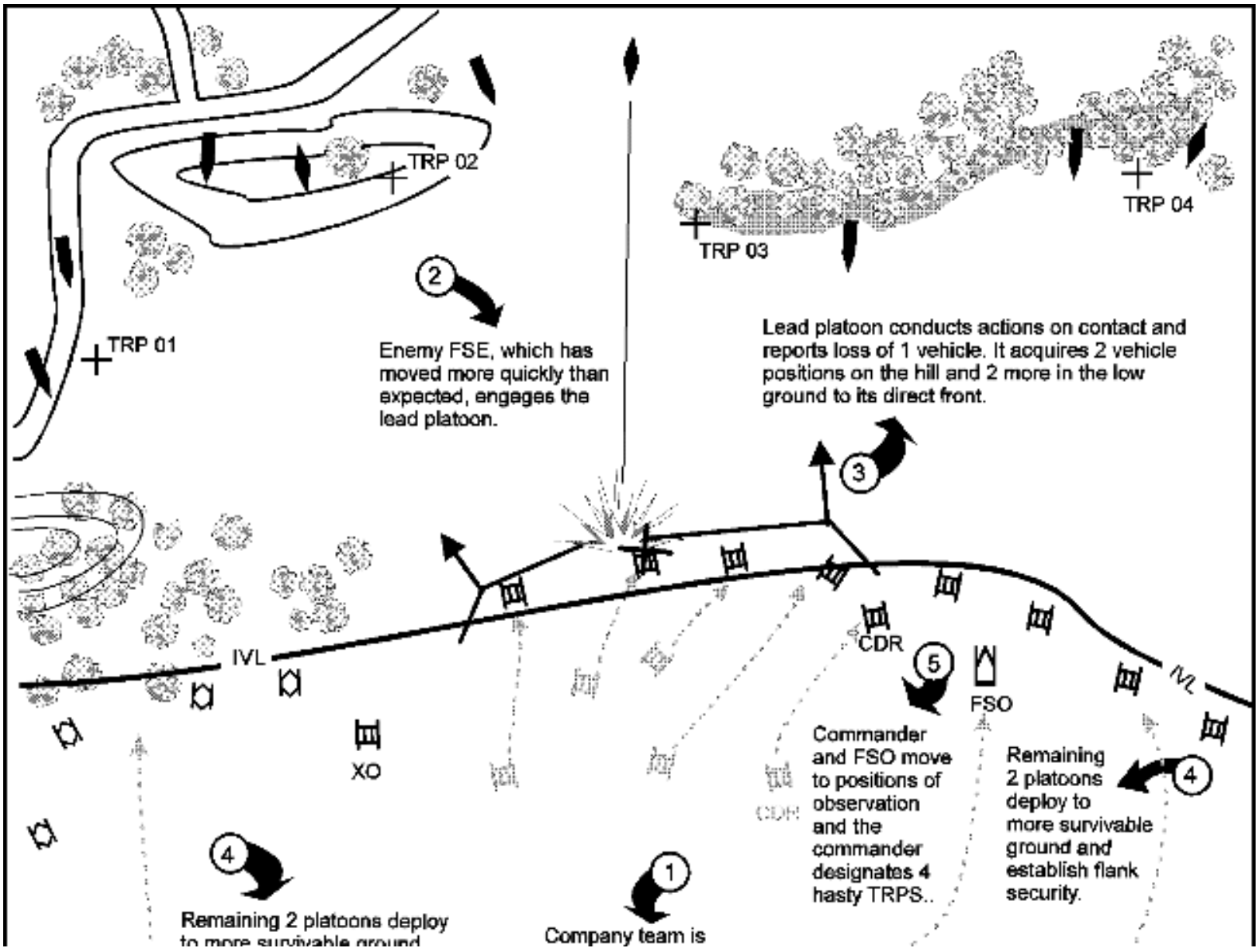


Figure 3-11. Suppression continues as mech platoon assaults to destroy remaining BMP and infantry.

Contact with an unexpected force

Figures 3-12 and 3-13 illustrate an example of actions on contact that the company team might execute following an unexpected encounter with an enemy force. In this case, the enemy element is a forward security element (FSE) with tanks and BMPs.



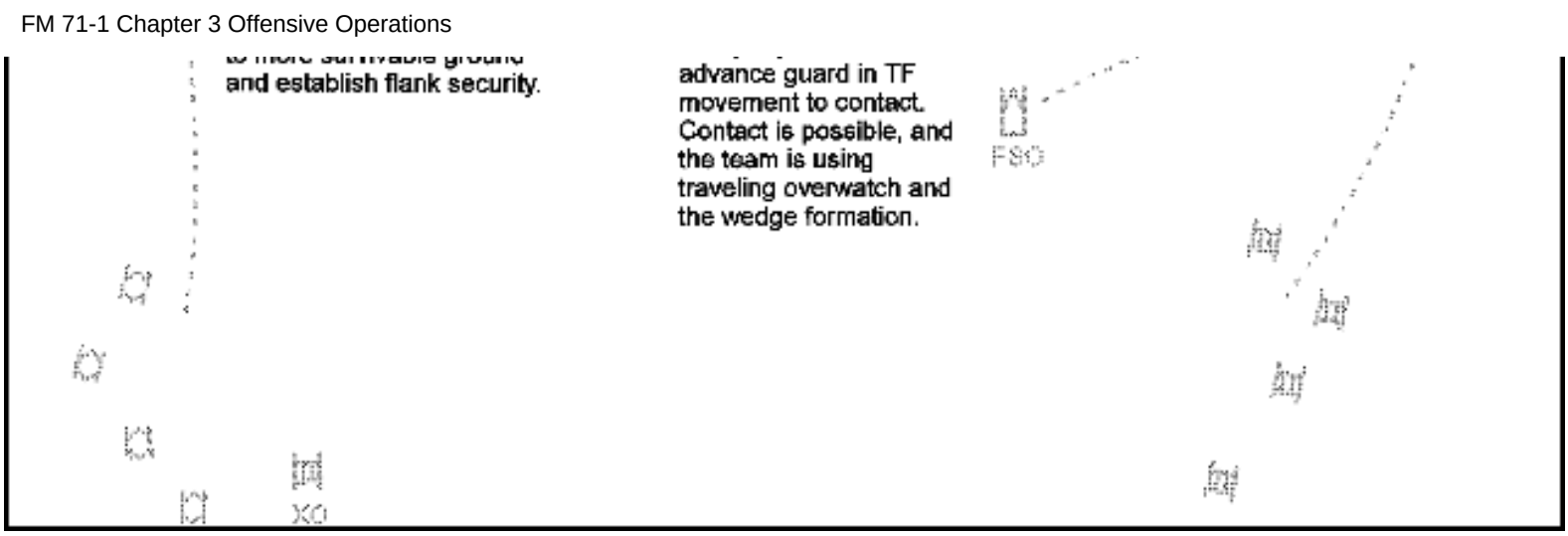
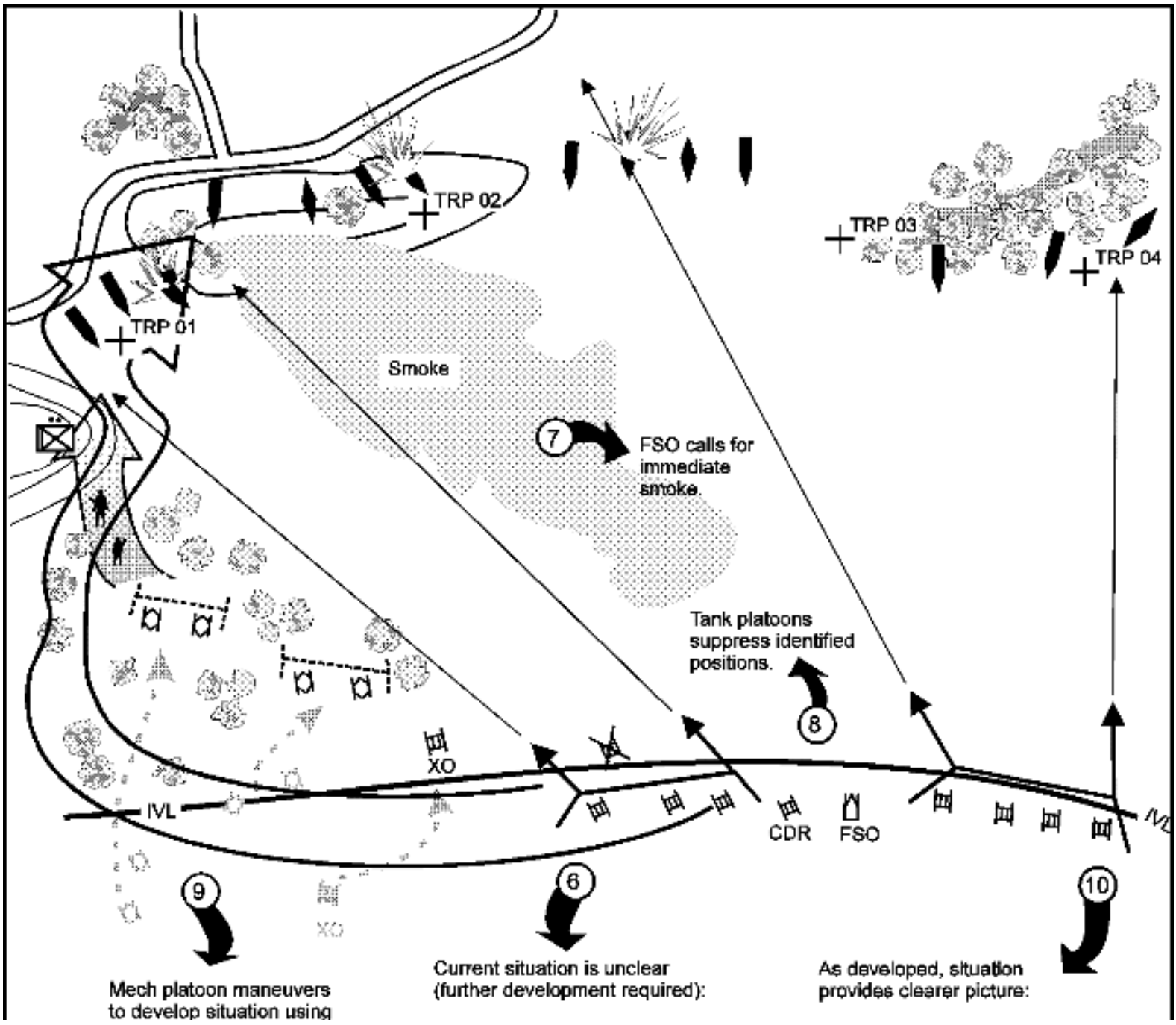


Figure 3-12. Company team makes unexpected contact, deploys, and receives and sends contact reports.



covered and concealed terrain. It acquires 3 more vehicles and suppresses them. The platoon dismounts its infantry squads to further develop the situation.	• Right platoon has acquired 2 more BMPs in the wood line vicinity TRPs 3 and 4, totaling 6 acquired. It suppresses enemy elements. • Commander does not have enough information to choose a COA; he decides to further develop the situation.	• 3 tanks and 6 BMPs acquired; 2 BMPs destroyed. • Commander knows that enemy force is at least an MRC. He determines it to be the FSE. • Infantry squads report an assailable flank on the enemy's right through the wood line. • Commander sends SITREP to the task force commander and issues FRAGO to subordinates directing the center platoon to attack the enemy right and directing the other two platoons to provide a base of fire.

Figure 3-13. Company team develops the situation and chooses and executes a COA.

Chapter 3 (continued)

CHAPTER 4

Defensive Operations

Military forces conduct defensive operations only until they gain sufficient strength to attack. Though the outcome of decisive combat derives from offensive actions, commanders often find that it is necessary, even advisable, to defend. Once they make this choice, they must set the conditions for the defense in a way that allows friendly forces to withstand and hold the enemy while they prepare to seize the initiative and return to the offense. A thorough understanding of the commander's intent is especially critical in defensive operations, which demand precise integration of combat, CS, and CSS elements.

The immediate purposes of all defensive operations are to defeat an enemy attack and gain the initiative for offensive operations. The company team may also conduct the defense to achieve one or more of the following purposes:

- Gain time.
- Retain key terrain.
- Facilitate other operations.
- Preoccupy the enemy in one area while friendly forces attack him in another.
- Erode enemy forces at a rapid rate while reinforcing friendly operations.

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Section 2	**Defensive Planning Considerations**
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Section 3	**Preparation and Integration**
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Section 4	**Defensive Techniques**
	Defend in Sector Defend a Battle Position Defend a Strongpoint Defend a Perimeter
Section 5	**Reserve Operations in the Defense**
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SECTION 1 - SEQUENCE OF THE DEFENSE

As part of a larger element, the company team conducts defensive operations in a sequence of integrated and overlapping phases or steps. The following paragraphs focus on the tactical considerations and procedures involved in each phase.

RECONNAISSANCE AND SECURITY OPERATIONS AND ENEMY PREPARATORY FIRES

Security forces must be employed to protect friendly MBA forces and allow them to continue their preparations. The enemy will attempt to discover the defensive scheme of maneuver using reconnaissance elements and attacks by forward detachments and advance guard elements. He will also attempt to breach the task force's tactical obstacles.

The goals of the task force security force normally include providing early warning, destroying enemy reconnaissance units, and impeding and harassing enemy main body elements. The security force will continue its mission until directed to displace. The commander may also use security forces in his deception effort, employing them to give the illusion of strength in one area while positioning his true combat power in another. While conducting this type of security operation, the company team may simultaneously have to prepare BPs, creating a challenging time management problem for the commander and other leaders.

During this phase of the operation, the company team may need to provide guides to the passing security force and may be tasked to close the passage lanes. The team may also play a role in shaping the battlefield. The task force or brigade commander may position the team to deny likely enemy attack corridors, enhancing flexibility and forcing enemy elements into friendly engagement areas. When it is not conducting security or preparation tasks, the company team will normally occupy hide positions to avoid possible chemical strikes or enemy artillery preparation.

OCCUPATION

During this phase, the company team reconnoiters and occupies its positions. This usually includes movement from tactical assembly areas to the actual defensive sector, led by a quartering party that clears the defensive positions. The division, brigade, and task force will establish security forces during this phase, and remaining forces will begin to develop engagement areas and prepare BPs.

Operational and tactical security is critical during the occupation to ensure the company team can avoid detection and maintain combat power for the actual defense. Leaders and crewmen at all levels of the team must thoroughly understand their duties and responsibilities related to the occupation; they then must be able to execute the occupation quickly and efficiently to maximize the time available for planning and preparation of the defense.

APPROACH OF THE ENEMY MAIN ATTACK

As this phase begins, the company team's parent brigade engages the enemy at long range using indirect fires, electronic warfare, and CAS (deep fight). The goal is to use these assets, along with disrupting obstacles, to shape the battlefield and/or to slow the enemy's advance and disrupt his formations, leaving him more susceptible to the effects of CS weapons.

As the enemy's main body echelon approaches the task force engagement area, the task force may initiate indirect fires and CAS to further weaken the enemy by attrition; at the same time, the brigade's effort normally shifts to second-echelon forces. (**NOTE:** Long-range fires may be withheld in accordance with the commander's intent.) Friendly forces will occupy their actual defensive positions before the enemy reaches direct fire range; positions are shifted in response to enemy actions or other tactical factors.

ENEMY ASSAULT

During this phase, the enemy will deploy to achieve mass at a designated point, normally employing both assault and supporting forces. This may leave him vulnerable to the combined effects of indirect and direct fires and integrated obstacles. He may employ additional forces to fix friendly elements and prevent their repositioning.

Friendly counterattack forces may be committed against the enemy flank or rear, while other friendly forces may displace to alternate, supplementary, or successive positions in support of the commander's scheme of maneuver. All friendly forces should be prepared for the enemy to maximize employment of combat multipliers, such as dismounted infantry operations, to create vulnerability. The enemy is also likely to use artillery, CAS, and/or chemical weapons to set the conditions for the assault.

COUNTERATTACK

As the enemy's momentum is slowed or stopped, friendly forces may launch a counterattack. The counterattack may be launched purely for offensive purposes to seize the initiative from the enemy. In some cases, however, the purpose of the counterattack will be mainly defensive, such as reestablishing the FEBA or restoring control of the sector. The company team may participate in the counterattack as a base of fire element (providing support by fire for the counterattack force) or as the counterattack force.

CONSOLIDATION AND REORGANIZATION

The company team must secure its sector by repositioning forces, destroying remaining enemy elements, processing EPWs, and reestablishing obstacles. The team conducts all necessary CSS functions as it prepares to continue the defense. Even when it is not being actively engaged by enemy forces, the company team must maintain situational awareness and local security at all times during consolidation and reorganization.

SECTION 2 - DEFENSIVE PLANNING CONSIDERATIONS

WEAPONS POSITIONING

The goal of effective weapons positioning is to enable the company team to mass fires at critical points on the battlefield and to enhance its survivability. To do this, the commander must maximize the strengths of the company team's weapons systems while minimizing its exposure to enemy observation and fires. The following paragraphs focus on tactical considerations for weapons positioning.

Depth and dispersion

Dispersing positions laterally and in depth helps to protect the force from enemy observation and fires. Company team and platoon positions are established in depth, allowing sufficient maneuver space within each position to establish in-depth placement of vehicle weapon systems and dismounted infantry elements. Refer to Figure 4-1 for an illustration of how a company team establishes depth in sector.

Vehicle and infantry fighting positions should be positioned to allow the massing of fires at critical points on the battlefield. (**NOTE:** For a more detailed discussion of emplacement of weapon systems, refer to Section 3 of this chapter.) Although METT-TC factors ultimately determine the placement of weapon systems and unit positions, the following general guideline apply:

- Tanks are best employed where they can engage targets with the main gun (out to a maximum range of 4,000 meters for M1A1 and M1A2 tanks) and with the coaxial machine gun (at ranges out to 900 meters). The factors of METT-TC will ultimately dictate positioning and engagement criteria. As a general guideline, however, tanks are normally best employed where they can engage the enemy at a range of approximately 2,500

meters.

- TOW missiles are best employed at a range of 2,500 to 3,700 meters, where targets can be tracked for at least 12 seconds.
- BFVs are best employed from flank positions and in positions, at a range of 2,500 meters or less, from which they can destroy lightly armored vehicles and infantry or fix or severely limit the movement of tanks.
- Infantry squads should be positioned on reverse slopes or in restricted terrain where they cannot be engaged before they can take the enemy under fire.
- Infantry squads can supplement the antiarmor fires of the tanks and BFVs with Javelin missiles, which have a maximum range of 2,000 meters.
- Infantry squads can retain or deny key terrain if employed in strongpoints or well-covered positions.
- Infantry squads can protect obstacles or flank positions that are tied into severely restricted terrain.

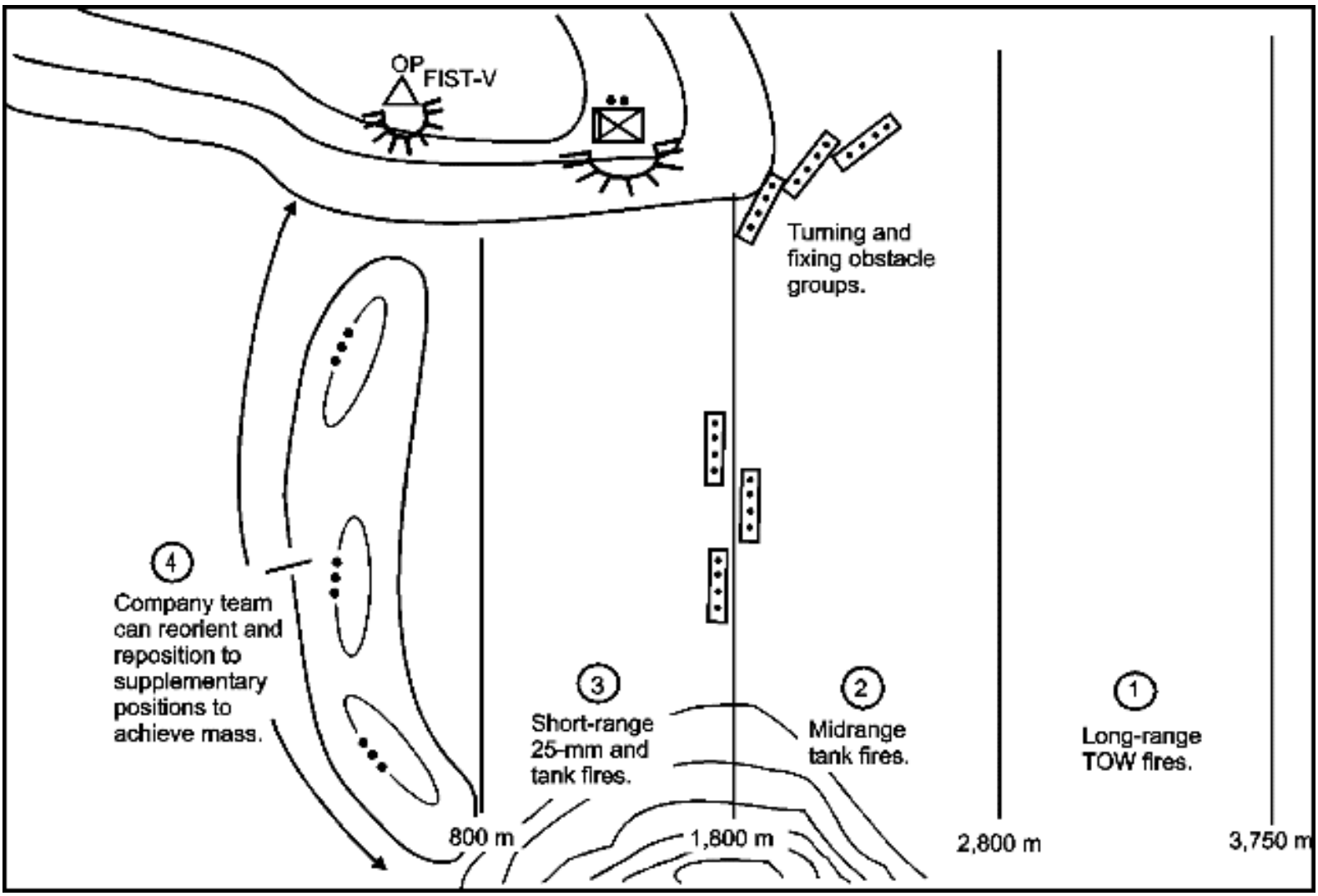


Figure 4-1. Example of a company team achieving depth in sector.

Flank positions

Flank positions enable a defending force to bring fires to bear on an attacking force moving parallel to the defender's attack formation. An effective flank position provides the defender with a larger and more vulnerable target while leaving the attacker unsure of the location of the defense.

Major considerations for successful employment of a flank position are the defender's ability to secure the flank and his ability to achieve surprise by remaining undetected. Effective fire control and fratricide avoidance measures are critical considerations in the employment of flank positions. Figure 4-2 illustrates an example of a team using flank positions in the defense.

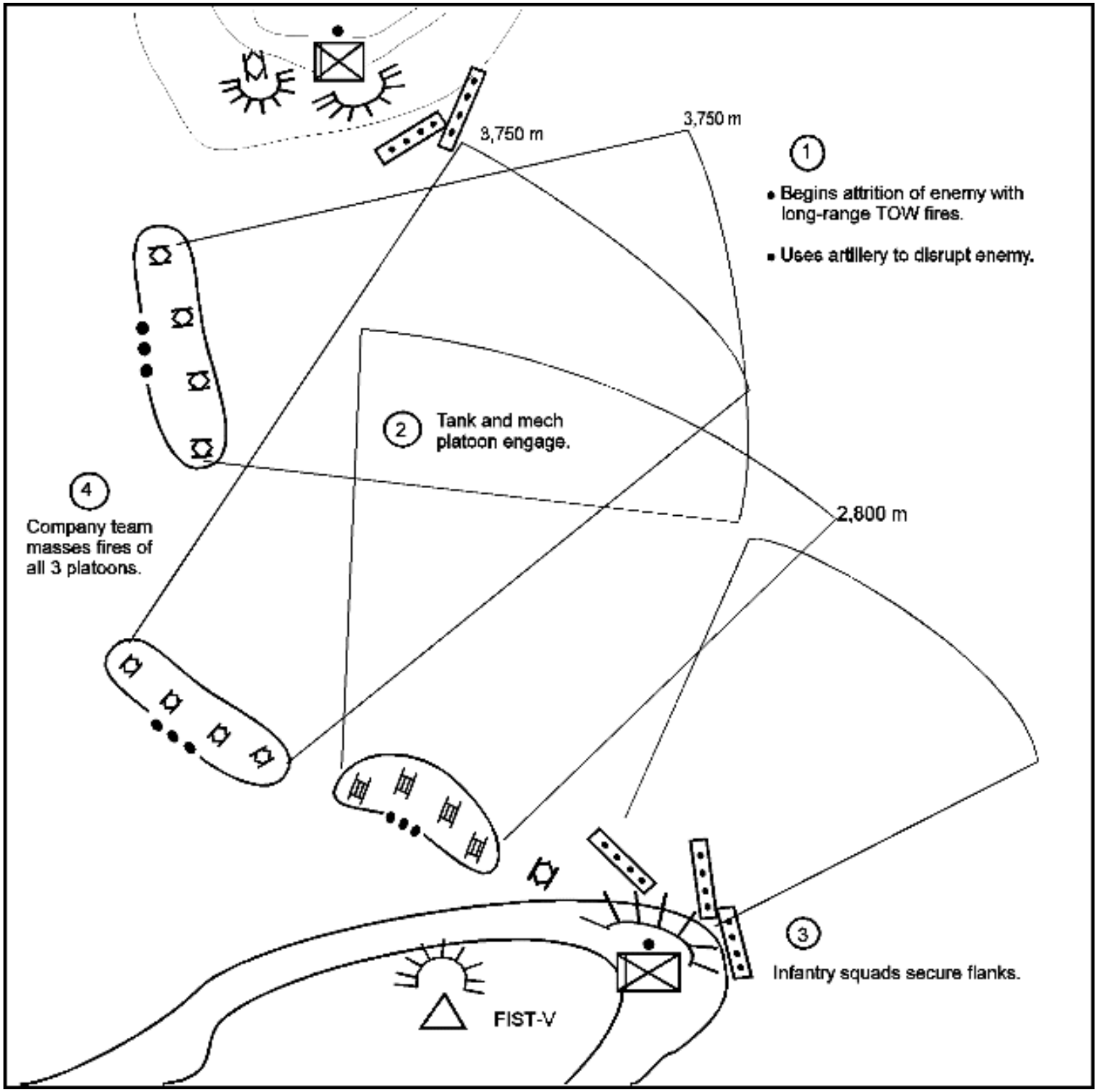


Figure 4-2. Example of company team depth and flank positions.

Reverse slope positions

The reverse slope defense uses the topographical crest to mask the defender from the attacker's observation and supporting long-range direct and indirect fires. This can provide the defender with both a degree of force protection and the advantage of surprise. By employing OPs on the far side of the crest, he gains early warning of the attacking force's advance and can use indirect fires to disrupt or destroy the enemy. In addition, the reverse slope defense allows effective employment of obstacles. The enemy will have very little time to react to any obstacles placed on the friendly side of the crest, preventing him from generating effective combat power (mass) for a rapid penetration. Figure 4-3 illustrates an example of a company team reverse slope defense.

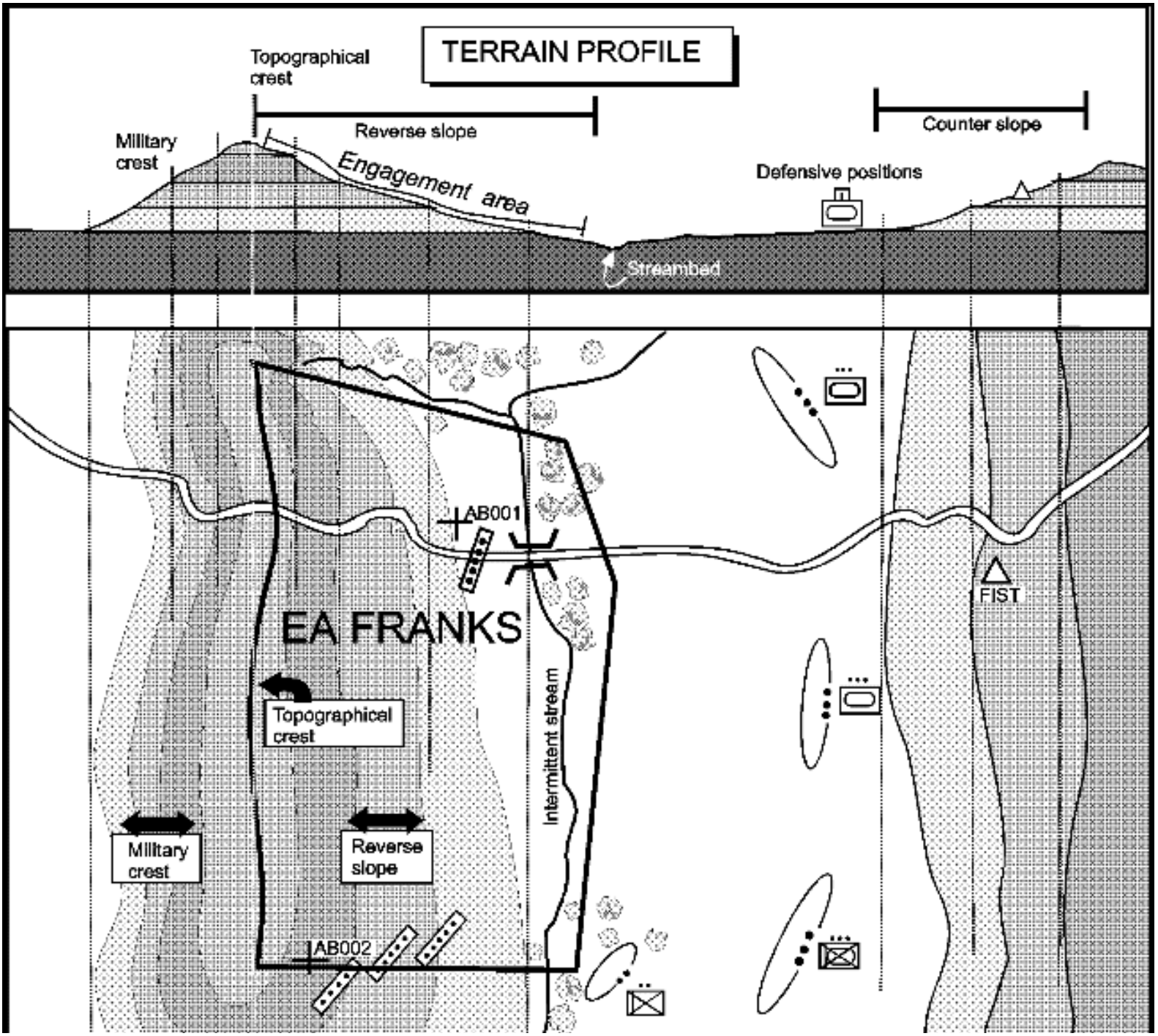


Figure 4-3. Example of company team reverse slope defense.

DISPLACEMENT PLANNING

Disengagement and displacement are key defensive tasks that allow the company team to retain its operational flexibility and tactical agility. The ultimate goals of disengagement and displacement are to enable the company team to maintain standoff range and to avoid being fixed or decisively engaged by the enemy. The company team commander must consider several important factors in displacement planning; these include, but are not limited to, the following:

- The enemy situation (for example, an enemy attack with two MRBs may prevent the company team from disengaging).
- Disengagement criteria.
- Availability of direct fire suppression that can facilitate disengagement by suppressing or disrupting the enemy.
- Availability of cover and concealment, indirect fires, and smoke to assist disengagement.
- Obstacle integration, including situational obstacles.
- Positioning of forces on terrain (such as reverse slopes or natural obstacles) that provides an advantage to the disengaging elements.
- Identification of displacement routes and times that disengagement and/or displacement will take place.
- The size of the friendly force that must be available to engage the enemy in support of the displacing unit.
- Location of remount points, times that remount operations will take place, and maneuver considerations for conduct of a remount in contact.

While disengagement and displacement are valuable tactical tools, they can be extremely difficult to execute in the face of a rapidly moving enemy force. In fact, displacement in contact poses such great problems that the company team commander must plan for it thoroughly before the operation; even then, he must carefully evaluate the situation whenever displacement in contact becomes necessary to ensure it is feasible and will not result in unacceptable personnel or equipment losses.

Disengagement criteria

Disengagement criteria dictate to subordinate elements the circumstances under which they will displace to an alternate, supplementary, or successive BP. The criteria are tied to an enemy action (such as one MRC advancing past PL DOG) and are linked to the friendly situation (for example, they may depend on whether an overwatch element or artillery can engage the enemy). Disengagement criteria are developed during the planning process based on the unique conditions of a specific situation; they should never be part of the unit's SOP.

Direct fire suppression

The attacking enemy force must not be allowed to bring effective fires to bear on a disengaging force. Direct fires from the base of fire element, employed to suppress or disrupt the enemy, are the most effective way to facilitate disengagement. The company team may receive base of fire support from another element in the task force. In most cases, however, the team will establish its own base of fire; an internal base of fire requires the commander to carefully sequence the displacement of his elements.

Cover, concealment, and rehearsals

Ideally, the company team and subordinate elements should use covered and/or concealed routes when moving to alternate, supplementary, or successive BPs. Regardless of the degree of protection the route itself affords, the team should rehearse the movement. This will increase the speed at which it can conduct the move, providing an added measure of security. The company team commander must make a concerted effort whenever time is available to rehearse movement in limited visibility and degraded conditions.

Indirect fires and smoke

Artillery or mortar fires can be employed to assist the team during disengagement. Suppression fires, placed on an enemy force as it is closing inside the defender's standoff range, will slow the enemy and cause him to button up. The defending force rapidly engages the enemy with long-range direct fires, then disengages and moves to new positions. Smoke can be employed to obscure the enemy's vision, slow his progress, or screen the defender's movement out of the BP or along his displacement route.

Obstacle integration

Obstacles should be integrated with direct and indirect fires to assist in disengagement. By slowing and disrupting enemy movement, obstacles provide the defender with the time necessary for displacement and allow friendly forces to employ direct and indirect fires against the enemy. MOPMS can also be employed in support of the disengagement, either to block a key displacement route once the displacing unit has passed through it or to close a lane through a tactical obstacle.

The location of obstacles in support of disengagement depends in large measure on METT-TC factors. A major consideration is that an obstacle should be positioned far enough away from the defender that he can effectively engage enemy elements on the far side of the obstacle while remaining out of range of the enemy's massed direct fires.

FIRE SUPPORT

Target purpose

For the fire plan to be effective in the defense, the unit must plan and execute fires in a manner that achieves the intended task and purpose of each target. Indirect fires serve a variety of purposes in the defense, including the following:

- Slow and disrupt enemy movement.
- Prevent the enemy from executing breaching operations at turning or blocking obstacles.
- Destroy or delay enemy forces at fixing obstacles using massed fires or pinpoint munitions (such as Copperhead rounds).
- Disrupt enemy support by fire elements.
- Defeat attacks along dismounted avenues of approach with the use of FPF.
- Disrupt the enemy to allow friendly elements to disengage or conduct counterattacks.
- Obscure enemy observation or screen friendly movement during disengagement and counterattacks.
- Deliver scatterable mines to close lanes and gaps in obstacles, to disrupt or prevent enemy breaching operations, to disrupt enemy movement at choke points, or to separate or isolate enemy echelons.
- Provide illumination as necessary.
- Execute SEAD missions to support CAS attacks and high-payoff targets.
- Use smoke to separate enemy echelons; to screen friendly displacement; or to silhouette enemy formations, facilitating direct fire engagement.

Fire support assets

In developing the fire plan, the company team must evaluate the indirect fire systems available to support a specific operation; considerations include tactical capabilities, weapons ranges, and available munitions. These factors help the company team commander and FSO to determine the best method for achieving the purpose of each target in the fire plan.

Positioning of the FSO and FIST-V

The company team's fire support personnel contribute significantly to the fight; effective positioning is critical. The team commander and FSO must select positions that provide fire support personnel with unobstructed observation of the area of operations. In addition, the FIST-V should receive high priority for a position with enhanced survivability.

AIR DEFENSE

The focus of the air defense plan is on likely air avenues of approach for enemy fixed-wing aircraft, helicopters, and UAVs; these may or may not correspond with the enemy's ground avenues of approach. ADA assets are positioned based on METT-TC factors and the task force commander's scheme of maneuver. For example, a key consideration is to position air defense vehicles (BSFVs or Bradley Linebackers), usually about 2 kilometers apart, to maximize the Stinger's capabilities in the defense. The Stinger then becomes the primary killer of rotary-wing and fixed-wing aircraft, with the Bradley's 25-mm machine gun used for close-in defense. In another situation, the task force S2 and the task force air defense officer (ADO) may determine that the air defense vehicles should be positioned independent of the friendly ground maneuver elements. These vehicles are also frequently used to protect friendly counterattack forces against aerial observation or attack.

Other factors in air defense planning include development of engagement criteria for BSFVs or Linebackers that become involved in the ground fight and positioning of air defense vehicles near templated enemy LZs in the task force sector. Resupply of Stinger missiles places unique demands on the company team; it requires detailed planning and consideration. It may be necessary to pre-position Stingers in the company team area to facilitate timely resupply.

MOBILITY AND SURVIVABILITY

Mobility

Mobility operations in the defense focus on the ability to reposition forces, including unit displacement and the commitment of reserve forces. Priorities set by the task force may specify some routes for improvement in support of such operations. Normally, however, all or most of the task force engineer assets will be allocated to the survivability and/or countermobility effort.

Survivability

Survivability positions are prepared in BPs or strongpoints to protect vehicles, weapon systems, and dismounted infantry elements. Positions can be dug in and reinforced with overhead cover to provide dismounted infantry and crew-served weapons with protection against shrapnel from air bursts. Vehicle fighting positions are constructed with both hull-defilade firing positions and turret-defilade observation positions. In addition, the company team may use blade assets to dig in ammunition prestocks at alternate, supplementary, or successive BPs or in individual vehicle fighting positions.

Because the process of digging in a task force requires many "blade hours" and assets may be limited, the company team commander must develop a plan for digging in the team; he prepares the team area for the arrival of the blades by marking vehicle positions and designating guides for the engineer vehicles. He also may have to position fuel vehicles in the vicinity of the BP to refuel the supporting ACEs or dozers.

The commander must prioritize the survivability effort; for example, he may only have time to dig in positions that have the least amount of natural cover and concealment. Soil composition should also be a consideration in BP selection; sites to be avoided include those where the soil is overly soft, hard, wet, or rocky.

Countermobility

To be successful in the defense, the company team commander must integrate individual obstacles into both direct and indirect fire plans, taking into account the intent of each obstacle group. At the task force level, obstacle intent consists of the target of the obstacle group, the desired effect on the target, and the relative location of the group. In addition, like artillery and mortar employment, obstacle emplacement must have a clear task and purpose. The purpose will influence many aspects of the operation, from selection and design of obstacle sites to actual conduct of the defense. Normally, the task force or brigade will designate the purpose of an obstacle group. For example, the task force commander might specify this purpose: "We must deny the enemy access to our flank by turning the northern, first-echelon MRB into our engagement area, allowing Team B and
Team C to mass their fires to destroy it."

Refer to FM 90-7 for additional information on obstacle planning, siting, and turnover. The following paragraphs discuss employment considerations for various types of standard obstacles. (**NOTE:** Engineers can augment these with nonstandard obstacles such as tank ditches and abatises.)

Disrupting effects

These are often the product of situational obstacles, such as scatterable mines. Disrupting effects focus a combination of fires and obstacles to impede the enemy’s attack in several ways, such as breaking up his formations, interrupting his tempo, and causing premature commitment of breaching assets. These obstacles are normally used forward within engagement areas or in support of forward positions within a defensive sector. Normally, only indirect fires and long-range direct fires are planned in support of disrupting obstacles.

Turning effects

The commander uses this combination of fires and obstacles to support the scheme of maneuver in several ways, including the following:

- Divert the enemy into an engagement area, exposing his flanks when he makes the turn.
- Divert an enemy formation from one avenue of approach to another.
- Deny the enemy the ability to mass forces on a flank of the friendly force.

The fire plan should specify how the defending unit will maintain pressure on the enemy throughout the turn as well as identify the task and purpose of the obstacle. In addition, the commander must clearly identify the size of the enemy element to be turned. The turning obstacle is tied into an existing obstacle (severely restricted terrain) at its initial point. The commander may further enhance the effectiveness of the obstacle by using infantry squads to cover it with fires.

Fixing effects Fixing effects use the combination of fires and obstacles to slow or temporarily stop an attacker within a specified area, normally an engagement area. The defending unit can then focus on defeating the enemy, using indirect fires to suppress him in the engagement area while direct fires inflict maximum casualties and damage. If necessary, the defender can reposition his forces using the additional time gained as a result of fixing the enemy. To fully achieve the fixing effect, these obstacles must be covered by direct and/or indirect fires. The commander must clearly specify the size of enemy unit to be fixed.

Blocking effects Blocking effects use the combination of fires and obstacles to stop an attacker along a specific avenue of approach. Fires employed to achieve blocking effects are primarily oriented on preventing the enemy from maneuvering. Because they require the most extensive engineer effort of any type of obstacle, blocking effects are employed only at critical choke points on the battlefield.

Blocking obstacles must be anchored on both sides by existing obstacles (severely restricted terrain). They must be covered by direct and/or indirect fires to achieve the full blocking effect. The commander must clearly specify the size of enemy force that he intends to block.

Protective obstacles Company teams are responsible for coordinating and employing their own protective obstacles to protect their BPs. To be most effective, these should be tied into existing obstacles. The company team may use mines and wire from its basic load or pick up additional assets (including MOPMS, if available) from the engineer Class IV/V supply point. The team may also be responsible for any other required coordination (such as that needed in a relief in place), for recovery of the obstacle, or for its destruction (as in the case of MOPMS).

In planning for protective obstacles, the commander must evaluate the potential threat to the team's position and then employ the appropriate system to counter that threat. For example, MOPMS is predominantly an antitank system best used on mounted avenues of approach, although it does have some antipersonnel applications; on the other hand, wire obstacles may be most effective when employed on dismounted avenues. FM 90-7 provides detailed planning guidance for protective obstacle emplacement.

Obstacle lanes The company team may be responsible for actions related to lanes through obstacles. These duties may include marking lanes in an obstacle, reporting locations of the start and end points of each lane, manning contact points, providing guides for elements passing through the obstacle, and closing the lane.

COMBAT SERVICE SUPPORT

In addition to the CSS functions required for all operations, the company team commander's planning process should cover the considerations discussed in the following paragraphs. (**NOTE:** CSS operations are discussed in detail in Chapter 7 of this manual.)

Prestocks and caches

The commander's mission analysis may reveal that the company team's ammunition needs during an upcoming operation will exceed its basic load. This will require the team to establish ammunition caches, or prestocks. The prestocks, which may be positioned either at an alternate or successive BP or with the fighting vehicles, should be both dug in and guarded.

Position of trains

The company team combat trains normally operate 500 to 1,000 meters (or one terrain feature) to the rear of the company team to provide immediate recovery, medical, and maintenance support. The commander must ensure that all elements know the locations of the forward and main aid stations. He must also plan and rehearse casualty evacuation procedures.

SECTION 3 - PREPARATION AND INTEGRATION

ENGAGEMENT AREA DEVELOPMENT

The engagement area is where the commander intends to trap and destroy an enemy force using the massed fires of all available weapons. The success of any engagement depends on how effectively the commander can integrate the obstacle plan, the indirect fire plan, and the direct fire plan within the engagement area to achieve the company team's tactical purpose.

At the company team level, engagement area development is a complex function, demanding parallel planning and preparation if the team is to accomplish the myriad tasks for which it is responsible. Despite this complexity, however, engagement area development resembles a drill in that the commander and his subordinate leaders use an orderly, fairly standard set of procedures. Beginning with evaluation of METT-TC factors, the development process covers these steps:

- Identify all likely enemy avenues of approach.
- Determine likely enemy schemes of maneuver.
- Determine where to kill the enemy.
- Plan and integrate obstacles.
- Emplace weapon systems.
- Plan and integrate indirect fires.
- Rehearse the execution of operations in the engagement area.

Identify likely enemy avenues of approach

The following paragraphs outline planning and preparation procedures the commander may use for each of these steps.

The following procedures and considerations, as illustrated in Figure 4-4, apply in identifying the enemy's likely avenues of approach:

- Conduct initial reconnaissance. If possible, do this from the enemy's perspective along each avenue of approach into the sector or engagement area.
- Identify key and/or decisive terrain. This includes locations that afford positions of advantage over the enemy as well as natural obstacles and/or choke points that restrict forward movement.
- Determine which avenues will afford cover and concealment for the enemy while allowing him to maintain his tempo.
- Evaluate lateral routes adjoining each avenue of approach.

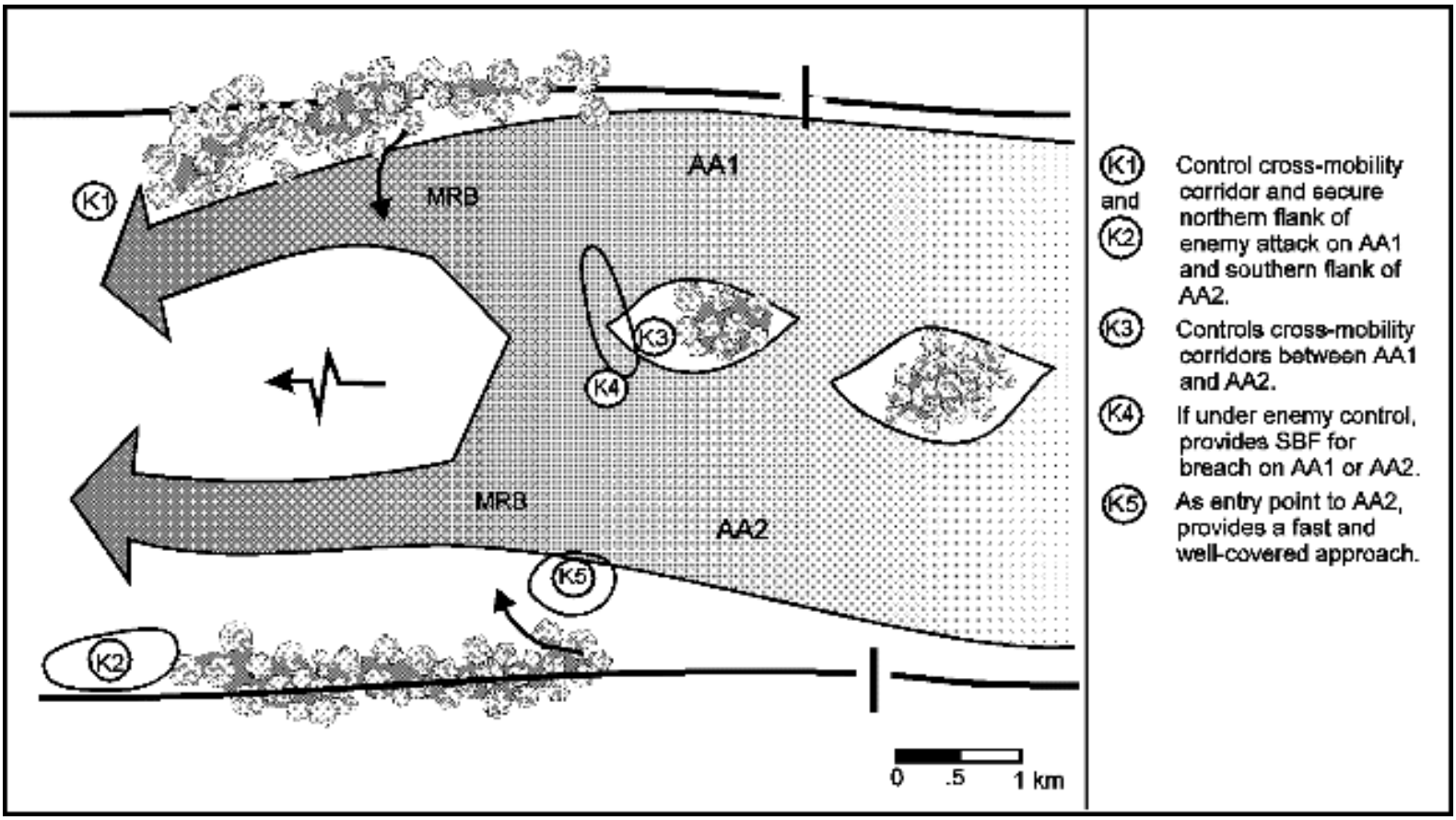


Figure 4-4. Identify all likely enemy avenues of approach.

Determine the enemy scheme of maneuver

The company team commander can use the following procedures and considerations, which are illustrated in Figure 4-5, in determining the enemy's scheme of maneuver:

- Determine how the enemy will structure the attack. Will he use two MRBs forward and one back? Will the attack be led by an FSE, an advance guard, or a forward detachment?
- Determine how the enemy will use his reconnaissance assets. Will he attempt to infiltrate friendly positions?
- Determine where and when the enemy will change formations and/or establish support by fire positions.
- Determine where, when, and how the enemy will conduct his assault and/or breaching operations.
- Determine where and when he will commit follow-on forces.
- Determine the enemy's expected rates of movement.
- Assess the effects of his combat multipliers.
- Determine what reactions the enemy is likely to have in response to projected friendly actions.

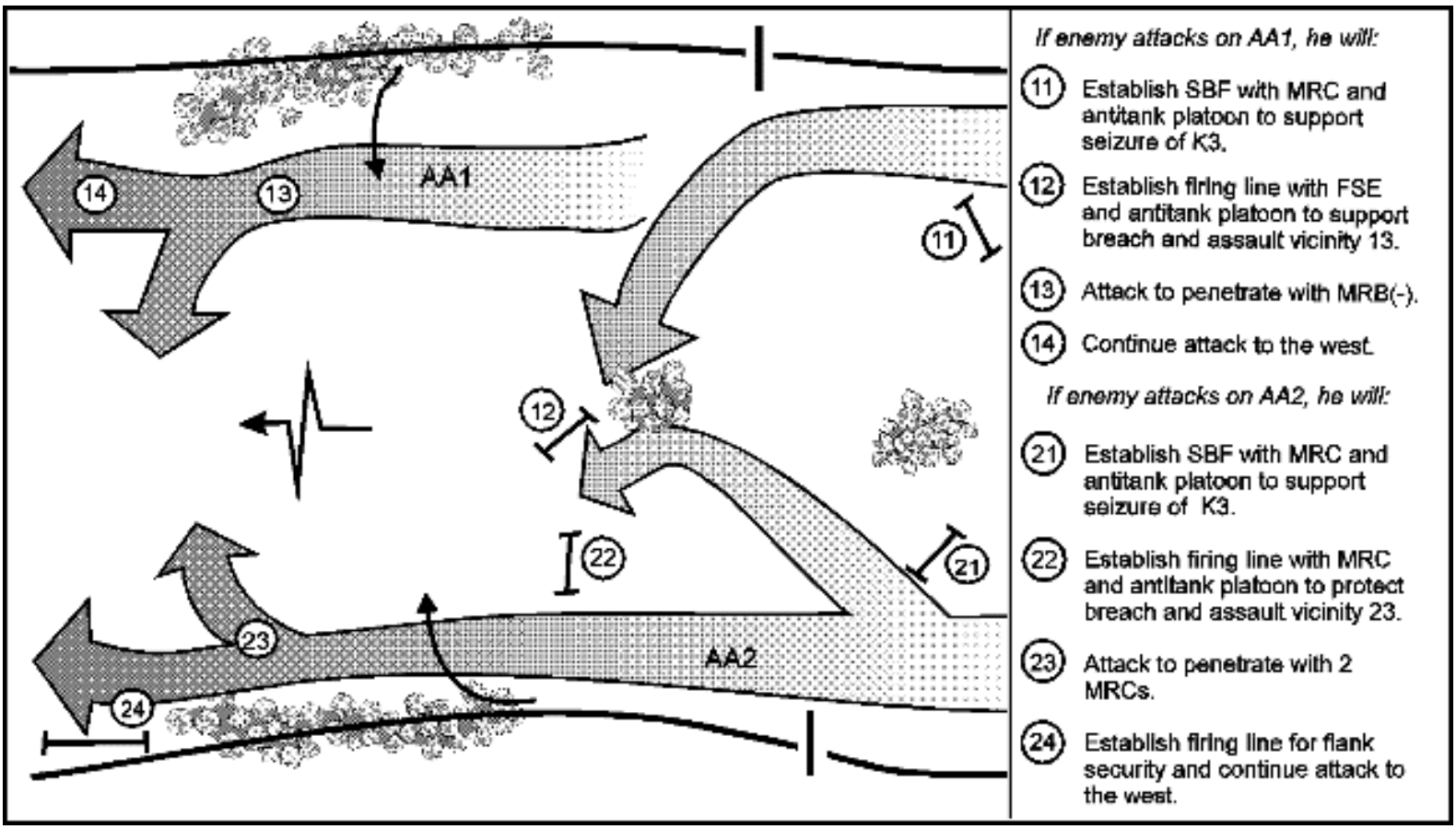


Figure 4-5. Determine the enemy's scheme of maneuver.

Determine where to kill the enemy

The following steps (illustrated in Figure 4-6) apply in identifying and marking where the task force and company team will engage the enemy:

- Identify TRPs that match the enemy's scheme of maneuver, allowing the company team to identify where it will engage enemy forces through the depth of the sector.
- Identify and record the exact location of each TRP.
- Determine how many weapon systems will focus fires on each TRP to achieve the desired end state.
- Determine which platoons will mass fires on each TRP.
- Establish engagement areas around TRPs.
- Develop the direct fire planning measures necessary to focus fires at each TRP. (**NOTE:** For additional information applicable to this step, refer to the discussion of direct fire control in Chapter 2 of this manual.)

  NOTE: In marking TRPs, use thermal sights to ensure visibility at the appropriate range under varying conditions, including daylight and limited visibility (darkness, smoke, dust, or other obscurants).

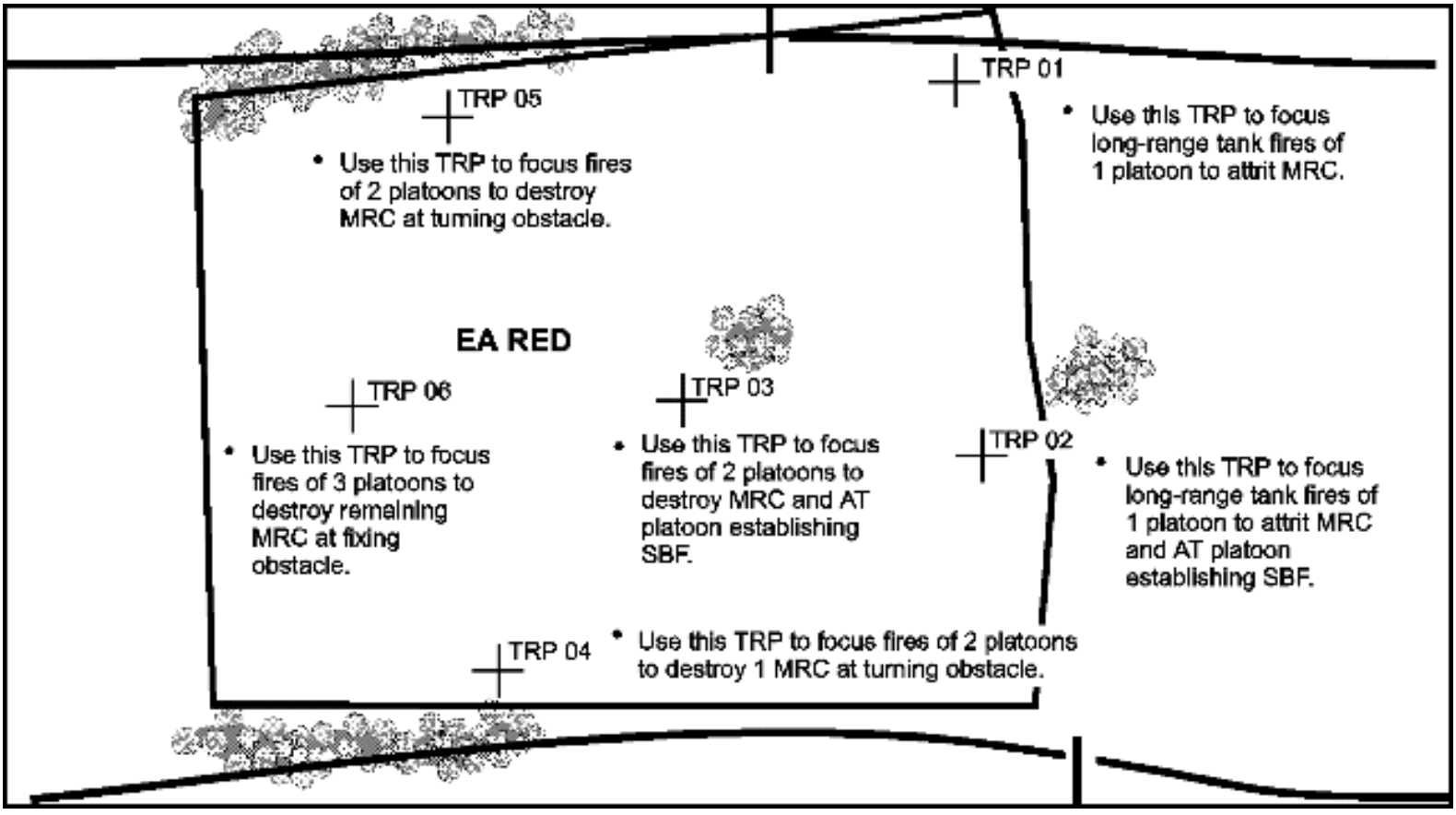


Figure 4-6. Determine where to kill the enemy.

Plan and integrate obstacles

The following steps apply in planning and integrating obstacles in the company team defense (see Figure 4-7 for an illustration):

- In cooperation with the engineer platoon leader, identify, site, and mark task force tactical obstacles and team protective obstacles. (**NOTE:** Refer to the discussion of obstacle siting in Chapter 6 of this manual.)
- Ensure coverage of all obstacles with direct fires.
- Assign responsibility for guides and lane closure as required.

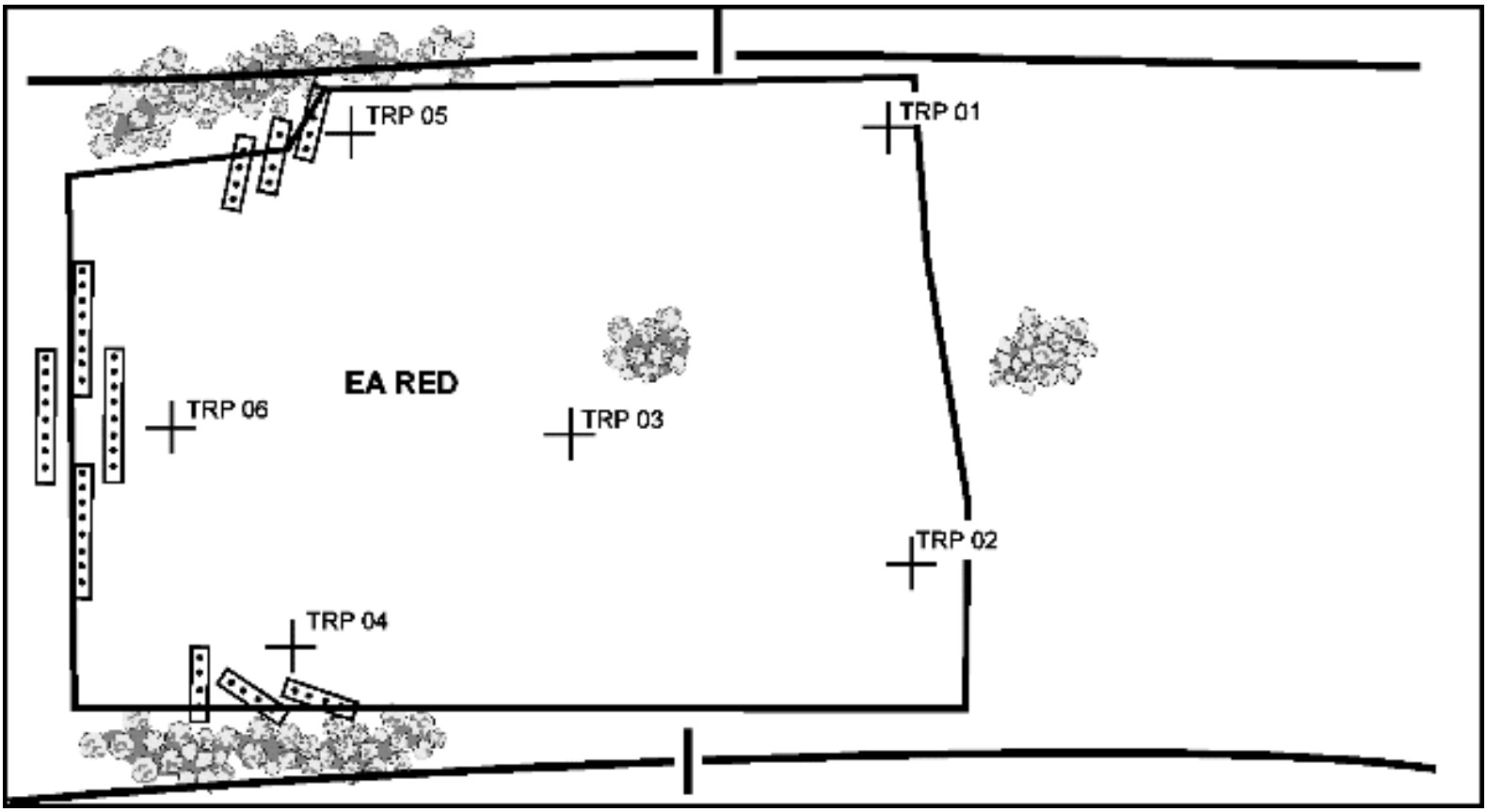


Figure 4-7. Plan and integrate obstacles.

Emplace weapon systems

The following steps apply in selecting and improving BPs and emplacing the company team's vehicles, crew-served weapon systems, and dismounted infantry positions (see Figure 4-8):

- Select tentative platoon BPs. (**NOTE:** When possible, select these while moving in the engagement area. Using the enemy's perspective enables the commander to assess survivability of the positions.)
- Conduct a leader's reconnaissance of the tentative BPs.
- Drive the engagement area to confirm that selected positions are tactically advantageous.
- Confirm and mark the selected BPs.
- Ensure that BPs do not conflict with those of adjacent units and that they are effectively tied in with adjacent positions.
- Select primary, alternate, and supplementary fighting positions to achieve the desire effect for each TRP.

- Ensure that platoon leaders, PSGs, vehicle commanders, and/or dismounted infantry squad leaders position weapon systems so that each TRP is effectively covered by the required number of weapons, vehicles, and/or platoons.
- Ensure that positions allow vehicle commanders, loaders, and/or gunners (as applicable for each vehicle) to observe the engagement area from the turret-down position and engage enemy forces from the hull-down position.
- Stake vehicle positions in accordance with unit SOP so engineers can dig in the positions while vehicle crews perform other tasks.
- Proof all vehicle positions.

The following steps, as illustrated in Figure 4-8, apply in planning and integrating indirect fires:

- Determine the purpose of fires.
- Determine where that purpose will best be achieved.
- Establish the observation plan, with redundancy for each target. Observers will include the FIST, as well as members of maneuver elements with fire support responsibilities (such as PSGs).
- Establish triggers based on enemy movement rates.
- Obtain accurate target locations using survey and/or navigational equipment.
- Refine target locations to ensure coverage of obstacles.
- Adjust artillery and mortar targets.
- Plan FPF.
- Request CFZs for protection of maneuver elements and NFAs for protection of OPs and forward positions.

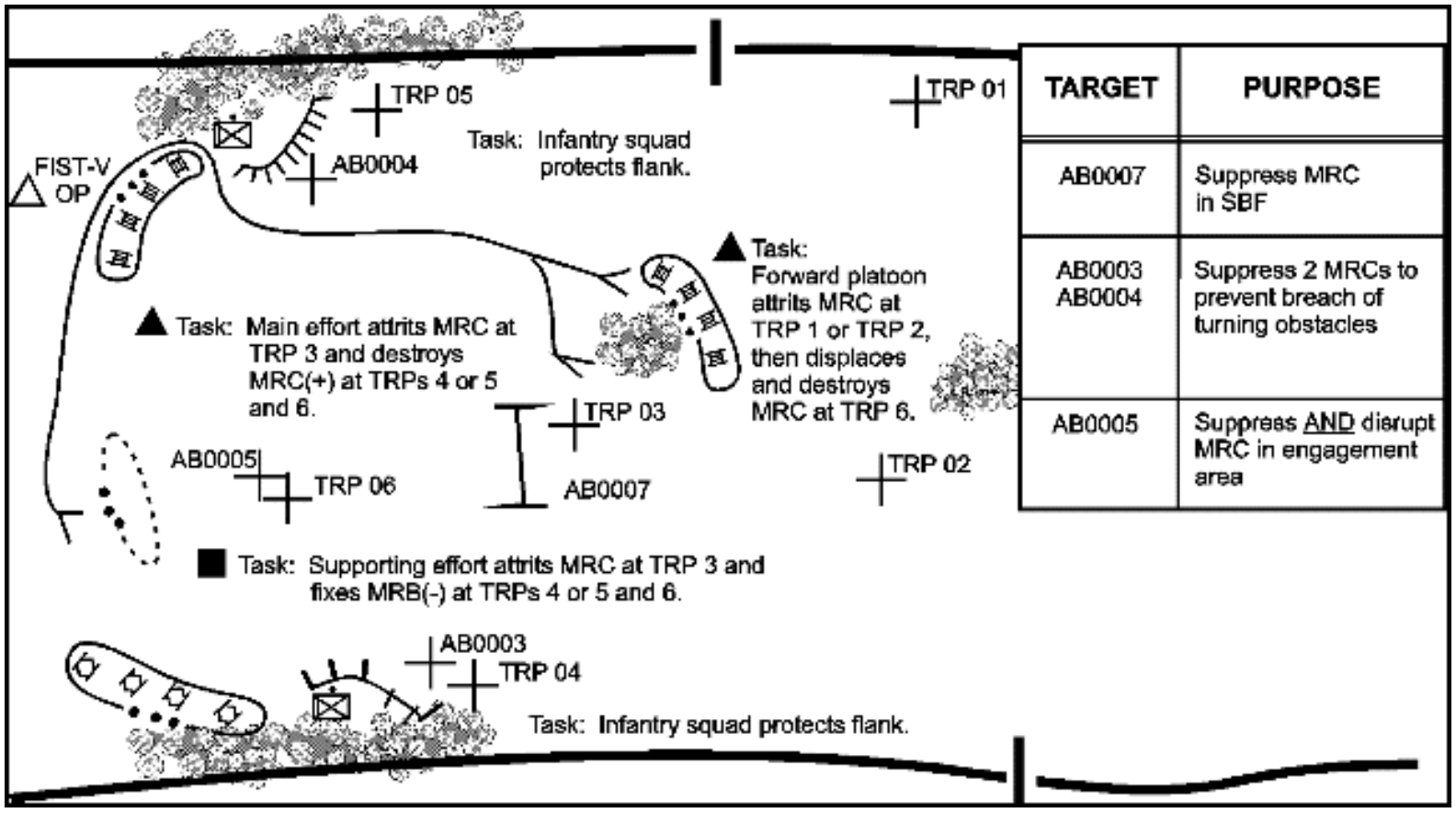


Figure 4-8. Emplace weapon systems and plan and integrate indirect fires.

NOTE: Figure 4-9 illustrates the completed scheme of maneuver for a company team defense in sector; refer to the discussion of defense in sector in Section 4 of this chapter.

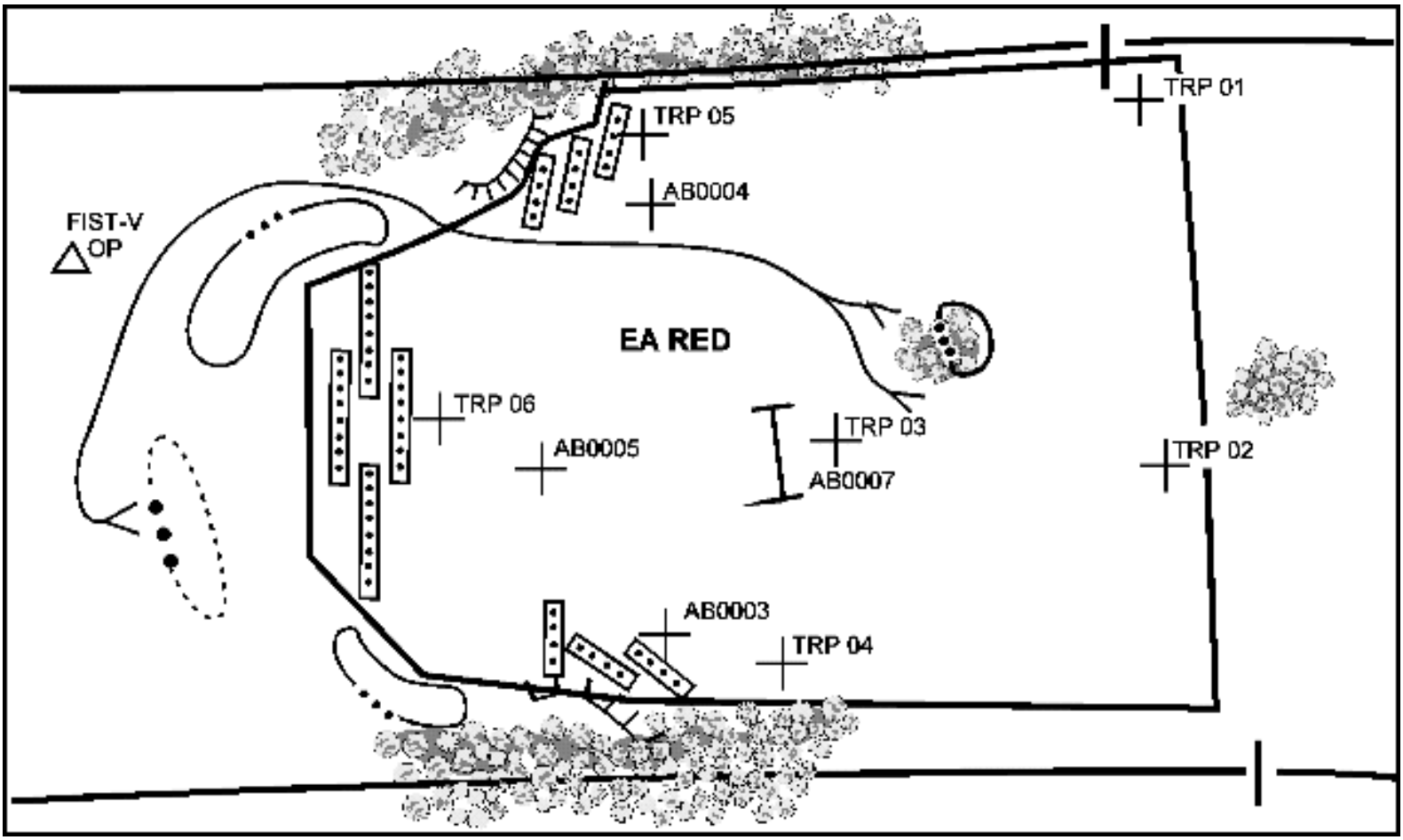


Figure 4-9. Example of a company team defense in sector.

Conduct an engagement area rehearsal

The purpose of this rehearsal is to ensure that every leader and soldier understands the plan and that elements are prepared to cover their assigned areas with direct and indirect fires. Although the company team commander has several options, the most common and most effective type is the mounted rehearsal. One technique for the mounted rehearsal in the defense is to have the company team trains, under the control of the team XO, move through the engagement area to depict the enemy force while the commander and subordinate platoons rehearse the battle from the team BP. The rehearsal should cover these actions:

- Rearward passage of security forces (as required).
- Closure of lanes (as required).
- Movement from the hide position to the BP.
- Use of fire commands, triggers, and/or MELs to initiate direct and indirect fires.
- Shifting of fires to refocus and redistribute fire effects.
- Preparation and transmission of critical reports using FM and digital systems (as applicable).
- Assessment of the effects of enemy weapon systems.
- Displacement to alternate, supplementary, or successive BPs.
- Cross-leveling or resupply of Class V.

- Evacuation of casualties.

  NOTE: The company team commander should coordinate the team rehearsal with the task force to ensure other units' rehearsals are not planned for the same time and/or location. Coordination will lead to more efficient use of planning and preparation time for all task force units. It will also eliminate the danger of misidentification of friendly forces in the rehearsal area, which could result in fratricide.

BATTLE POSITION OCCUPATION AND PREPARATION

Occupation and preparation of the BP is conducted concurrently with troop-leading procedures and development of the engagement area. Almost all aspects of BP preparation are tied closely to those two processes. As an example of this, the company team commander must determine where to kill the enemy and where to emplace his weapon systems before the team can occupy the BP and begin digging survivability positions. The process is not sequential, however, and the commander must weigh the limited time available against the competing demands of security, engagement area development, execution of the troop-leading procedures, and BP preparation. The potential problems associated with this process, especially lack of adequate preparation time, can be compounded if the team has several other BPs (alternate, supplementary, and successive) and engagement areas to develop.

Hasty occupation of a BP

The company team may conduct a hasty occupation in the defense during a counterattack or after disengagement and movement to alternate, supplementary, or successive BPs. At a minimum, the team must accomplish the following actions:

- The commander issues a FRAGO, at a minimum covering the following information:

  - Changes in the enemy and/or friendly situation (the reason the FRAGO is being issued).

  - The company team task and purpose (what the team must accomplish and why).

  - The task and purpose for each platoon/element.

  - The scheme of fires.

  - Coordinating instructions.

- The team approaches the BP from the rear or flank.
- The commander establishes direct fire control measures or, if these are preplanned, reviews the plan.
- The commander reports "OCCUPIED" to the task force.

Deliberate occupation of a BP

The company team conducts deliberate occupation of a BP when time is available, enemy contact is not expected, and friendly elements are positioned forward in sector to provide security for forces in the MBA. The actual establishment of the BP is conducted concurrently with the development of the engagement area. The commander directs the initial reconnaissance from the engagement area; only then are vehicle and weapon system positions tentatively emplaced.

Once this is completed, subordinate leaders can begin to develop their sector sketches and fire plans based on the basic team fire plan developed during the leader's reconnaissance of the engagement area. Vehicle positions are improved while the direct fire plan is finalized and proofed. Depending on METT-TC factors, the company team may occupy hide positions when preparations are completed, then occupy the BP just before initiating the defensive operation.

BP preparation

The commander will designate the level of preparation for each BP based on the time available and other tactical considerations for the mission. There are three

levels of BP preparation, which are listed here in descending order of thoroughness and time required:

- **Occupy.** This is complete preparation of the position from which the company team will initially defend. The position is fully reconnoitered, prepared, and occupied prior to the "defend NLT" time specified in the task force OPORD. The company team must rehearse the occupation, and the commander must establish a trigger for occupation of the position.
- **Prepare.** The position and the corresponding engagement area will be fully reconnoitered. Platoon and vehicle positions in the BP should be marked, along with fire control measures in the engagement area. Survivability positions may be dug, ammunition caches pre-positioned, and protective obstacles emplaced.
- **Reconnoiter.** The engagement area and BP will both be fully reconnoitered. Tentative platoon and weapon positions should be planned in the BP, and limited fire control measures should be established in the engagement area.

Alternate, supplementary, and successive BPs

In addition to establishing the company team's primary BP, the commander and subordinate leaders normally plan for preparation and occupation of alternate, supplementary, and successive BPs in accordance with the task force OPORD. The following paragraphs describe tactical considerations for these positions; accompanying illustrations depict how the positions are employed in tactical situations.

Alternate BP

The following characteristics and considerations apply for an alternate BP, which is illustrated in Figure 4-10:

- It covers the same avenue of approach and/or sector of fire as the primary BP.
- It is located slightly to the front, flank, or rear of the primary BP.
- It may be positioned forward of the primary BP during limited visibility operations.
- It is normally employed to supplement or support positions with weapons of limited range, such as dismounted infantry positions.

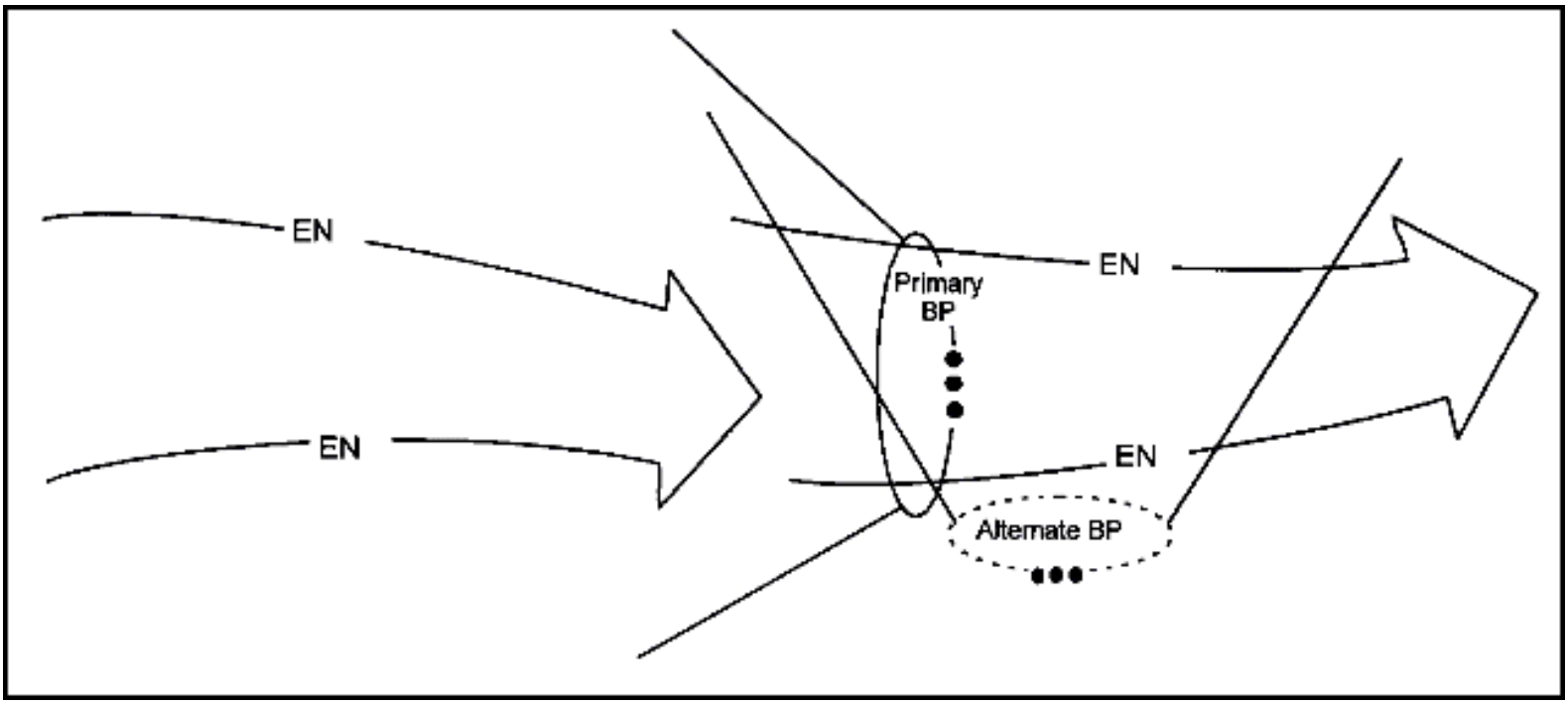


Figure 4-10. Alternate BP.

Supplementary BP

The following characteristics and considerations apply for a supplementary BP, which is illustrated in Figure 4-11:

- It covers an avenue of approach and/or sector of fire different from those covered by the primary BP.
- Occupation is based on specific enemy actions.

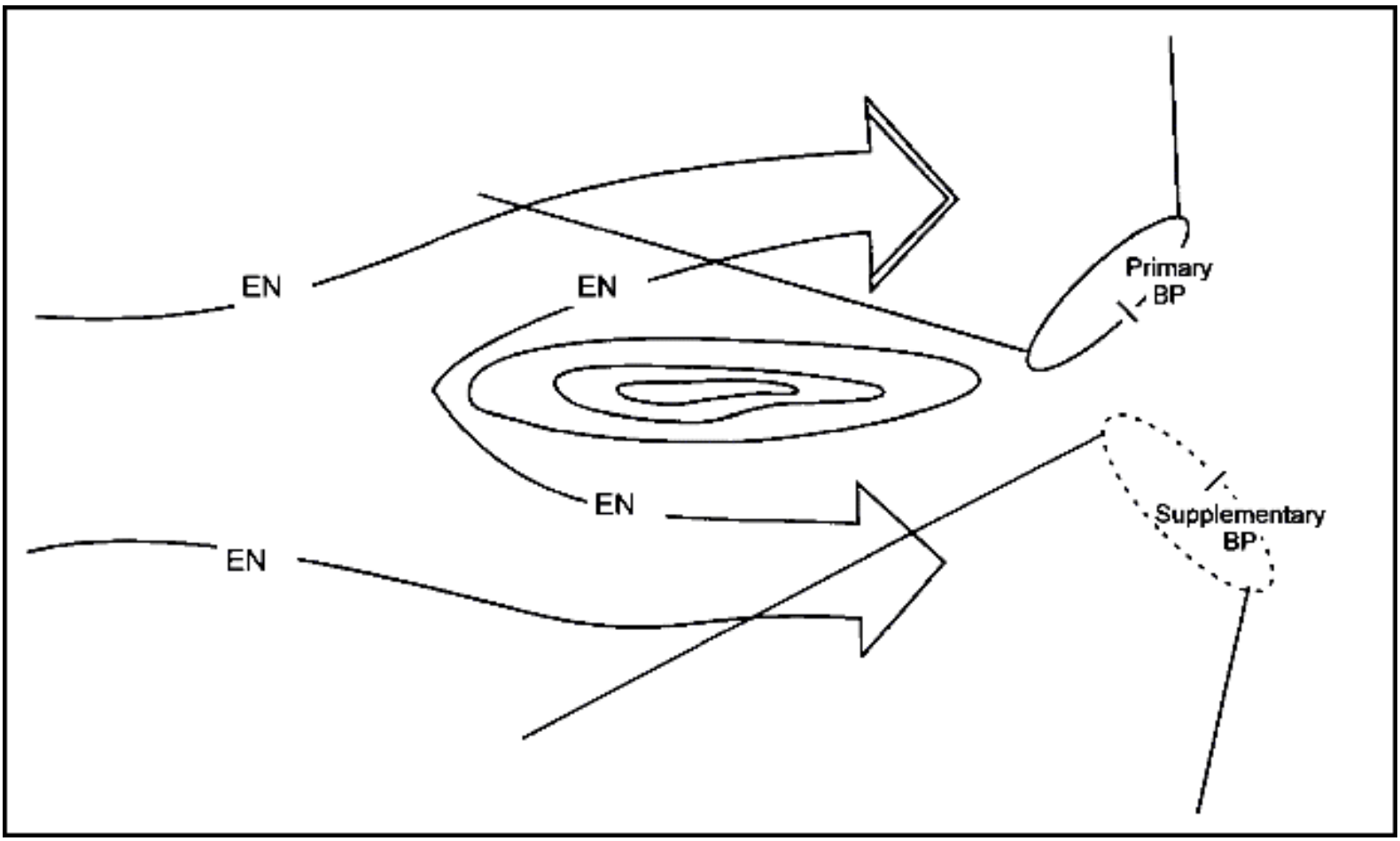


Figure 4-11. Supplementary BP.

Successive BP The following characteristics and considerations apply for a successive BP, which is illustrated in Figure 4-12:

- It covers the same avenue of approach and/or sector of fire as the primary BP.
- It is located in depth through the defensive sector.
- Occupation is based on specific enemy actions or conducted as part of the higher headquarters scheme of maneuver.

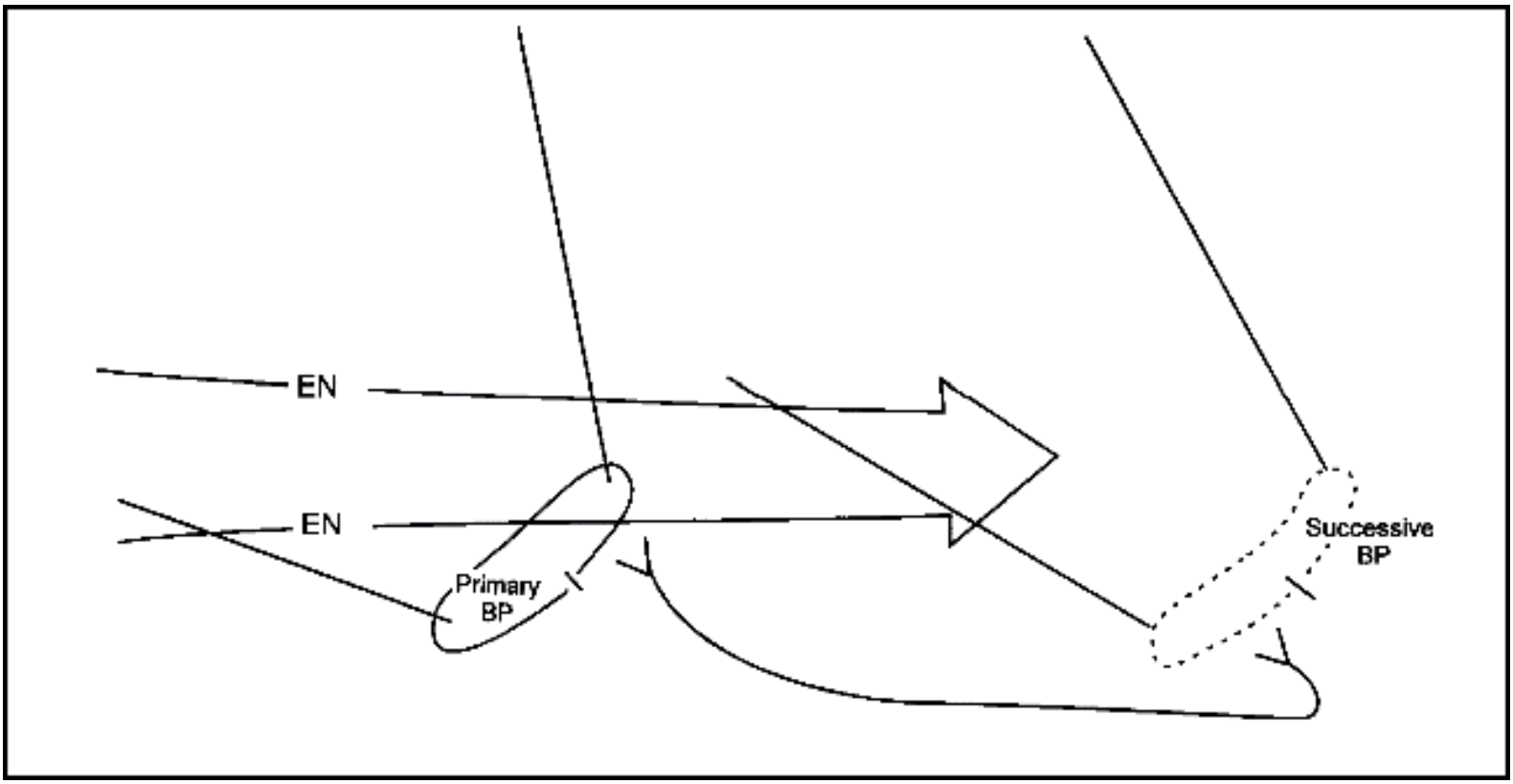


Figure 4-12. Successive BP.

ADJACENT UNIT COORDINATION

The ultimate goal of adjacent unit coordination is to ensure unity of effort in the accomplishment of the higher unit's mission. Items that adjacent units must coordinate include, but are not limited to, the following:

- The enemy situation.
- Unit positions, including locations of command and control nodes.
- Locations of OPs and patrols.
- Overlapping fires (to ensure that direct fire responsibility is clearly defined).
- TRPs.
- Alternate, supplementary, and successive BPs.
- Indirect fire and SOI information.
- Obstacles.
- Air defense considerations, if applicable.
- Routes to be used during occupation and repositioning.
- CSS considerations.

SECTION 4 - DEFENSIVE TECHNIQUES

The company team will normally defend using one of these basic techniques:

- Defend in sector.
- Defend a BP.
- Defend a strongpoint.
- Defend a perimeter.

DEFEND IN SECTOR

This defense allows the task force to maintain flank contact and security and ensures unity of effort within the task force scheme of maneuver. Sectors afford depth in the company team defense. They allow the team to achieve the commander's desired end state while facilitating clearance of fires at the appropriate level of responsibility. The task force commander normally orders a defense in sector when these conditions apply:

- Flexibility is desired.
- Retention of specific terrain features is not necessary.
- The task force cannot concentrate fires because of any of the following factors:

  - Extended frontages.

  - Intervening, or cross-compartment, terrain features.

  - Multiple avenues of approach.

The company team is assigned a defend in sector mission to prevent enemy forces from penetrating the rear boundary of the sector; see Figures 4-2 and 4-9. To maintain coherence of the sector defense, it is critical that the company team remain tied in to adjacent units on the flanks. The task force commander may direct the team to conduct the defense in one of two ways:

- In one type, he specifies a series of successive BPs within the sector from which the team will defend; he normally does this to ensure that fires of two company teams can be massed at any given time.
- The other option is to assign a sector to the company team. The team commander assumes responsibility for most tactical decisions, normally controlling maneuver of his platoons by assigning them a series of successive BPs. The task force commander will normally assign a sector to the team only when it is fighting in isolation.

DEFEND A BATTLE POSITION

The task force commander assigns this defense to his company teams when he wants to mass the fires of two or more teams in the task force engagement area or to position a team to execute a counterattack. Purposes of this defense include the following:

- Destroy an enemy force in the engagement area.
- Block an enemy avenue of approach.
- Control key or decisive terrain.
- Fix the enemy force to allow another unit to maneuver.

The task force commander assigns company team BPs to allow each team to concentrate its fires or to place it in an advantageous position for the counterattack. The size of the team BP can vary, but it should provide enough depth and maneuver space for platoons to maneuver into alternate or supplementary positions and to execute local counterattacks.

The BP is a general position on the ground; the company team commander places his vehicles on the most favorable terrain within the BP based on the higher unit mission and intent. The team then fights to retain the position unless ordered by the task force commander to counterattack or displace. (**NOTE:** Figure 4-1, illustrates a company team defense of a BP.)

DEFEND A STRONGPOINT

Defense of a strongpoint is an uncommon mission for an armor or mechanized infantry force. Strongpoints sacrifice the mobility of the unit's organic weapon systems, require extensive engineer support (in terms of expertise, materials, and equipment), and take a long time to complete. Nonetheless, when the company team is directed to defend a strongpoint, it must retain the position at all costs until ordered to withdraw. This defensive mission may require the team to accomplish any of the following purposes:

- Hold key or decisive terrain critical to the task force scheme of maneuver.
- Provide a pivot for the maneuver of friendly forces.
- Block an avenue of approach.
- Canalize the enemy into one or more engagement areas.

Employment considerations

The success of the strongpoint defense depends on how well the position is tied into the existing terrain. It is most effective when employed in terrain that naturally provides cover and concealment to both the strongpoint and its supporting obstacles. Mountainous, forested, or urban terrain can be easily adapted to a strongpoint defense. Strongpoints placed in more open terrain, however, require the use of reverse slopes or of extensive camouflage and deception efforts.

The prime characteristic of an effective strongpoint is that it cannot be easily overrun or bypassed. It must be positioned and constructed so that the enemy knows he can reduce it only at the risk of heavy casualties and significant loss of materiel. He must be forced to employ massive artillery concentrations and dismounted assaults. To accomplish this, the strongpoint must be tied in with existing obstacles and positioned to afford 360-degree security in terms of both observation and fighting positions.

At company team level, a strongpoint defense is normally executed by a mechanized infantry team to take advantage of the organic infantry squads' ability to retain ground. The defense can be used in conjunction with BPs and sectors to make best use of the team's tanks and BFVs. Before committing a platoon to construct a strongpoint, the company team commander must have the permission of the task force commander.

Strongpoint procedures

The following discussion covers a variety of techniques and considerations involved in the establishment and execution of the strongpoint defense. It also includes considerations for displacement and withdrawal from the strongpoint.

Establishment of the strongpoint

The company team commander begins by determining the projected size of the strongpoint. He does this by assessing the number of vehicles, weapon systems, and individual soldiers available to conduct the assigned mission, as well as the terrain on which the team will fight. He must remember that although a strongpoint is usually tied into a task force defense and is flanked by other BPs, it must afford 360-degree observation and firing capability.

The commander must ensure that layout and organization of the strongpoint maximize the capabilities of the team's personnel strength and weapon systems without sacrificing the security of the position. Siting options range from positioning all the vehicles outside the strongpoint (with the infantry occupying dismounted positions inside it) to placing all assets inside the position. From the standpoint of planning and terrain management, placing everything within the strongpoint is the most difficult option. An added factor is that this is potentially the most dangerous organization because of the danger of enemy encirclement.

In laying out the strongpoint, the commander first designates weapon positions that support the task force defensive plan. Once these primary positions have been identified, he continues around the strongpoint, siting weapons on other possible enemy avenues of

approach and engagement areas until he has the ability to orient effectively in any direction. The fighting positions facing the task force engagement area may be positioned along one line of defense or staggered in depth along multiple lines of defense (if the terrain supports positions in depth). Similarly, vehicle positions may be located abreast of the two-man fighting positions or, for greater depth, behind them. The commander can create a broader frontage for the strongpoint by interspersing vehicle and dismounted positions.

Mobility/survivability considerations

Terrain reinforcement is the primary role of engineers in support of the strongpoint defense. Priorities of work will vary depending on the situation and the time available. For example, the first 12 hours of the strongpoint construction effort may be critical for emplacing countermobility and survivability positions as well as command and control bunkers. On the other hand, if the focus of engineer support is to make terrain approaching the strongpoint impassable, the task force engineer effort must be adjusted accordingly.

The task force obstacle plan will be the foundation for the company team strongpoint obstacle plan. Depending on the situation, the commander may need to determine how he can integrate protective obstacles (designed to defeat dismounted assaults) into the overall countermobility plan. In addition, if adequate time and resources are available, he should plan to reinforce existing obstacles using field expedient demolitions and booby traps.

Once the enemy has identified the strongpoint, it will bring all the fires it can spare against the position. To safeguard his dismounted infantry, the commander must arrange for construction of overhead cover for the individual fighting positions. If the strongpoint is in a more open position, such as on a reverse slope, he may also plan for connecting trench lines, which will allow soldiers to move between positions without exposure to fire. Time permitting, these crawl trenches can be improved to fighting trenches or standard trenches.

Employment of the reserve

The reserve may comprise mounted elements, dismounted elements, or a combination. Regardless of the actual configuration, the commander must know how to influence the strongpoint battle by employing his reserve. He has several employment options, including these:

- Reinforcing a portion of the defensive line.
- Counterattacking along a portion of the perimeter against an identified enemy main effort.

The commander should identify routes or axes that allow the reserve to move to any area of the strongpoint. He should then designate positions that the reserve can occupy once they arrive. These routes and positions should afford sufficient cover to allow the reserve to reach its destination without enemy interdiction. The commander should give special consideration to developing a direct fire plan for each contingency that may involve the reserve; one key area of focus may be a plan for isolating an enemy penetration of the perimeter.

NOTE: Refer to Section 5 of this chapter for a detailed discussion of reserve employment in the defense.

Displacement considerations The commander should conduct a rehearsal covering actions the company team must take if it has to fall back to a second defensive perimeter; this should include the direct fire control measures necessary to accomplish the maneuver. FPF may be employed to assist in the displacement.

Example Figure 4-13 illustrates an example of a mechanized infantry company team conducting a strongpoint defense in a small town.

DEFEND A PERIMETER

A perimeter defense allows the defending force to orient in all directions, as illustrated in Figure 4-14. In terms of weapons emplacement, direct and indirect fire integration, and reserve employment, a commander conducting a perimeter defense must consider the same factors as for a strongpoint operation.

The perimeter defense is a relatively uncommon mission for a tank or mechanized company team because it allows only limited maneuver and limited depth. (**NOTE:** The defense is normally conducted at task force or higher level to protect maneuver units against Level III threats and to protect CS and CSS assets against Level I and II threats.) Nonetheless, the company team may called upon to execute this type of defense under a variety of conditions, including the following:

- When it must hold critical terrain in areas where the defense is not tied in with adjacent units.
- When it has been bypassed and isolated by the enemy and must defend in place.
- When it conducts occupation of an independent assembly area or reserve position.
- When it begins preparation of a strongpoint.
- When it is directed to concentrate fires into two or more adjacent avenues of approach.

  NOTE: A variant of the perimeter defense is the use of the "Y"-shaped defense, which allows two of the team's platoons to orient at any particular time on any of three engagement areas. Refer to Figure 4-15.

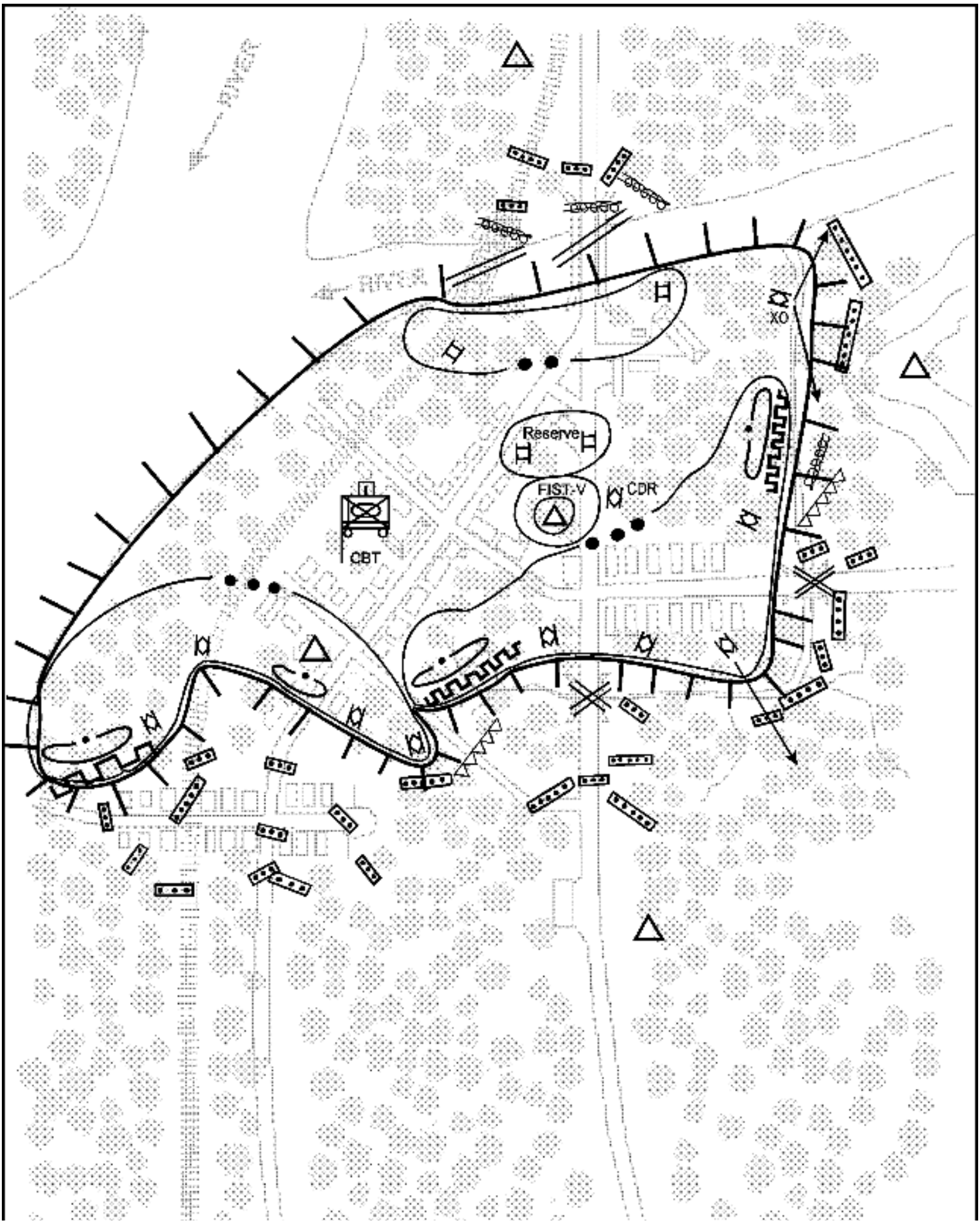

XO
Reserve
FIST-V
CDR
CBT

Figure 4-13. Example of a company team strongpoint defense.

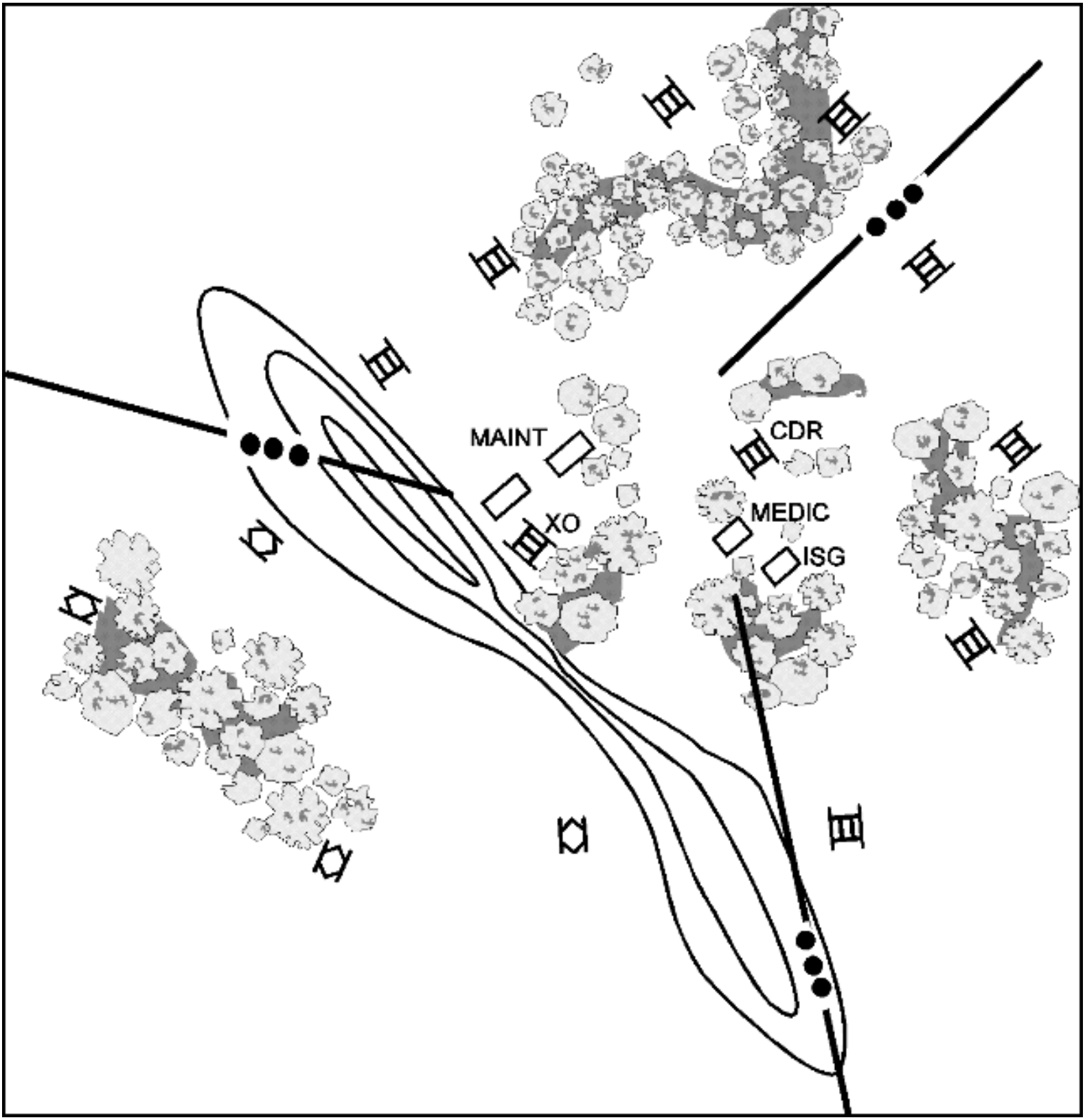


Figure 4-14. Company team perimeter defense during assembly area operations.

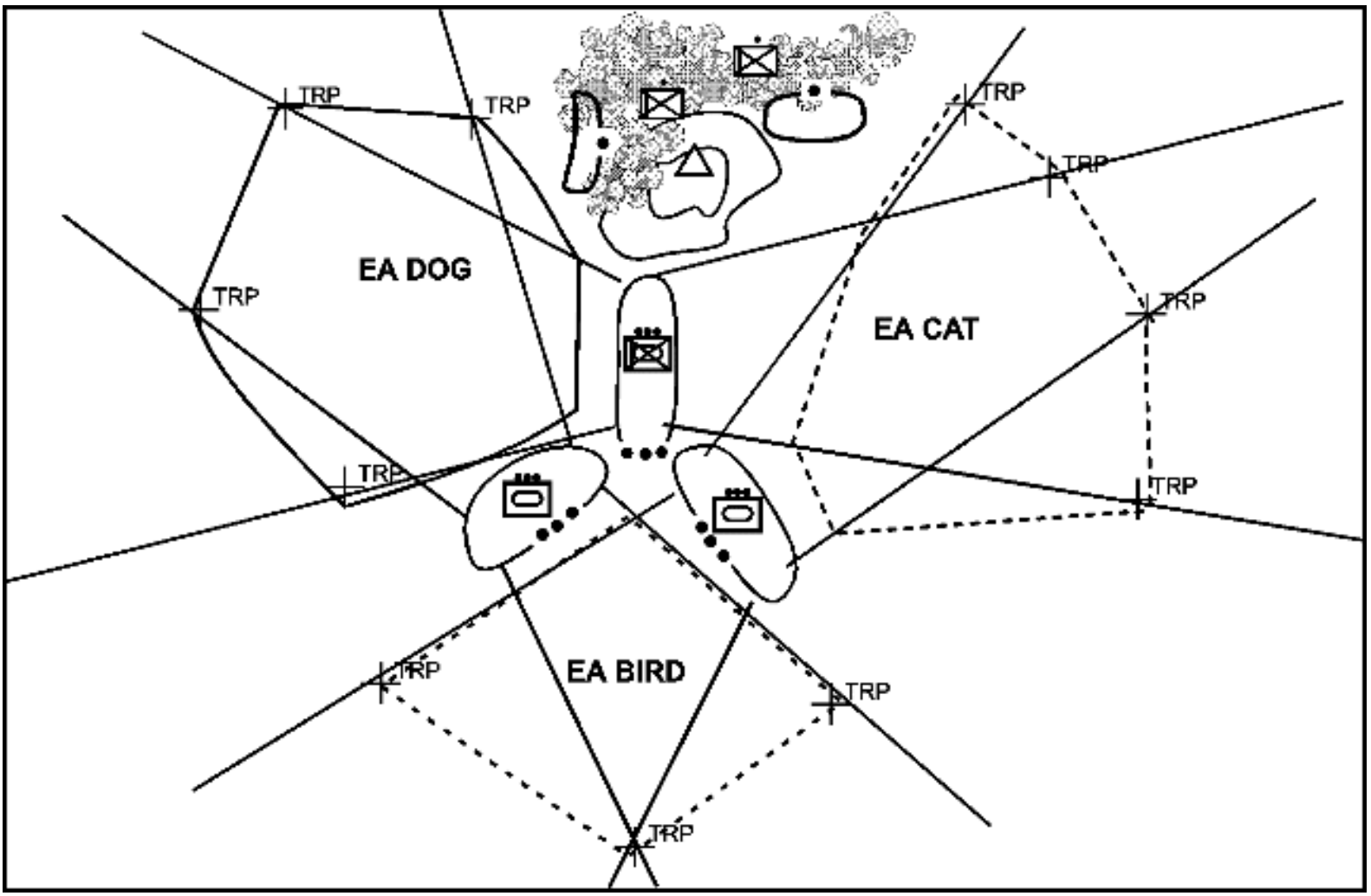


Figure 4-15. "Y"-shaped perimeter defense.

SECTION 5 - RESERVE OPERATIONS IN THE DEFENSE

INTRODUCTION

The company team may be assigned to serve as the reserve for either the task force or the brigade. In this role, it executes either offensive or defensive missions to support the scheme of maneuver of the controlling headquarters. Purposes of reserve employment include the following:

- Conduct counterattacks to destroy an enemy force, to exploit success, and/or to regain the initiative.
- Block enemy penetrations.
- Conduct defense of a BP.
- Reinforce defending elements in a BP.
- Assume another company team's mission.

PLANNING CONSIDERATIONS

Command guidance

Flexibility and the ability to remain responsive to the commander are of paramount importance to successful reserve operations. At the same time, however, these attributes, coupled with the wide range of missions the reserve can perform, dictate that the task force commander's initial intent will not always correspond directly to his use of the reserve on the battlefield. His command guidance for the reserve will most likely cover a series of be-prepared missions rather than a single well-defined task. To assist the reserve commander with mission planning and preparation, the task force commander's guidance should, at a minimum, address the following areas:

- Positioning.
- Be-prepared missions in priority order. The task force commander must understand that the reserve commander may be able to effectively plan for only a limited number of these missions.
- A clear task and purpose for each mission.
- Decision points that define the friendly and/or enemy criteria under which the reserve will be employed for each be-prepared mission.
- Supporting graphic control measures, such as BPs or attack by fire positions and corresponding engagement areas.
- Direct fire planning information.

Time management, coordination, rehearsals, and REDCON levels

Receipt of a reserve mission will have a significant impact on the troop-leading process. Because he normally will be required to plan for several contingencies, the reserve commander must, in most cases, delegate responsibilities for conducting preparations for combat. Thorough coordination and effective rehearsals are keys in ensuring that the unit is ready to fight. As an example, the company team may be tasked as the brigade reserve and committed in one of several sectors. This results in much broader coordination requirements and creates a need for well-focused rehearsals. The team commander and subordinate leaders must be proactive in fulfilling these requirements and ensuring that their soldiers are ready to execute the team's portion of the higher commander's plan. In addition, the commander must make a realistic determination of the REDCON levels under which the company team will operate throughout the reserve mission. Refer to Appendix E of this manual for a detailed discussion of REDCON levels.

Positioning and protection

Since the reserve is one of the higher commander's most important resources, he must ensure both that the force remains intact and that it is located where it can influence the battle. He does this through effective positioning and thorough OPSEC and force protection measures.

Reserve position

The location of the reserve position is a critical factor in the success of the reserve, no matter what mission it is performing. The commander must position the force so it is responsive to the most likely contingency; however, the reserve position must allow it to respond to all possible missions dictated by the task force or brigade.

Force protection

The enemy's actions (both actual and anticipated) also have a significant effect on reserve positioning. The enemy will target the reserve in his intelligence collection effort; later, he will try to prevent the reserve from influencing the battle, using indirect fires, chemicals, or virtually any other means to divert, slow, or weaken it. To counter these actions, the commander must ensure that the reserve position enhances security, if possible affording cover from enemy fires and concealment from enemy observation. If an effective hide position is not available, the reserve can maintain security through frequent moves or effective dispersion.

Axis planning and time-distance analysis

Mobility is a key factor in maintaining the responsiveness of the reserve force. Both the reserve commander and the higher commander are responsible for ensuring that the reserve can move quickly and safely throughout the defensive sector. Their tools in this effort include axis planning and time-distance analysis.

Whenever possible, the commander should identify covered and concealed axes for each contingency the reserve may face. This will require detailed coordination and planning for routes through and/or around tactical and protective obstacles in the sector. The reserve should rehearse movement on as many axes as possible under a variety of conditions.

The commander also must calculate time-distance factors for each axis.

The time required to move between the reserve position and each contingency BP or attack by fire position must be forwarded to the controlling headquarters to assist in the synchronization of the higher plan.

Engagement area development and direct fire planning

During planning for the reserve mission, the commander must prioritize engagement area development and direct fire planning. The level of planning and preparation that goes into each engagement area should be based on the priority it was given in the task force or brigade command guidance. The reserve force is not likely to receive countermobility and survivability support in developing its engagement areas since those assets will normally be allocated to company teams in defensive positions; this means the commander must give special attention to the use of existing terrain features and obstacles in providing security for the reserve. He must also conduct direct fire planning for all contingencies. Depending on the designated priorities, the level of planning and preparation will vary for each contingency. For example, the commander may specify a mounted rehearsal for the most likely mission, but limit planning for contingencies of lower priority to a leader's reconnaissance.

Planning for BPs and attack by fire positions

Planning and preparation for BPs and/or attack by fire positions in reserve operations are virtually identical to the corresponding activities for other types of operations. A key difference is that the commander has a greater opportunity, and a greater responsibility, to employ positional advantage in the reserve role. Whenever possible, he should maximize the use of BPs and attack by fire positions on the enemy's flanks or on reverse slopes.

Fire support planning

The company team commander and FSO must develop fire support plans to support the engagement area(s) designated for each reserve contingency. Once it is employed, the reserve is usually designated as the main effort and, as such, may receive priority of fires. An additional fire support consideration is the employment of smoke to screen the movement of the reserve force. (**NOTE:** When the company team is serving in the reserve role, the team FIST may be task organized with forward elements of the task force.)

RESERVE OPERATIONS AND TECHNIQUES

In a reserve role, the company team may be committed to execute an offensive mission (such as a counterattack to destroy an enemy force or to exploit success) or a defensive mission (for example, block a penetration, reinforce a BP, or assume another company team's mission). In either case, the tactical tasks the team will be called on to execute are similar to those discussed in Chapter 3 (offensive operations) and elsewhere in Chapter 4 (defense).

Counterattack by fire

The reserve force may execute a counterattack by fire to destroy exposed enemy elements and free decisively engaged friendly elements. A base of fire element suppresses or fixes the enemy force while the counterattack (maneuver) element moves on a concealed route to firing positions from which it can engage the enemy in the flank and/or rear. The counterattack element must maneuver rapidly to its firing position, often fighting through enemy flank security elements, to complete the counterattack before the enemy can bring follow-on forces forward to influence the fight.

Counterattack security is provided in several ways. The commander and all element leaders analyze and implement intelligence data from the task force. Platoons in the counterattack element employ fire and movement, with support from the base of fire element adding a degree of movement security. Smoke is especially valuable in enhancing counterattack security. It can be employed to screen the movement of the counterattack element. It can also aid in a deception effort; examples include placing smoke on previous reserve positions to simulate disengagement and placing it on the flank opposite the counterattack force to deceive the enemy as to the location of the counterattack.

Execution of the counterattack by fire is similar to that for an attack by fire; refer to the discussion of the attack by fire in Chapter 3 of this manual. Planning and preparation considerations for the counterattack will vary depending on the purpose and location of the operation. For example, the counterattack may be conducted forward of friendly positions, requiring the reserve force to move around friendly elements and through their protective and tactical obstacles. In other situations, the commander may use a counterattack by fire to block, fix, or contain a penetration. In any case, the reserve force will conduct the counterattack as an enemy-oriented operation. Figure 4-16 illustrates a counterattack by fire conducted by a company team.

Assault

In a reserve role, the company team can conduct an assault to destroy an enemy force, to relieve pressure on a friendly unit, or to regain key terrain. The unit attacks the enemy force from the flank and uses maneuver (fire and movement) to close with and destroy the threat. Unlike the counterattack by fire, in which long-range fires are employed from stationary positions to reduce enemy combat power by attrition, the assault requires the attacking force to maneuver to a position of advantage well inside the range of enemy weapons.

Reinforce a defending force

Reinforcement of a defending element requires a level of detailed planning and coordination similar to that associated with linkup operations. As the reinforcing element, the reserve force moves into adjacent positions covering the same avenues as the unit being reinforced. It then assists the other unit in the defense of the BP or assumes responsibility for the defense. Figure 4-16 illustrates a reserve mission in which the company team reinforces a defending element.

Assume the mission of another team

In assuming the mission of another company team (or another type of unit, if applicable), the reserve force first conducts a relief in place. The now-committed reserve then continues the mission, such as defense of a BP.

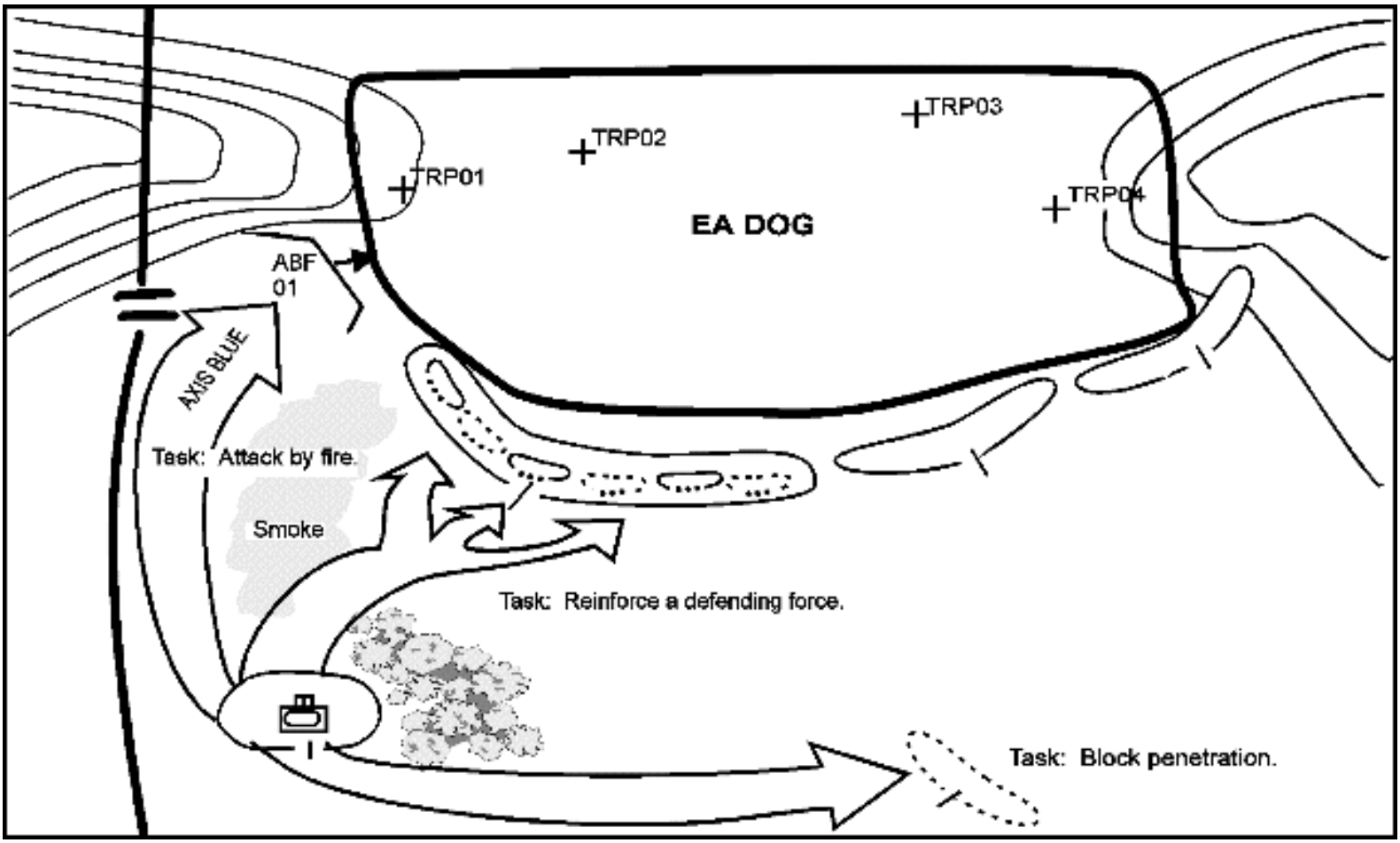


Figure 4-16. Example of company team reserve missions, including counterattack by fire, reinforce a defending element, and block a penetration.

SECTION 6 - RETROGRADE OPERATIONS

Retrograde operations entail organized movement away from the enemy. Units may employ them, either voluntarily or under direct pressure from the enemy, to achieve a variety of purposes:

- Improve a tactical situation or prevent an unfavorable situation from becoming worse.
- Economize forces.
- Maintain freedom of maneuver.
- Avoid combat under unfavorable conditions.

There are three types of retrograde operations:

- **Delay.** This operation allows the unit to trade space for time, avoiding decisive engagement and safeguarding its elements.
- **Withdrawal.** The commander uses this operation to break enemy contact, especially when he needs to free the unit for a new mission.
- **Retirement.** This operation is employed to move a force that is not in contact to the rear.

DELAY

This is a series of defensive and offensive actions over successive positions in depth. It is an economy of force operation that trades space for time. While the enemy gains access to the area (space) that is vacated, friendly elements gain time to conduct necessary operations and retain freedom of action and maneuver. This allows friendly forces to influence the action; they can prevent decisive engagement or postpone it to occur at a more critical time or place on the battlefield.

Delay missions

There are two types of delay missions:

- Delay in sector.
- Delay forward of a specified line or position for a specified time.

The controlling commander must determine whether the delay operation will focus on avoiding decisive engagement and preserving the combat power of the friendly force (delay in sector) or on a specific, time-related objective. The type of mission must be clearly outlined in the commander’s intent.

For either type of delay mission, the flow of the operation can be summarized as "hit hard, then move." A successful delay has three key components:

- The ability to stop or slow the enemy’s momentum while avoiding decisive engagement.
- The ability to degrade the enemy’s combat power.
- The ability to maintain a mobility advantage. Techniques for maintaining this advantage are covered in detail in the discussion of displacement planning earlier in this chapter.

Planning

In preparing for the delay operation, the commander uses planning considerations that are identical to those for a defense in sector, varying only in their purpose. Refer to the discussion of defense in sector earlier in this chapter. Planning for the delay must cover several areas related to hindering enemy movement and maintaining mobility. These considerations include the following:

- Use of existing terrain and obstacles, enhanced as necessary by employment of reinforcing obstacles.
- Designation of positions from which the friendly force can harass or impede the enemy without risking decisive engagement itself; this is especially applicable for a delay in sector. When a task force is delaying in sector, company teams are normally assigned a series of specific BPs to enhance command and control across the sector. Likewise, in a company team delay in sector, the commander will assign a series of specific BPs for each platoon.
- Assessment of opportunities to conduct limited counterattacks to disrupt enemy actions.
- Designation of high-speed avenues of withdrawal.
- Rehearsal of operations anticipated for the delay; these may include engagement of the enemy and maneuver through the delay area.

Delay techniques

In executing either a delay in sector or a time-related delay, the commander can choose from the following techniques:

- Delay from successive positions or phase lines.
- Delay from alternating positions.

Delay from successive positions or phase lines

This delay technique is normally used when the sector is so wide that available forces cannot occupy more than a single line of positions. The commander must be aware of several factors that may put his unit at a disadvantage during the delay:

- Lack of depth at any particular time.
- The possibility of inadequate time to prepare successive positions.
- Decreased security during disengagement.
- The possibility of gaps between units.

When the unit receives the order to conduct the delay from its initial positions, one element (such as a company team in a task force delay or a platoon in a company team delay) displaces and occupies its successive BP. The remainder of the unit maintains contact with the enemy until the first displacing element is in position to engage the enemy from the successive position. The first element then provides overwatch or base of fire as other elements displace to their successive positions. Figure 4-17 illustrates a company team delay from successive positions.

Delay from alternating positions

This method of delay may be used when the delaying element has sufficient forces to occupy more than a single line of positions (normally in a narrow sector). The delaying task force or company team arrays one or more of its subordinate elements in the initial delay positions. This first echelon then engages the enemy while the rest of the unit occupies and prepares second-echelon delay positions.

The unit then alternates fighting the enemy with movement to new positions. The elements in the initial delay positions engage the enemy until ordered to displace or until their displacement criteria have been met. They then displace, moving through the second-echelon delay positions to their own successive positions (which become the third echelon of the delay).

Elements in the second echelon overwatch the displacing units' movement and assume responsibility for engaging the enemy. This sequence continues until the delay operation is completed. Figure 4-18 illustrates a company team delay from alternating positions.

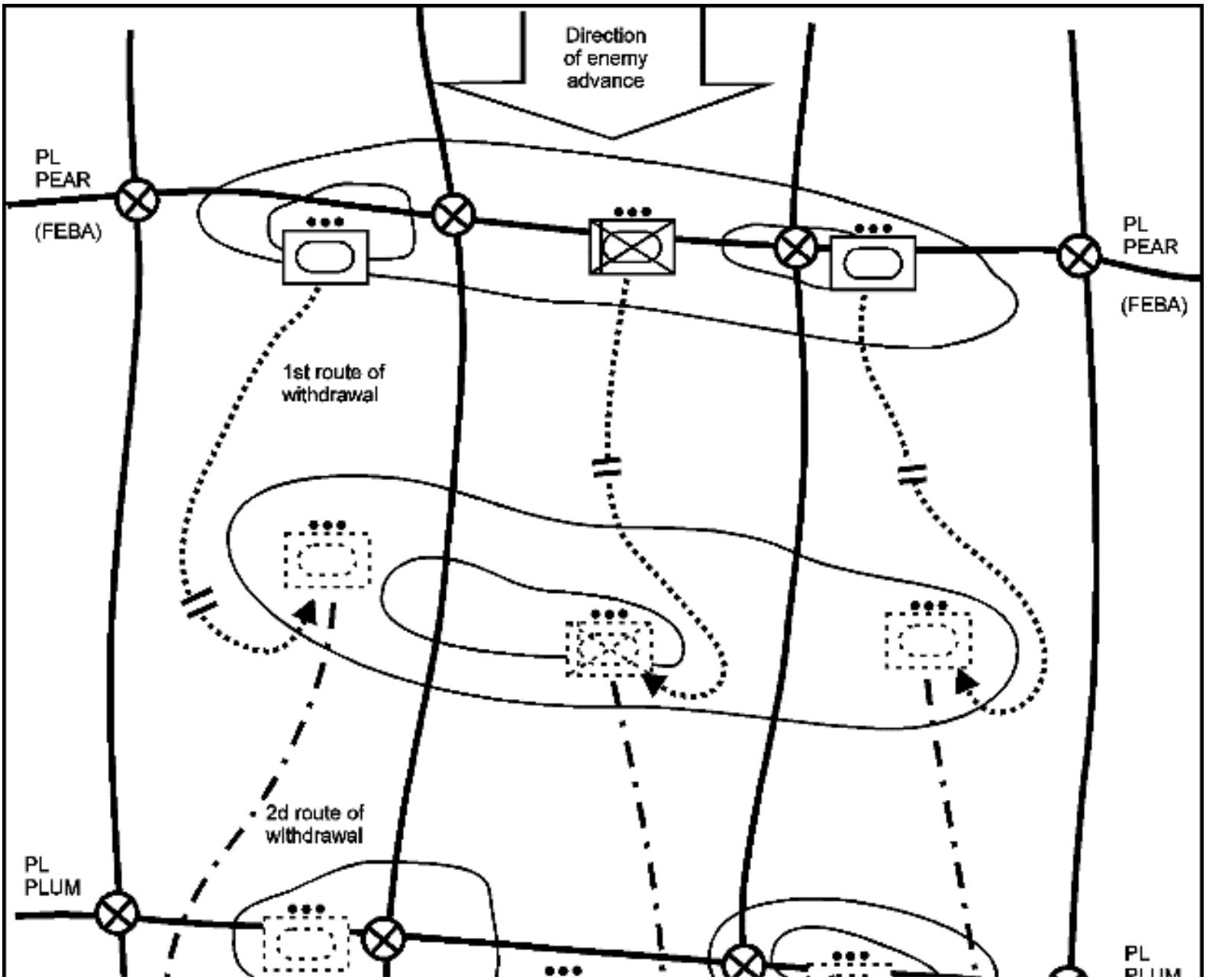
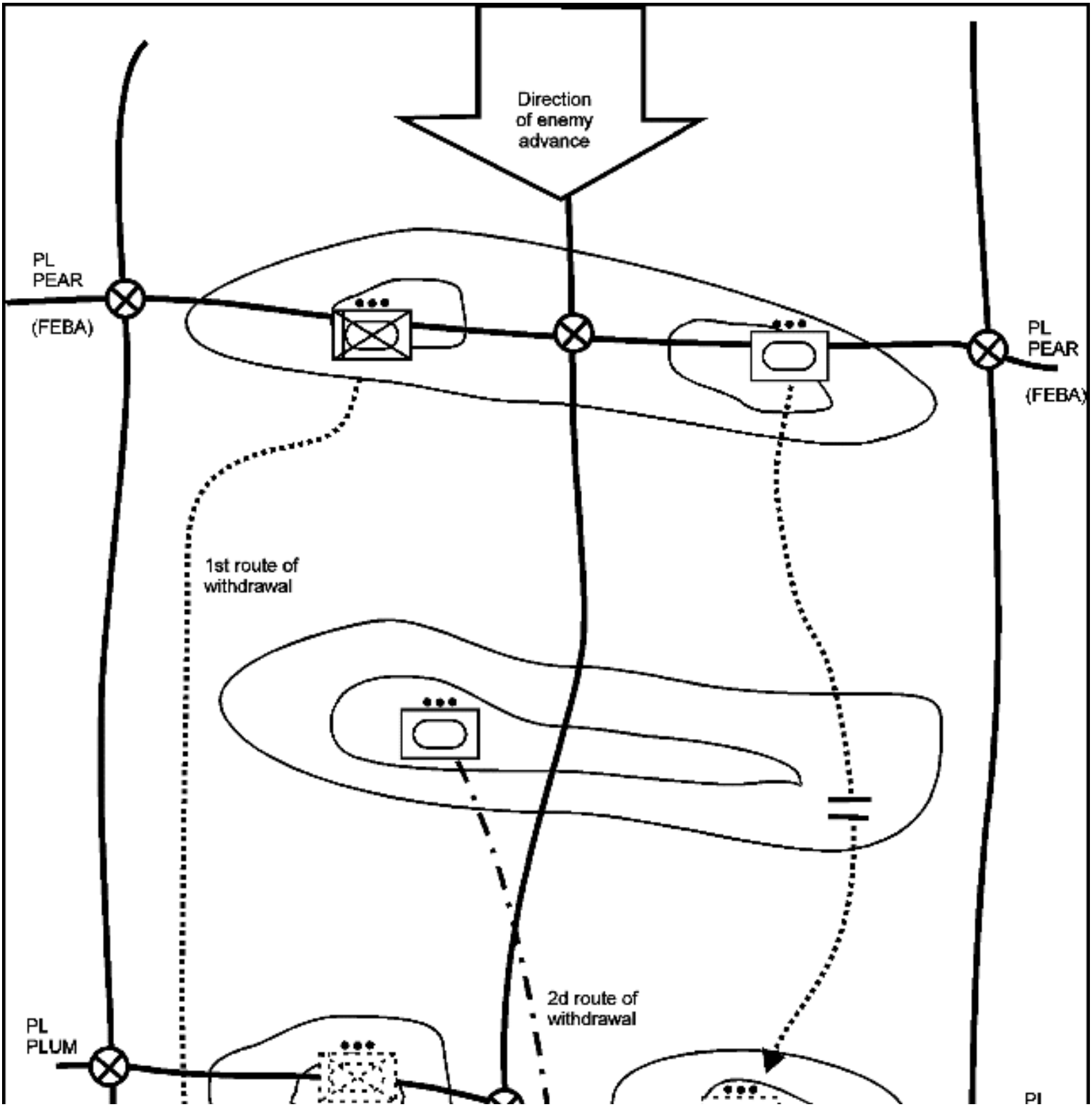


Figure 4-17. Example company team delay from successive positions.



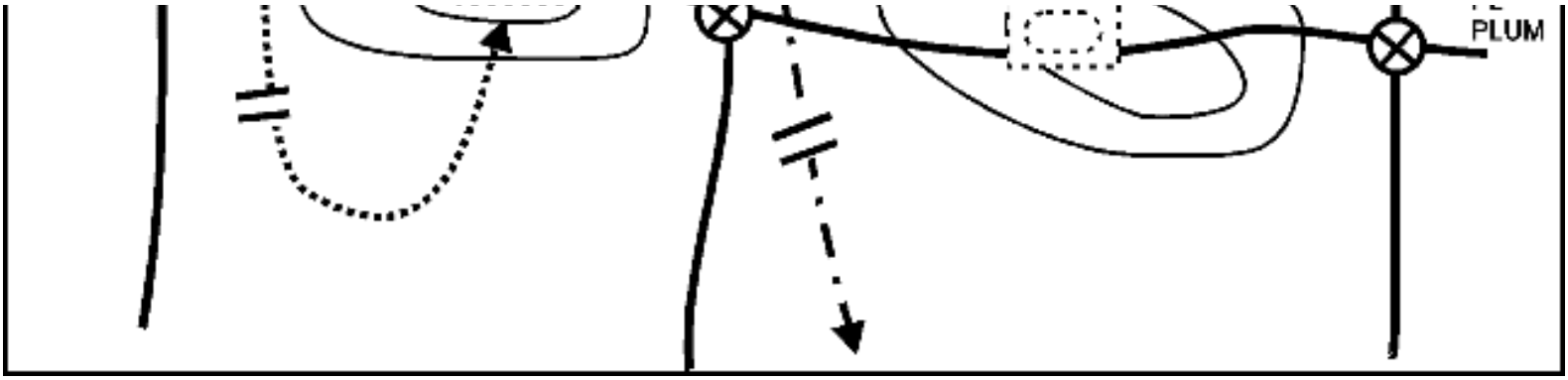


Figure 4-18. Example company team delay from alternating positions.

WITHDRAWAL

A withdrawal is an operation in which a unit frees itself for a new mission. It can also be conducted when the commander determines that he must reposition all or part of his force for a specific purpose; for example, he may need to separate from the enemy by a prescribed distance to allow employment of special-purpose munitions. A withdrawal can be executed at any time and during any type of operation. The company team normally conducts a withdrawal as part of a task force operation.

Classification

In addition to the purpose of the operation, conduct of the withdrawal is classified in several ways:

- **Under pressure or not under pressure.** A unit making a withdrawal under pressure must additionally be prepared to conduct disengagement operations.
- **Assisted or unassisted.** In an assisted withdrawal, a security force provided by the next higher headquarters assists the main body in breaking contact with the enemy. In an unassisted withdrawal, the controlling headquarters must provide its own security. Assisted and unassisted withdrawals are covered later in this discussion.

Phases

Withdrawals are accomplished in three overlapping phases, which are outlined in the following paragraphs.

Preparation phase The commander dispatches quartering parties, issues warning orders, and initiates planning. Nonessential vehicles are moved to the rear.

Disengagement phase Designated elements begin movement to the rear. They break contact (refer to the discussion of displacement planning earlier in this chapter) and conduct tactical movement to a designated assembly area or position.

Security phase

In this phase, a security force protects and assists the other elements as they disengage and/or move to their new positions. This is done either by a DLIC, which the unit itself designates in an unassisted withdrawal, or by a security force provided by the higher headquarters in an assisted withdrawal. As necessary, the security force assumes responsibility for the sector, deceives the enemy, and protects the movement of disengaged elements by providing overwatch and suppressive fires. In an assisted withdrawal, the security phase ends when the security force has assumed responsibility for the fight and the withdrawing element has completed its movement. In an unassisted withdrawal, this phase ends when the DLIC completes its disengagement and movement to the rear.

Unassisted withdrawal

In an unassisted withdrawal, the unit conducting the withdrawal establishes the DLIC to maintain contact with the enemy and/or to deceive him. In a task force withdrawal, the DLIC may consist of an element from each company team (under leadership of the team XO or a platoon leader), with the task force S3 as the overall DLIC commander. As an alternative, a company team may serve as the DLIC for the rest of the task force. The company team commander has several deployment options. He can reposition elements across the entire task force frontage. Another option is to position the team to cover only the most dangerous enemy avenue of approach; other avenues into the sector are covered with observation from additional security elements provided by the task force, such as the scout platoon.

The commander has similar options in an unassisted company team withdrawal. He may designate one platoon to execute the DLIC mission for the team, or he can constitute the DLIC using elements from all three platoons, with the XO as the DLIC commander. Figure 4-19 illustrates an example of an unassisted withdrawal.

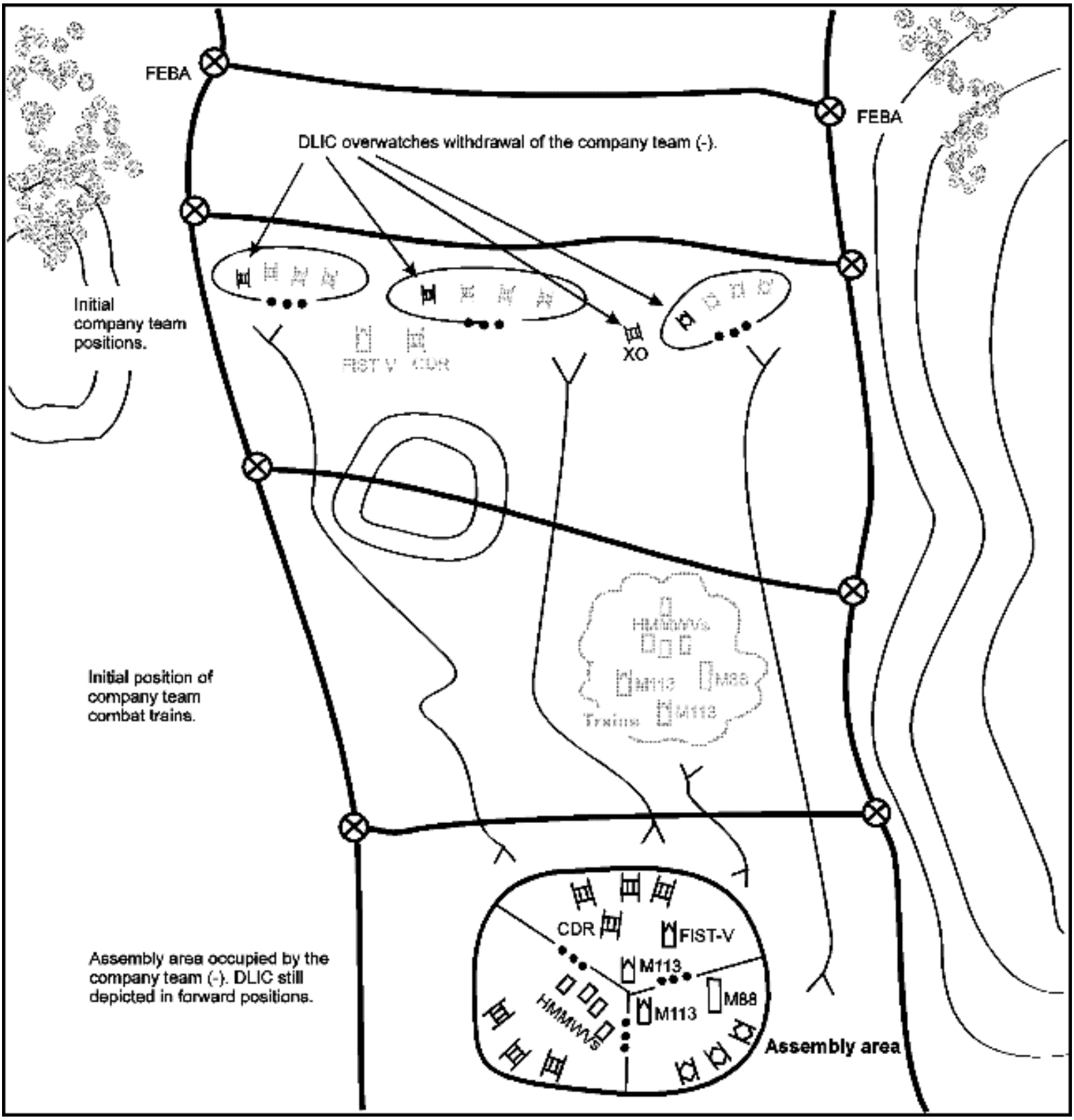


Figure 4-19. Example of an unassisted withdrawal.

Assisted withdrawal

In an assisted task force withdrawal, the brigade will normally provide a security element to maintain contact with and deceive the enemy while the task force conducts its withdrawal. Likewise, in a company withdrawal, the task force provides the security force.

The security force establishes defensive positions behind the withdrawing unit and conducts preparations for a rearward passage of lines. The withdrawing force disengages from the enemy and conducts the rearward passage through the security force to assembly areas in the rear.

RETIREMENT

Retirement is a retrograde operation in which a force not in contact with the enemy conducts organized movement to the rear. It is normally done during periods of limited visibility. The company team conducts a retirement as part of a larger force.

CHAPTER 5

Other Tactical Operations

This chapter covers tasks the company team may conduct, either on its own or as part of a larger force, to complement or support its primary missions.

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Section 4	**Passage of Lines** Planning Considerations Reconnaissance and Coordination Forward Passage of Lines Rearward Passage of Lines
Section 5	**Relief in Place** Planning the Relief Coordination Conducting the Relief
Section 6	**Breaching Operations** Mobility Assets Breaching Tenets Types of Breaching Operations Example of a Deliberate Breach

Section 7	Hasty Water Crossing/Gap Crossing Operations
	Methods/Purposes of Water Crossing Operations Company Team Crossing Capabilities Task Force Hasty Water Crossing Operations Company Team Hasty Gap Crossing Operations

SECTION 1 - RECONNAISSANCE

Reconnaissance is any mission undertaken, using visual observation or other methods, to obtain information regarding the activities and resources of enemy forces or the physical characteristics of a particular area. Successful reconnaissance is a focused collection effort, aimed at gathering timely, accurate information about the enemy and the terrain in the area of operations. **It is the responsibility of every commander to conduct reconnaissance**, with the goal of gaining the information he needs to ensure the success of his mission. In addition, the company team may conduct other reconnaissance operations to gather information for higher headquarters. For a more detailed discussion of reconnaissance operations, refer to FM 17-95 or FM 100-40.

RECONNAISSANCE PLANNING

Reconnaissance planning starts with the commander's identification of critical information requirements. This process may be conducted while the unit is planning or preparing for an operation; in may cases, it will continue during the conduct of the operation.

As an example of identifying information requirements before an operation, the company team commander determines that he must find out if an enemy force is controlling a choke point through which the team must move during the next day's attack. As a result, the commander may decide to send an infantry patrol to reconnoiter the choke point the night before the attack. Once the operation is under way, the commander continues to identify information requirements. An example is the need to find an assailable flank or another position of advantage over an identified enemy force while the company team develops the situation; in such a situation, the commander may dispatch a platoon or section to find a flank or position from which the team can effectively engage the enemy.

RECONNAISSANCE EXECUTION

Reconnaissance can be passive or active. Passive reconnaissance includes such techniques as map and photographic reconnaissance and surveillance. Active methods available to the company team include mounted and dismounted ground reconnaissance and reconnaissance by fire. Active reconnaissance operations are also classified as stealthy or aggressive, as discussed in the following paragraphs.

Stealthy reconnaissance

Stealthy reconnaissance emphasizes procedures and techniques that allow the unit to avoid detection and engagement by the enemy. It is more time-consuming than aggressive reconnaissance. To be effective, stealthy reconnaissance must rely primarily on dismounted elements that make maximum use of covered and concealed terrain. The company team's primary assets for stealthy reconnaissance are its infantry squads. For a more detailed discussion of dismounted patrolling, refer to FM 7-10 or FM 17-98.

Aggressive reconnaissance

Aggressive reconnaissance is characterized by the speed and manner in which the reconnaissance element develops the situation once contact is made with an enemy force. A unit conducting aggressive reconnaissance uses both direct and indirect fires and movement to rapidly develop the situation. It uses primarily mounted reconnaissance and reconnaissance by fire. In conducting a mounted patrol, the unit employs the principles of tactical movement to maintain security. The patrolling element maximizes the use of cover and concealment and conducts bounding overwatch as necessary to avoid detection. For a more detailed discussion of tactical movement, refer to Chapter 3 of this manual. The discussion of direct fire control in Chapter 2 includes a description of reconnaissance by fire.

RECONNAISSANCE BEFORE AND AFTER OPERATIONS

To be most effective, reconnaissance must be continuous, conducted before, during, and after operations. Before an operation, the company team focuses its reconnaissance effort on filling gaps in its information about the enemy and terrain. (**NOTE:** Figure 5-1 shows an example of company team reconnaissance prior to an operation.) After an operation, the team normally conducts reconnaissance to maintain contact with the enemy and collect information for upcoming operations. Situations in which the company team may conduct reconnaissance before or after an operation include the following:

- Reconnaissance by a quartering party of an assembly area and the associated route to it.
- Reconnaissance from the assembly area to the LD and in the vicinity of the LD before an offensive operation.
- Reconnaissance by infantry patrols to probe enemy positions for gaps prior to an attack or infiltration.

- Reconnaissance by infantry patrols to observe forward positions and guide mounted elements to key positions on the battlefield.
- Reconnaissance by dismounted patrols (normally infantry and engineers) to locate bypasses around obstacle belts or to determine the best locations and methods for breaching operations.
- Reconnaissance by infantry patrols of choke points or other danger areas in advance of the remainder of the company team.
- Reconnaissance by mounted patrols to observe forward positions or to clear a route to a forward position.
- Reconnaissance of defensive positions or engagement areas prior to the conduct of the defense.
- Reconnaissance by mounted or dismounted patrols as part of security operations to secure friendly obstacles, clear possible enemy OPs, or cover areas not observable by stationary OPs.
- Reconnaissance by mounted or dismounted patrols to maintain contact with adjacent units.
- Reconnaissance by mounted or dismounted patrols to maintain contact with enemy elements.

RECONNAISSANCE DURING OPERATIONS

During offensive operations, company team reconnaissance normally focuses on fighting for information about the enemy and the terrain, with the primary goal of gaining an advantage over the enemy. The company team conducts this type of reconnaissance during actions on contact. As the team develops the situation, the commander may dispatch mounted or dismounted patrols to identify positions of advantage or to acquire an enemy force. The information gained by the company team while in contact is critical not only to the success of its own mission but also to the success of its higher headquarters. Actions on contact are discussed in detail in Chapter 3 of this manual.

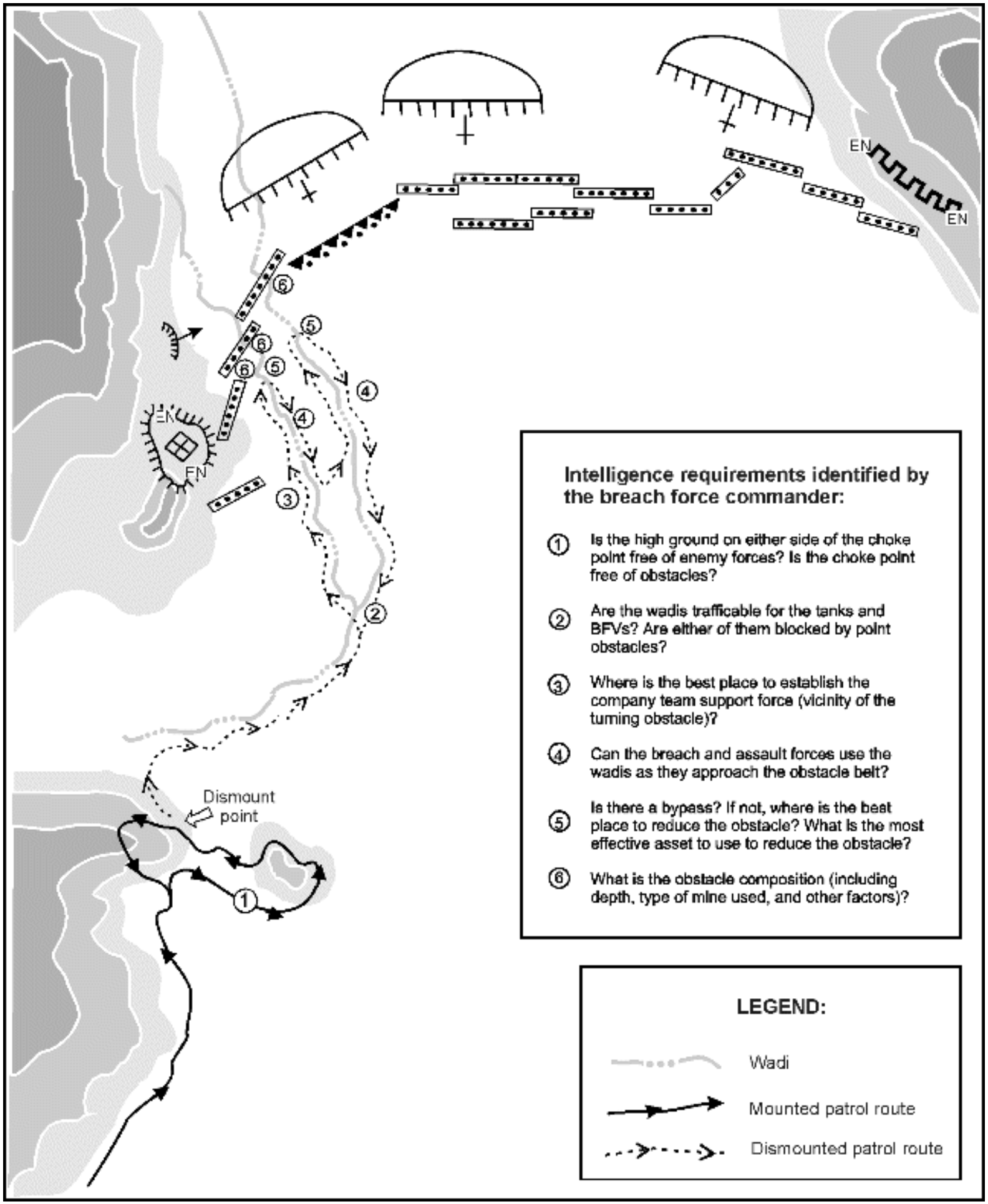

EN
EN
EN
EN
Dismount point
1
2
3
4
5
6
Intelligence requirements identified by the breach force commander:
① Is the high ground on either side of the choke point free of enemy forces? Is the choke point free of obstacles?
② Are the wadis trafficable for the tanks and BFVs? Are either of them blocked by point obstacles?
③ Where is the best place to establish the company team support force (vicinity of the turning obstacle)?
④ Can the breach and assault forces use the wadis as they approach the obstacle belt?
⑤ Is there a bypass? If not, where is the best place to reduce the obstacle? What is the most effective asset to use to reduce the obstacle?
⑥ What is the obstacle composition (including depth, type of mine used, and other factors)?
LEGEND:
Wadi
Mounted patrol route
Dismounted patrol route

Figure 5-1. Example of a company team commander identifying intelligence requirements and using patrols to conduct reconnaissance.

FORMS OF RECONNAISSANCE

In addition to reconnaissance performed as part of another type of operation, there are four forms of reconnaissance that are conducted as distinct operations: route reconnaissance, zone reconnaissance, area reconnaissance, and reconnaissance in force. Although not optimally organized for reconnaissance, the company team can conduct route, zone, or area reconnaissance. It may conduct a reconnaissance operation during preparation for another operation of its own (for example, performing zone reconnaissance before initiating a stationary guard operation), or it can conduct the reconnaissance to gain information for a higher headquarters. The team will normally be task organized with additional combat or CS assets as needed to meet the requirements of the reconnaissance operation. (**NOTE:** Reconnaissance in force is a limited-objective operation conducted by battalion-size and larger forces.)

Positioning of subordiante elements

In conducting a route, zone, or area reconnaissance, the company team employs a combination of mounted and dismounted elements as well as reconnaissance by direct and indirect fires. Based on his evaluation of METT-TC factors, the team commander establishes the role of organic elements and support assets within his scheme of maneuver. The following considerations apply:

- Mechanized infantry platoons normally perform the reconnaissance role, taking advantage of their ability to use infantrymen to gather information on the ground.
- Tank platoons normally perform the overwatch role, providing security to reconnaissance elements. Based on METT-TC, however, the tanks may be tasked to perform the reconnaissance role.
- Engineers remain behind the combat elements; as necessary, they move forward to conduct any required breaches once breach sites have been secured by the combat elements.

Focus of the reconnaissance

In planning for route, zone, or area reconnaissance, the company team commander must determine the focus of the mission, identifying whether the reconnaissance will be oriented on the terrain or on the enemy force. It is then essential that he provide the team with clear guidance on the focus of the reconnaissance. In a force-oriented reconnaissance operation, the critical task will simply be to find the enemy and gather information on him; terrain considerations of the route, zone, or area are only a secondary concern. The company team generally is able to move more quickly than in terrain-oriented reconnaissance.

Conduct of the reconnaissance

The following paragraphs examine the specifics of route, zone, and area reconnaissance. For a more detailed discussion of these operations at the company/troop level, refer to FM 17-97.

Route reconnaissance

A route reconnaissance is a directed effort to obtain detailed information on a specific route as well as on all terrain from which the enemy could influence movement along that route. Route reconnaissance may be oriented on a specific area of movement, such as a road or trail, or on a more general area, like an axis of advance. It is normally assigned when a commander wants to use the route in question. Although METT-TC and the commander's intent will ultimately dictate what actions the company team must take, the following tasks are normally considered critical components of the route reconnaissance:

- Determine the trafficability of the route.
- Reconnoiter all built-up areas.
- Reconnoiter all terrain the enemy can use to dominate movement along the route.
- Reconnoiter all lateral routes.
- Inspect and evaluate all bridges.
- Locate fords and crossing sites near all bridges.
- Reconnoiter all defiles. This step includes clearing defiles of enemy forces and obstacles (within capability) or locating bypasses.
- Locate and clear mines, obstacles, and barriers (within capability).
- Locate a bypass around built-up areas, obstacles, and contaminated areas.
- Find and report all enemy elements that can influence movement along the route.
- Report all reconnaissance information.

Zone reconnaissance

A zone reconnaissance is a directed effort to obtain detailed information concerning all routes, terrain, enemy forces, and obstacles (including areas of chemical and radiological contamination) within a zone, which is defined by specific boundaries. The zone reconnaissance is normally conducted when the enemy situation is vague or when information concerning cross-country trafficability is required. As in route reconnaissance, METT-TC and the commander's intent will dictate the company team's actions during a zone reconnaissance; the following tasks are normally considered critical components of the operation:

- Find and report all enemy forces within the zone.
- Reconnoiter specific terrain within the zone.
- Report all reconnaissance information.

Time permitting, the commander may also direct the company team to accomplish the following tasks as part of a zone reconnaissance:

- Reconnoiter all terrain within the zone.
- Inspect and classify all bridges.
- Locate fords or crossing sites near all bridges.

- Inspect and classify all overpasses, underpasses, and culverts.
- Locate and clear all mines, obstacles, and barriers (within capability).
- Locate bypasses around built-up areas, obstacles, and contaminated areas.

Area reconnaissance

Area reconnaissance, a specialized form of zone reconnaissance, is a directed effort to obtain detailed information concerning the terrain or enemy activity within a prescribed area. The area can be any location that is critical to the unit's operations. Examples include easily identifiable areas covering a fairly large space (such as towns or military installations), terrain features (ridge lines, wood lines, choke points), or a single point (like a bridge or a building). The critical tasks of the area reconnaissance are the same as those associated with zone reconnaissance.

SECTION 2 - SECURITY OPERATIONS

Security operations are conducted to provide early and accurate warning of enemy operations, to provide the protected force with time and maneuver space to react to the enemy, and to develop the situation to allow the commander to effectively employ the protected force. These operations may be conducted to the front, flanks, or rear of the force. For additional information on security operations, refer to FM 17-95 or FM 100-40.

The four forms of security operations are screen, guard, cover, and area security. The screen, guard, and cover entail deployment of progressively higher levels of combat power and provide increasing levels of security for the main body. Area security preserves a higher commander's freedom to move his reserves, position fire support assets, conduct command and control operations, and provide for sustainment operations.

> **NOTE:** All forces have an inherent responsibility to provide for their own local security. Local security includes OPs, local security patrols, perimeter security, and other measures taken to provide close-in security for the force. Refer to the discussion at the end of this section.

The company team can conduct screen or guard operations on its own. It participates in area security missions and covering force operations only as part of a larger element. The company team always provides its own local security. (**NOTE:** As part of a larger element's area security operation, the company team may conduct route clearance or convoy escort operations; refer to Appendix J for a detailed discussion on these missions.)

PLANNING CONSIDERATIONS

Security operations require the commander assigning the security mission and the security force commander to address a variety of special operational factors. These planning considerations are discussed in the following paragraphs.

Augmentation of security forces

When it is assigned to conduct a guard or screen mission, the company team may receive additional combat, CS, and CSS elements. Attachments may include, but are not limited to, the following:

- A scout platoon.
- A mortar section or platoon.
- Additional tank or mechanized infantry platoons.
- MI surveillance assets. For example, these may include elements equipped with AN/PPS-5 night vision devices.
- Associated CSS elements.

Enemy-related considerations

Security operations require the company team to deal with a unique set of enemy considerations. For example, the array of enemy forces (and the tactics that enemy commanders use to employ them) may be different from those for any other tactical operation the team will conduct. Additional enemy considerations that may influence company team security operations include, but are not limited to, the following:

- The presence or absence of specific types of forces on the battlefield, including the following:
  - Insurgent elements (not necessarily part of the enemy force).
  - Enemy reconnaissance elements of varying strength and capabilities (at divisional, regimental, or other levels).
  - Enemy security elements (such as CRPs or forward patrols).
  - Enemy stay-behind elements or enemy elements that have been bypassed.
- Possible locations that the enemy will use to employ his tactical assets, including the following:
  - Reconnaissance and/or infiltration routes.
  - OP sites for surveillance and/or indirect fire observers.
- Availability and/or anticipated employment of other enemy assets, including the following:
  - Surveillance devices, such as radar devices or UAVs.
  - Long-range rocket and artillery assets.

- Helicopter and fixed-wing air strikes.

- Elements capable of dismounted insertion and/or infiltration.

- Mechanized forward detachments.

Time the security operation is initiated

The time by which the screen or guard must be set and active will influence the company team's method of deploying to the security area as well as the time it begins the deployment.

Reconnaissance of the security area

The company team commander uses a thorough analysis of METT-TC factors to determine the appropriate methods and techniques the company team will use in accomplishing this critical action. (**NOTE:** The commander must make every effort to conduct his own reconnaissance of the security area he expects the team to occupy, even when the operation is preceded by a zone reconnaissance by other task force elements.)

Movement to the security area

In deploying elements to an area for a stationary security mission, the company team commander must deal with the competing requirements of establishing the security operation quickly to meet mission requirements and of providing the necessary level of local security in doing so. The team can move to the security area using one of two basic methods: a tactical road march or a movement to contact. Either method should be preceded by a zone reconnaissance by the task force scout platoon. The following paragraphs examine considerations and procedures for the two methods of movement.

Tactical road march The company team conducts a tactical road march to an RP behind the security area. From that point, the platoons (or sections) deploy to occupy their initial positions. This method of deployment is faster than a movement to contact, but less secure. It is appropriate when enemy contact is not expected or when time is critical.

Movement to contact The company team conducts a movement to contact from the LD to the security area. This method is slower than a tactical road march, but it is more secure. It is appropriate when time is not critical and either enemy contact is likely or the situation is unclear.

Location and orientation of the security area

The main body commander determines the location, orientation, and depth of the security area in which he wants the security force to operate. The security force commander conducts a detailed analysis of the terrain in the security area. He then establishes his initial dispositions (usually a screen line, even for a guard mission) as far forward as possible on terrain that allows clear observation of avenues of approach into sector. The initial screen line is depicted as a phase line and sometimes represents the FLOT. As such, the screen line may be a restrictive control measure for movement; this requires the company team commander to conduct all necessary coordination if he decides to establish OPs or to perform reconnaissance forward of the line.

Initial OP locations

The company team commander may deploy OPs to ensure effective surveillance of the sector and designated NAIs. He will designate initial OP locations on or behind the screen line. He should provide OP personnel with specific orientation and observation guidance, including, at a minimum, the primary orientation for the surveillance effort during the conduct of the screen. Once set on the screen line, the surveillance elements (normally, either scouts or mechanized infantrymen) will report their location. The element that occupies each OP always retains the responsibility for changing the location in accordance with tactical requirements and the commander's intent and guidance for orientation. OPs may be either mounted or dismounted. Mounted OPs allow use of vehicular optics and weapon systems and maximize speed of displacement, but are more easily detected by the enemy. Dismounted OPs maximize stealth.

Width and depth of the security area

The company team sector is defined by lateral boundaries extending out to an LOA (the initial screen line) forward of a rear boundary. The team's ability to maintain depth through the sector decreases as the screened or guarded frontage increases.

Special requirements and/or constraints

The company team commander must specify any additional considerations for the security operation, including, but not limited to, the following:

- All requirements for observing NAIs, as identified by the task force.
- Any additional tactical tasks or missions that the company team and subordinate elements must perform.
- Engagement and disengagement criteria for all team elements.

Indirect fire planning

The company team commander conducts indirect fire planning to integrate artillery and mortar assets into the security mission. A wide sector may require him to position attached mortar assets where they can provide effective coverage of the enemy's most likely axis of attack or infiltration route, as determined in his analysis of the enemy. The commander can position the mortars so that up to two-thirds of their maximum range lies forward of the initial screen line. The company team FIST assists the commander in planning artillery fires to adequately cover any gaps in mortar coverage.

Positioning of command and control and CSS assets

The commander normally positions himself where he can observe the most dangerous enemy axis of attack or infiltration route, with the XO positioned on the second most critical axis or route. The XO positions the team CP (if used) in depth and, normally, centered in sector; this allows the CP to provide control of initial movement, to receive reports from the screen or guard elements, and to assist the commander in more effectively facilitating command and control. Combat trains are positioned behind masking terrain, but they remain close enough for rapid response. The trains are best sited along routes that afford good mobility laterally and in depth. Patrols may be required to cover gaps between the OPs. The company team commander will task elements to conduct either mounted or dismounted patrols as required.

Coordination

The company team commander must conduct adjacent unit coordination to ensure there are no gaps in the screen or guard and to ensure smooth execution of the team's rearward passages of lines (if required). Additionally, he must coordinate the team's follow-on mission.

CSS considerations

The company team commander's primary consideration for CSS during the security operation is coordinating and conducting resupply of the team, especially for Class III and Class V supplies. **(NOTE:** One technique is for the commander to position prestock Class III and Class V vehicles at the team's successive positions.) In addition to normal considerations, however, the commander may acquire other responsibilities in this area, such as arranging CSS for a large number of attached elements or coordinating resupply for a subsequent mission.

The company team's support planning can be further complicated by a variety of factors. These include the extended distances from the task force combat trains and the BSA over which the team must operate (making resupply, casualty evacuation, and vehicle recovery more difficult), the wide frontages that the team must cover, and the increased numbers of attachments for which the team must provide resupply and other support services (such as casualty evacuation). To prevent these factors from creating outright tactical problems, the company team must receive logistical support, such as additional medical evacuation vehicles, from the controlling task force.

Follow-on missions

The complexities of security missions, combined with normal operational requirements (such as troop-leading procedures, engagement area development, rest plans, and CSS activities), can easily rob the company team commander of the time he needs for planning and preparation of follow-on missions. He must address these competing demands in his initial mission analysis to ensure that the team, and its leaders, can adequately meet all requirements for current and future operations. If METT-TC factors permit, for example, the commander can shift his focus to preparing for follow-on missions once preparations for the security mission are complete (or satisfactorily under way). Another technique is to detach the XO, with support personnel and vehicles, to prepare for follow-on missions. The XO's party can handle such operational requirements as reconnaissance, coordination, and development of follow-on engagement areas and BPs.

SCREEN OPERATIONS

A screen primarily provides early warning. It observes, identifies, and reports enemy actions. A screen provides the least amount of protection of any security mission. Generally, a screening force engages and destroys enemy reconnaissance elements within its capabilities, but otherwise fights only in self-defense. It normally does not have the combat power to develop the situation.

Purposes

A screen is appropriate to cover gaps between forces, the exposed flanks or rear of stationary and moving forces, or the front of a stationary formation; it is used when the likelihood of enemy contact is remote, the expected enemy force is small, or the friendly main body needs only a minimum amount of time once it is warned to react effectively. Screening is largely accomplished by establishing a series of OPs and conducting patrols to ensure adequate surveillance of the assigned sector. Purposes of the operation include the following:

- Prevent enemy ground elements from passing through the screen undetected or unreported.
- Maintain continuous surveillance of all avenues of approach into the sector under all visibility conditions.
- Destroy or repel enemy reconnaissance elements within capability.
- Locate the lead elements of each enemy advance guard force and determine their direction of movement.
- Maintain contact with enemy forces and report any activity in sector.
- Impede and harass the enemy within capability while displacing.
- Maintain contact with the enemy main body and any enemy security forces operating on the flanks of friendly forces.

Stationary screen

The company team commander first takes a close look at infiltration routes into the screen sector, then assigns surveillance responsibility to the team's subordinate elements. He designates locations of OPs, which should be in depth through the sector. The OPs are normally manned by sections within the company team. The commander identifies the enemy's likely axes of attack or infiltration routes; if necessary, he identifies additional control measures (such as NAIs, phase lines, TRPs, or checkpoints) to assist in movement control and in tracking of enemy elements. The company team conducts mounted and dismounted patrols to reconnoiter areas that cannot be observed from OPs.

Once the enemy is detected from an OP, the screening force normally engages him with indirect fires. This prevents the enemy from penetrating the screen line and does not compromise the location of the OP. Within its capability, the screening force may destroy enemy reconnaissance assets with direct fires if indirect fires cannot accomplish the task. (**NOTE:** For additional details, refer to the discussion of actions against enemy reconnaissance elements in the guard segment of this section). The screening force also impedes and harasses other enemy elements, primarily through the use of indirect fires. If enemy pressure threatens the security of the screening force, the unit normally reports the situation and requests permission to displace to a subsequent screen line.

Moving screen

The company team can conduct a moving screen to the flanks or rear of the screened force. The movement of the screen is keyed to time and distance factors associated with the movement of the friendly main body.

Moving flank screen

Responsibilities for a moving flank screen begin at the front of the main body's lead combat element and end at the rear of the protected force. In conducting a moving flank screen, the company team either occupies a series of temporary OPs along a designated screen line or, if the protected force is moving too fast, continues to move while maintaining surveillance and preparing to occupy a designated screen line. There are four basic methods of controlling movement along the screened flank. The screening force may use one or more of these methods as the speed of movement of the protected force changes or contact is made. The four methods are described in the following paragraphs.

Alternate bounds by individual OP. This method is used when the protected force is advancing slowly or enemy contact is likely along the screen line. Designated elements of the screening force move to and occupy new OPs as dictated by the enemy situation and the movement of the main body. Other elements remain stationary, providing overwatch and surveillance, until the moving elements establish their new positions; these elements then move to new positions while the now-stationary elements provide overwatch and surveillance. This sequence continues as needed. The method of alternate bounding by individual OP is secure but slow.

Alternate bounds by unit. This method is used when the protected force is advancing slowly or enemy contact is likely along the screen line. Designated elements of the screening force move and occupy new positions as dictated by the enemy situation and the movement of the main body. Other elements remain stationary, providing overwatch and surveillance, until the moving elements establish their new positions; these elements then move to new positions while the now-stationary elements provide overwatch and surveillance. This sequence continues as needed. The method of alternate bounding by unit is secure but slow.

Successive bounds. The screening element uses this method when enemy contact is possible and the main body makes frequent short halts during movement. Each platoon of the screening force occupies a designated portion of the screen line each time the main body stops. When main body movement resumes, the platoons move simultaneously, retaining their relative position as they move forward.

Continuous marching. This method is used when the main body is advancing rapidly at a constant rate and enemy contact is not likely. The screening force maintains the same rate of movement as the main body, at the same time conducting surveillance as necessary. Stationary screen lines are planned along the movement route, but the screening force occupies them only as necessary to respond to enemy action.

Moving rear screen

A moving rear screen may be established to the rear of a main body force conducting an offensive operation or between the enemy and the rear of a force conducting a retrograde operation. In either case, movement of the screen is keyed to the movement of the main body or to the requirements of the enemy situation; the operation is normally controlled by movement to a series of phase lines.

GUARD OPERATIONS

A guard force protects the friendly main body either by fighting to gain time (while simultaneously observing the enemy and reporting pertinent information) or by attacking, defending, and/or delaying the enemy to prevent him from observing the main body and engaging it with direct fires. There are three types of guard operations (advance guard, flank guard, and rear guard). They can be conducted in support of either a stationary or a moving friendly force.

The guard force differs from a screening force in that it contains sufficient combat power to defeat, repel, or fix the lead elements of an enemy ground force before they can engage the main body with direct fires. In addition, the guard force normally deploys over a narrower front than does a comparably sized screening force, allowing greater concentration of combat power. The guard force routinely engages enemy forces with both direct and indirect fires (it normally operates within range of the main body's indirect fire weapons).

Purposes

The purposes of the guard operation, in addition to those listed in the earlier discussion of the screen, include the following:

- Destroy or repel all enemy reconnaissance elements.
- Fix and defeat enemy security elements.
- Cause the enemy main body to deploy and report its direction of travel to the friendly main body commander.

Types of guard operations

The following discussion covers operational considerations for advance guard, flank guard, and rear guard operations.

Advance guard An advance guard for a stationary force is defensive in nature. The company team defends or delays in accordance with the intent of the main body commander. An advance guard for a moving force is offensive in nature. The company team normally conducts an offensive advance guard mission during a movement to contact as part of a task force. Its role is to maintain the freedom of maneuver of the supported task force; it does this by providing early warning of enemy activity to the protected task force and by finding, fixing, and destroying enemy reconnaissance and security elements. For more details on advance guard operations, refer to the discussion of movement to contact in Chapter 3 of this manual.

Flank guard A flank guard protects an exposed flank of the main body. A flank guard is similar to a flank screen except that both OPs and defensive positions are planned. The company team may conduct a moving flank guard during an attack or a movement to contact. In conducting a moving flank guard, the company team will normally occupy a series of BPs along the protected flank. It must maintain orientation both to the front (to perform its overwatch role and to maintain its own security) and to the protected flank. It must also maintain a sufficient distance from the main body to prevent the enemy from engaging the main body with long-range direct fires before early warning can be sent. A more detailed discussion later in this section focuses on execution of a moving flank guard.

Rear guard The rear guard protects the rear of the main body as well as all CS and CSS elements within the main body. This may occur during offensive operations when the main body breaks contact with the FLOT or during retrograde operations. A rear guard may be deployed behind both moving and stationary main bodies. The rear guard for a moving force displaces to successive BPs along phase lines or delay lines in depth as the main body moves. During retrograde operations, the rear guard normally deploys its elements across the entire sector behind the main body's forward maneuver units. For a more detailed discussion of retrograde operations, refer to Section 6 of Chapter 4.

Stationary guard

As noted, a stationary guard mission is, at least initially, defensive in nature. The guard force normally employs OPs to accomplish all surveillance requirements of the guard mission. The company team must be prepared to conduct actions against the enemy's main body and security elements as well as his reconnaissance forces. The following paragraphs discuss considerations for operations involving these enemy elements.

Actions against main body and security elements Once contact is made with an enemy main body or security force, the guard force attacks, defends, or delays in accordance with the enemy situation and the intent of the commander of the protected force. (**NOTE:** Considerations for the defense are discussed in Chapter 4 of this manual; considerations for retrograde operations are covered in Section 6 of Chapter 4.)

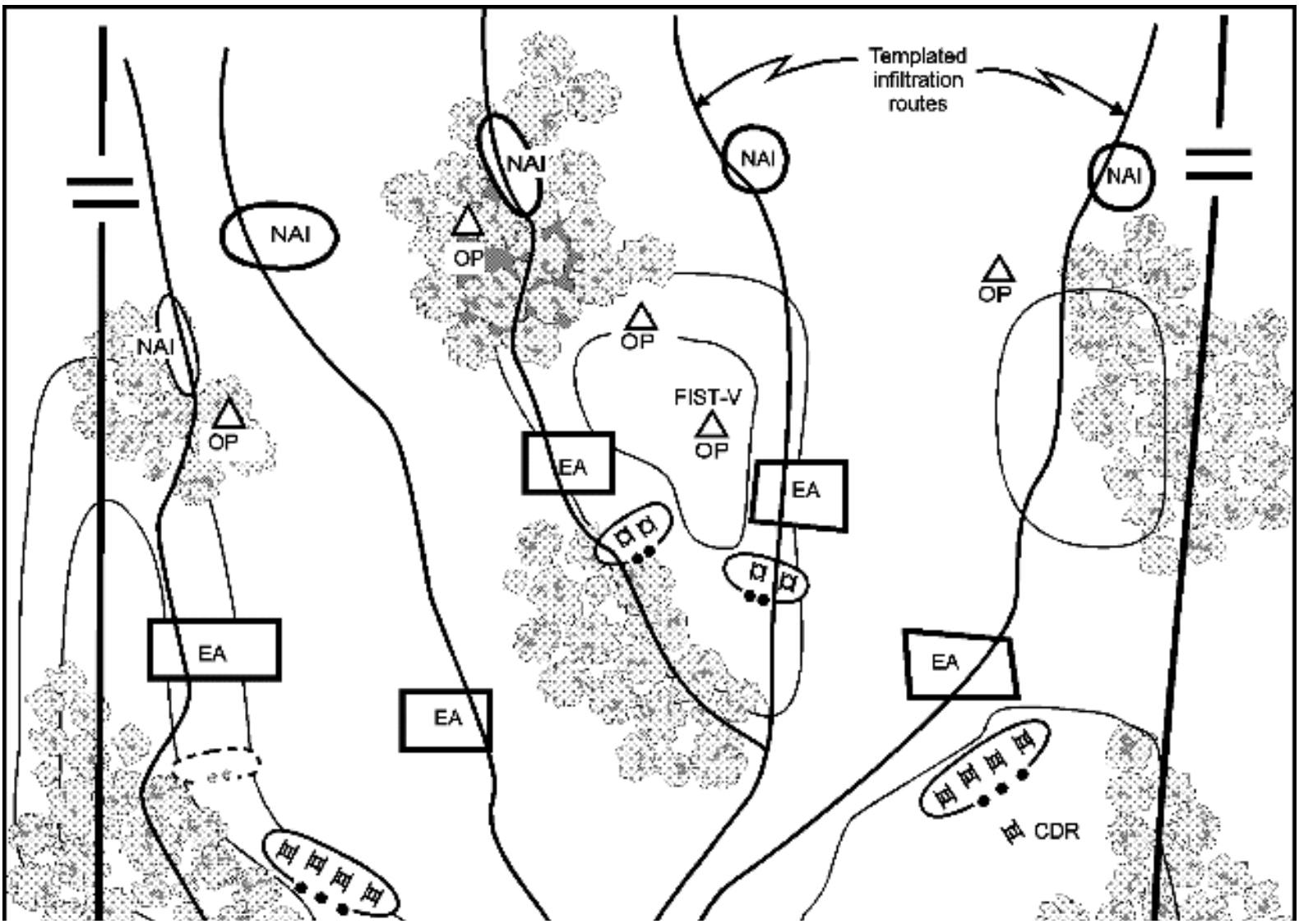
Actions against reconnaissance elements When it must execute counterreconnaissance tasks, the team will normally task organize into a surveillance element (normally occupying a screen line) and an attack element. Each element has specific responsibilities but must be prepared to work effectively with the other to ensure success of the operation.

Surveillance element and surveillance sectors. The commander must assign clear responsibilities for surveillance of identified avenues of approach and designated NAIs. The surveillance element (normally scout or mechanized infantry elements) is tasked with detecting, reporting, and maintaining contact with the enemy in the assigned surveillance sector. In addition, the surveillance element is responsible for passing off the enemy force to the attack element for destruction.

Attack element. In this role, the company team's tank platoons (or sections) will be the primary direct fire killing assets and will remain responsive to the commander. (**NOTE:** Depending on the composition of

the company team conducting the guard mission, BFVs may also be employed in this role, especially in a mech-heavy team.) The attack element occupies hide positions, BPs, or attack by fire positions along enemy avenues of approach. Once alerted by the surveillance force, it moves into position (if necessary) and destroys the approaching enemy element. The attack element is responsible for direct fire planning and engagement area development in support of the commander's plan. It must also rehearse all necessary movement to the planned fighting positions and report the required movement times to the commander.

Relationship of surveillance and attack elements. The company team's surveillance element must track locations of any enemy vehicles moving through the sector while the attack element moves into position. Once the attack element is set and can observe the enemy, the surveillance element completes target handover. This operation requires continuous communication between the two subordinate elements conducting the handover as well as close control by the company team commander or XO. In close terrain, the surveillance and attack elements must be positioned much closer together than in open terrain. This helps the elements both in maintaining visual contact and in achieving target handover at the appropriate time. Figure 5-2 illustrates a company team stationary guard operation.



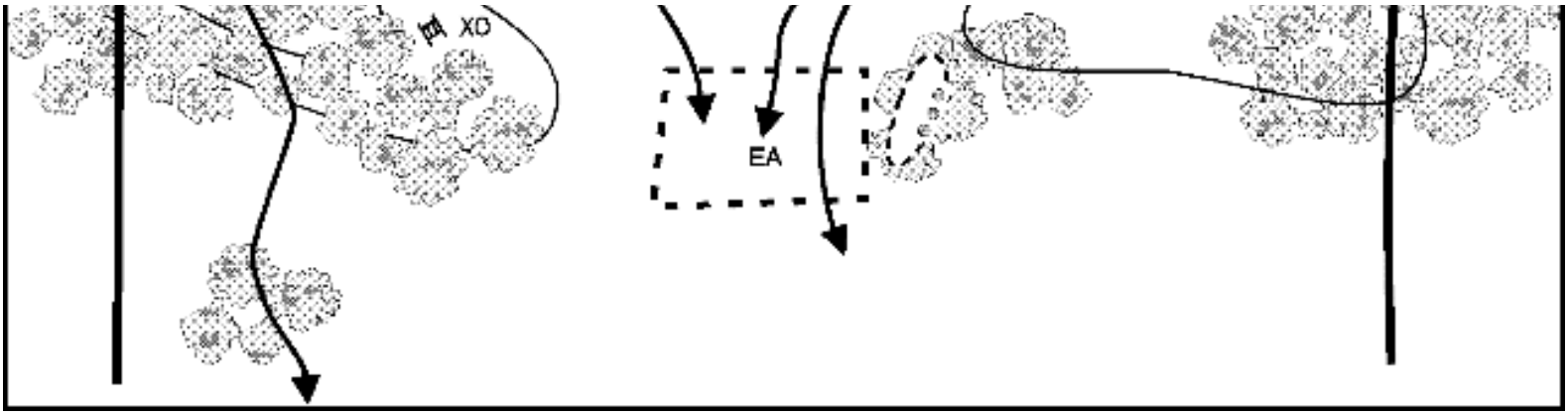


Figure 5-2. Example company team stationary guard (with infantry squads forward in OPs).

Moving flank guard

Many of the considerations for a moving flank screen apply to the execution of a moving flank guard. Unlike a moving flank screen, which occupies a series of OPs, the flank guard force plans to occupy a series of defensive positions. In conducting a moving flank guard, the company team either occupies a series of temporary BPs along the protected flank or, if the protected force is moving too quickly, continues to move along the protected flank. During movement, the team maintains surveillance to the protected flank while preparing to occupy designated BPs based on enemy activity or on the movement of the protected force. There are three basic methods of controlling movement along the guarded flank:

- Alternate bounds by unit.
- Successive bounds by unit.
- Continuous marching.

NOTE: These are identical to the methods for controlling movement along a screened flank except that the company team and its platoons occupy designated defensive positions instead of OPs. Refer to the discussion of screen operations earlier in this section.

The lead element of a moving flank guard must accomplish three tasks. It must maintain contact with the protected force, reconnoiter the flank guard's route of advance, and reconnoiter the zone between the protected force and the flank guard's advance. The rest of the flank guard marches along the route of advance and occupies BPs to the protected flank as necessary.

Figure 5-3 illustrates a company team flank guard operation during a movement to contact. One platoon is employed to provide security to the front and maintain contact with the main body; the other two platoons are oriented to the protected flank. The illustration shows BPs the platoons may occupy to respond to the approaching enemy force.

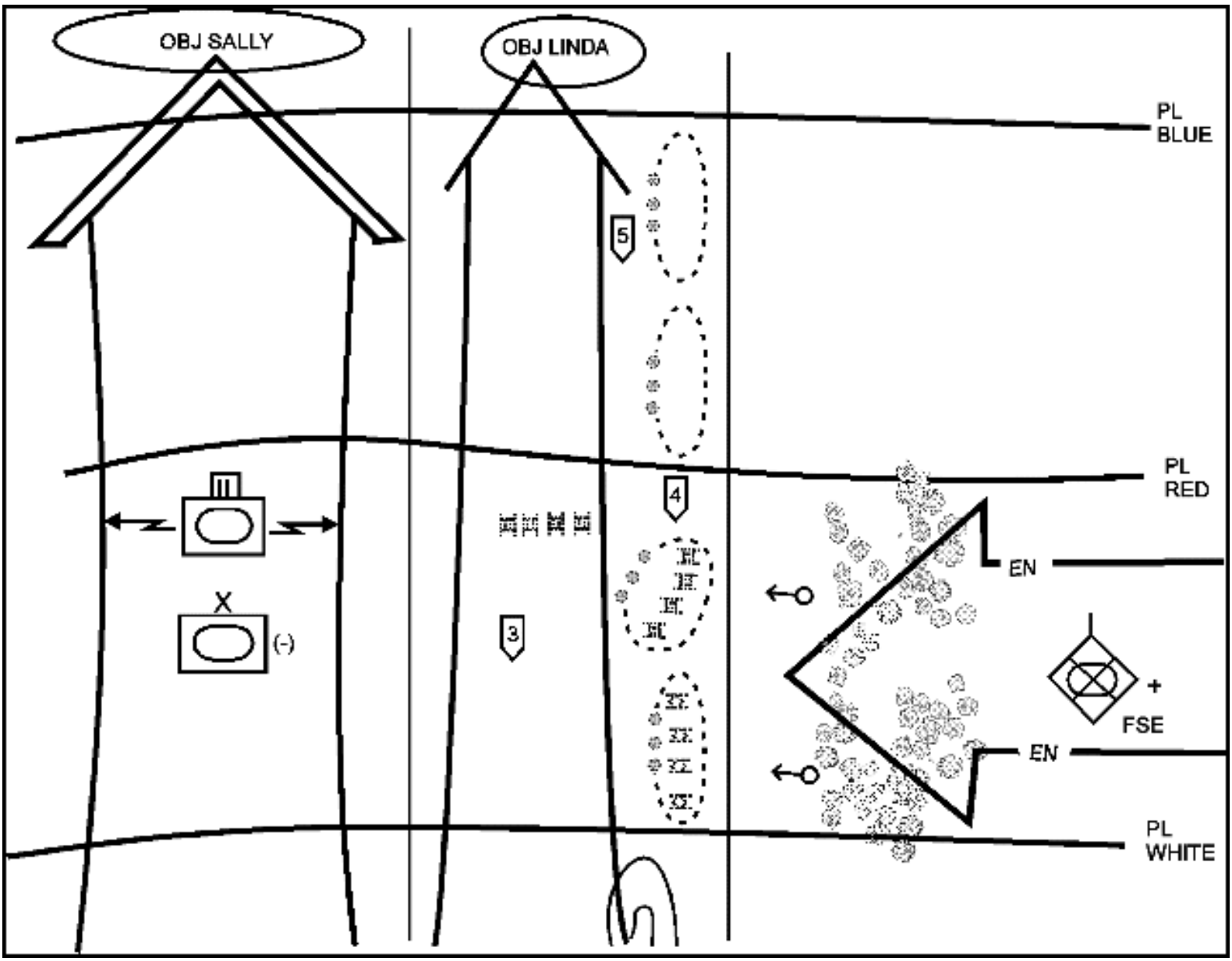


Figure 5-3. Example of a company team guarding the brigade flank during movement to contact.

LOCAL SECURITY

The company team is responsible for maintaining its own security at all times. It does this by deploying mounted and dismounted OPs and patrols to maintain surveillance and by employing appropriate OPSEC measures. (**NOTE:** For a detailed discussion of OPSEC measures, refer to Appendix M of this manual.) In addition to maintaining security for its own elements, the company team may implement local security for other units as directed by the task force commander. Examples of such situations include, but are not limited to, the following:

- Provide security for engineers as they emplace obstacles or construct survivability positions in the company team BP.
- Secure a templated LZ.
- Establish mounted and/or dismounted OPs to maintain

surveillance of enemy infiltration and reconnaissance routes.

- Conduct patrols to cover gaps in observation and to clear possible enemy OPs from surrounding areas.

SECTION 3 - LINKUP

LINKUP SITUATIONS

Linkup is an operation entailing the meeting of friendly ground forces (or their leaders or designated representatives). It may occur in, but is not limited to, the following situations:

- Advancing forces reaching an objective area previously secured by air assault, airborne, or infiltrating forces.
- Units conducting coordination for a relief in place.
- Cross-attached units moving to join their new organization.
- A unit moving forward during a follow and support mission with a fixing force.
- A unit moving to assist an encircled force.
- Units converging on the same objective during the attack.
- Units conducting a passage of lines.

PHASES OF THE LINKUP OPERATION

The company team conducts linkup activities independently or as part of a larger force. Within a larger unit, the team may lead the linkup force. The linkup consists of three phases; the actions outlined in the following paragraphs are critical to the execution of a successful operation:

Phase 1 - far recognition signal

During this phase, the units or elements involved in the linkup should establish communications before they reach direct fire range. The lead element of each linkup force should monitor the radio frequency of the other friendly force.

Phase 2 - coordination

Before initiating movement to the linkup point, the forces must coordinate necessary tactical information, including the following:

- The known enemy situation.
- Type and number of friendly vehicles.
- Disposition of stationary forces (if either unit is stationary).
- Routes to the linkup point and rally point (if used).
- Fire control measures.
- Near recognition signal(s).
- Communications information.
- CS coverage.
- CSS responsibilities and procedures.
- Finalized location of the linkup point and rally point (if used).
- Any special coordination, such as that covering maneuver instructions or requests for medical support.

Phase 3 - movement to the linkup point and linkup

All units or elements involved in the linkup must enforce strict fire control measures to help prevent fratricide; linkup points and RFLs must be easily recognizable by moving and/or converging forces. Linkup elements take these actions:

- Conduct far recognition using FM radio.
- Conduct short-range (near) recognition using the designated signal.
- Complete movement to the linkup point.
- Establish local security at the linkup point.
- Conduct additional coordination and linkup activities as necessary.

SECTION 4 - PASSAGE OF LINES

A passage of lines entails movement of one or more units through another unit. This operation becomes necessary when the moving unit(s) cannot bypass the stationary unit and must pass through it. The primary purpose of the passage is to maintain the momentum of the moving elements. A passage of lines may be designated as either forward or rearward (refer to the discussion and illustrations later in this section).

The controlling task force is responsible for planning and coordination of a passage of lines involving the company team. In some situations, as when the company team is using multiple passage routes (such as a separate route for each platoon), the team commander must take responsibility for planning and coordinating each phase of the operation.

PLANNING CONSIDERATIONS

In planning the passage of lines, the commander must consider the tactical factors and procedures covered in the following paragraphs.

Passage lanes The passage should facilitate transition to follow-on missions through the use of multiple lanes or of lanes wide enough to support doctrinal formations for the passing units.

Use of deception Deception techniques, such as the use of smoke, may be employed to enhance security during the passage.

Battle handover The controlling commander must clearly define the battle handover criteria and procedures to be used during the passage. His order should cover the roles of both the passing unit and the stationary unit and the use of direct and indirect fires. If necessary, he also specifies the location of the BHL as part of the unit's graphic control measures. For a forward passage, the BHL is normally the LD for the passing force; in a rearward passage, it is normally a location within the direct fire range of the stationary force. In general, a defensive handover is complete when the passing unit is clear and the stationary unit is ready to engage the enemy. Offensive handover is complete when the passing unit has deployed and crossed the BHL.

Obstacles The passing and stationary units must coordinate obstacle information, to include the locations of enemy and friendly obstacles, of existing lanes and/or bypasses, and of guides for the passage.

Air defense Air defense coverage is imperative during the high-risk passage operation. Normally, the stationary unit will be responsible for providing air defense, allowing the passing unit's air defense assets to move with it.

CSS responsibilities Responsibility for CSS actions, such as vehicle recovery or casualty evacuation in the passage lane, must be clearly defined for both passing and stationary units.

Command and control To enhance command and control during the passage, the company team will collocate a command and control element, normally the commander or XO (and his vehicle), with a similar element from the stationary or moving unit (as applicable).

RECONNAISSANCE AND COORDINATION

Detailed reconnaissance and coordination are critical in a passage of lines, both in dealing with the often complex planning factors outlined previously and in ensuring that the passage is conducted quickly and smoothly. The company team commander normally conducts all necessary reconnaissance and coordination for the passage. At times, he may designate the XO, 1SG, or a platoon leader to conduct liaison duties for reconnaissance and coordination.

The following items of information are coordinated (an asterisk indicates items that should be confirmed by reconnaissance):

- Unit designation and composition; type and number of passing vehicles.
- Passing unit arrival time(s).
- Location of attack positions or assembly areas. *
- Current enemy situation.
- Stationary unit's mission and plan (to include OP, patrol, and obstacle locations). *
- Location of movement routes, contact points, passage points, and passage lanes. (**NOTE:** In units with digital capability, the use of GPS/POSNAV waypoints will simplify this process and, as a result, speed the passage.)
- Guide requirements.
- Order of march.
- Anticipated actions on enemy contact.
- Requirements for supporting direct and indirect fires, including the location of the RFL. *
- NBC conditions.
- Available CS and CSS assets and their locations. *
- Communications information (to include frequencies, digital data, and near and far recognition signals).
- Criteria for battle handover and location of the BHL.
- Additional procedures for the passage.

FORWARD PASSAGE OF LINES

In a forward passage, the passing unit first moves to an assembly area or an attack position behind the stationary unit. Designated liaison personnel move forward to link up with guides and confirm coordination information with the stationary unit. Guides then lead the passing elements through the passage lane.

The company team conducts a forward passage by employing tactical movement. It moves quickly, using appropriate dispersal and formations whenever possible and keeping radio traffic to a minimum. It bypasses disabled vehicles as necessary. The team holds its fire until it passes the BHL or designated fire control measure unless the commander has coordinated fire control with the stationary unit. Once clear of passage lane restrictions, the unit consolidates at a rally point or attack position and then conducts tactical movement in accordance with its orders. Figure 5-4 illustrates a forward passage of lines.

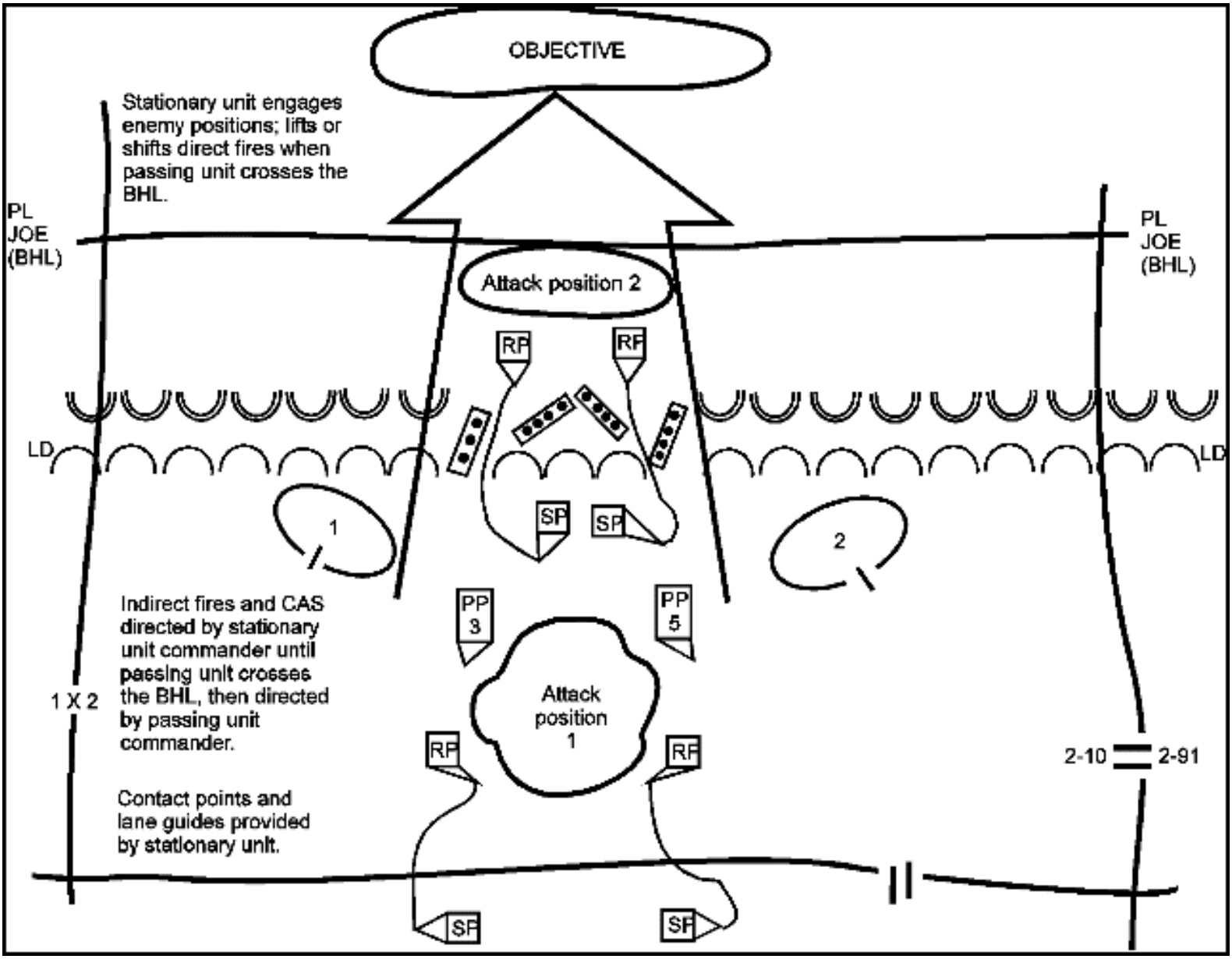
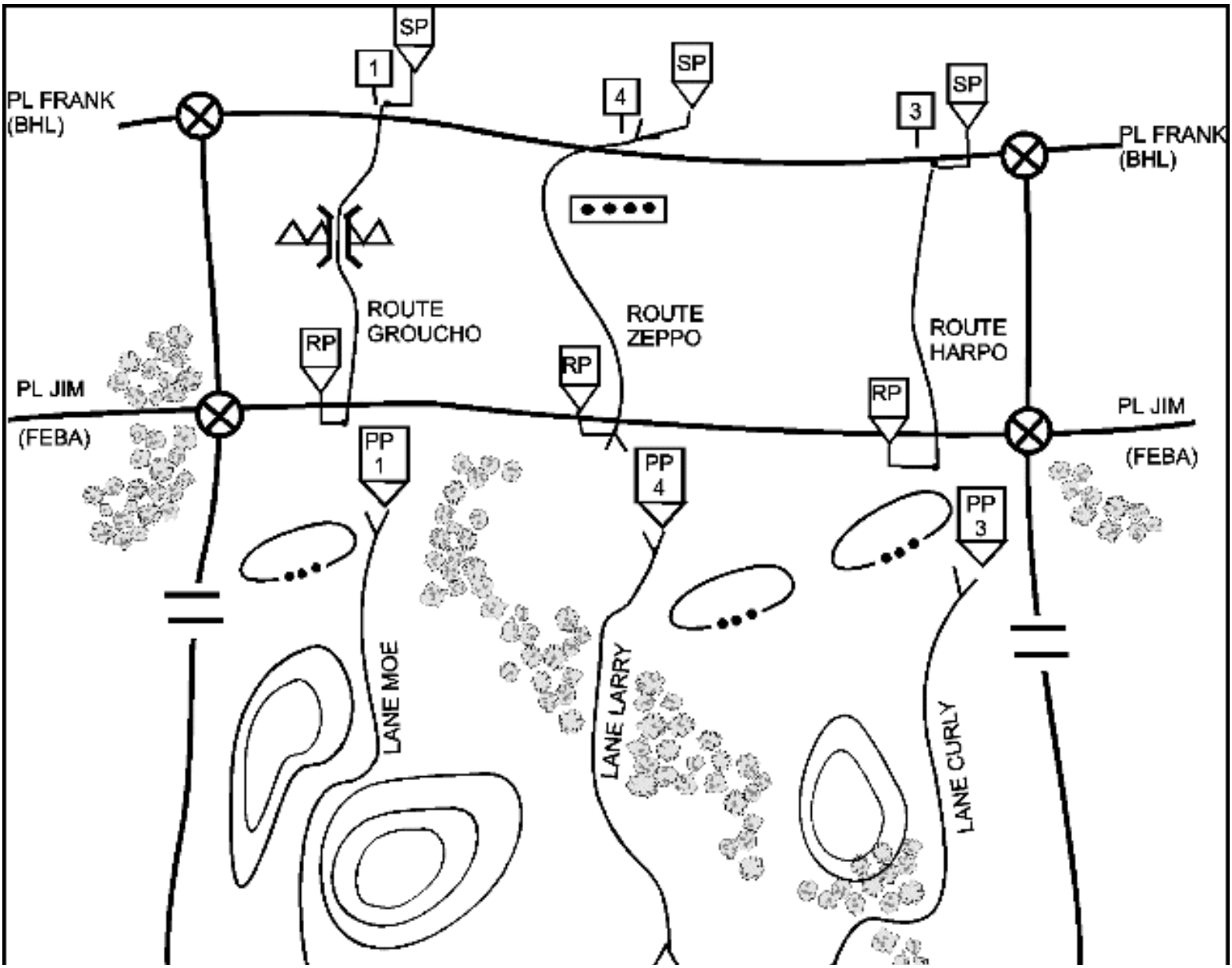


Figure 5-4. Company team forward passage of lines.

REARWARD PASSAGE OF LINES

Because of the increased chance of fratricide during a rearward passage, coordination of recognition signals and direct fire restrictions is critical. The passing unit contacts the stationary unit while it is still beyond direct fire range and conducts coordination as discussed previously. Near recognition signals and location of the BHL are emphasized. Additional fire control measures, such as RFLs, may be employed to further minimize the risk of fratricide.

Following coordination, the passing unit continues tactical movement toward the passage lane. Gun tubes are oriented on the enemy, and the passing unit is responsible for its own security until it passes the BHL. If guides are provided by the stationary unit, the passing unit may conduct a short halt to link up and coordinate with them. The passing unit moves quickly through the passage lane to a designated location behind the stationary unit. Refer to Figure 5-5 for an illustration of the rearward passage.



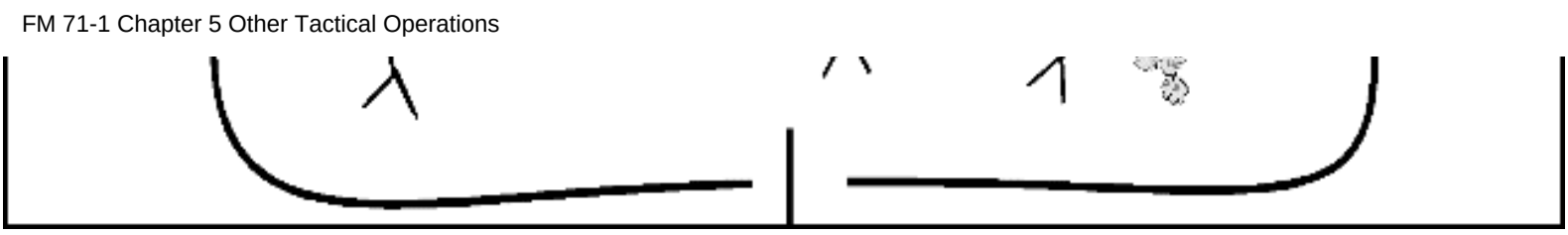


Figure 5-5. Company team rearward passage of lines.

SECTION 5 - RELIEF IN PLACE

A relief in place occurs when one unit is replaced by another unit during either offensive or defensive operations. Its purpose is to preserve the combat effectiveness of committed units. In a relief involving the company team, the task force commander will direct when and how the operation will be conducted.

PLANNING THE RELIEF

In planning for a relief in place, the company team commander takes the following actions:

- Issue a FRAGO immediately.
- Use an advance party composed of key leaders to conduct detailed reconnaissance and coordination.
- As the relieving unit, adopt the outgoing unit's normal pattern of activity as much as possible.
- As the relieving unit, determine when the team will assume responsibility for the outgoing unit's position.
- As the relieving unit, collocate team headquarters with the relieved unit's headquarters.
- Maximize OPSEC to prevent the enemy from detecting the relief operation. (**NOTE:** Whenever possible, conduct the relief at night or under other limited visibility conditions.)
- Plan for relief of CS elements after combat elements are relieved.
- Plan for transfer of excess ammunition, wire, POL, and other material of tactical value to the incoming unit. (**NOTE:** Other equipment that may be exchanged includes machine gun T&E mechanisms and tripods, emplaced sensors and chemical alarms, and MOPMS control boxes.)
- Control movement by reconnoitering, designating, and marking routes and providing guides.

COORDINATION

The incoming and outgoing commanders must meet to exchange tactical information, conduct a joint reconnaissance of the area, and complete other required coordination for the relief. The two commanders must carefully address passage of command and jointly develop contingency actions to deal with enemy contact during the relief. This process will normally include coordination of the following additional information:

- Location of vehicle and individual fighting positions (to include hide, alternate, and supplementary positions).
- Enemy situation.
- The outgoing unit's tactical plan, to include graphics, company team and platoon fire plans, and individual vehicles' sector sketches.
- Fire support coordination, including indirect fire plans and the time of relief for supporting artillery and mortar units.
- Types of weapon systems being replaced.
- Time, sequence, and method of relief.
- Location and disposition of obstacles and the time responsibility will be transferred.
- Supplies and equipment to be transferred.
- Movement control, route priority, and placement of guides.
- Command and signal information. (**NOTE:** The relief will be conducted on the radio nets of the outgoing unit.)
- Maintenance and logistical support for disabled vehicles.
- Limited visibility considerations.

CONDUCTING THE RELIEF

During conduct of the relief, the outgoing commander retains responsibility for the area of operations and the mission. He exercises operational control over all subordinate elements of the incoming unit that have competed their portion of the relief. Responsibility can pass to the incoming commander when all elements of the outgoing unit are relieved and adequate communications are established.

There are two overall methods of relief, sequential and simultaneous, with elements relieved one at a time or all at once. In addition, the relief of individual elements can be conducted in one of two ways:

- By alternate element position. The relieving element occupies a position separate from that of the relieved element. See Figure 5-6 for an illustration of this relief

method.

- By alternate vehicle and/or individual position. The relieving element occupies vehicle or individual fighting positions within the same BP as the relieved element. Refer to Figure 5-7.

Sequential relief

This is the most time-consuming method. The relieving unit moves to an assembly area to the rear of the unit to be relieved. Subordinate elements are relieved one at a time. This can occur in any order, with the relief generally following this sequence:

- The outgoing and incoming units collocate their headquarters and trains elements to facilitate command and control and transfer of equipment, ammunition, fuel, water, and medical supplies.
- The first element being relieved (such as a platoon) moves to its alternate fighting positions or BP while the relieving element moves into the outgoing element's primary positions. The incoming element occupies vehicle and individual fighting positions as appropriate.
- Incoming and outgoing elements complete the transfer of equipment and supplies.
- The relieved element moves to the designated assembly area behind the position.
- Once each outgoing element clears the RP en route to its assembly area, the next relieving element moves forward.

Simultaneous relief

This is the fastest, but least secure, method. All outgoing elements are relieved at once, with the incoming unit normally occupying existing positions, including BPs and vehicle and individual fighting positions. The relief takes place in this general sequence:

- Outgoing elements move to their alternate BPs and/or vehicle and individual positions.
- Incoming elements move along designated routes to the outgoing elements' primary positions.
- The units complete the transfer of equipment and supplies.
- Relieved elements move to the designated unit assembly area.

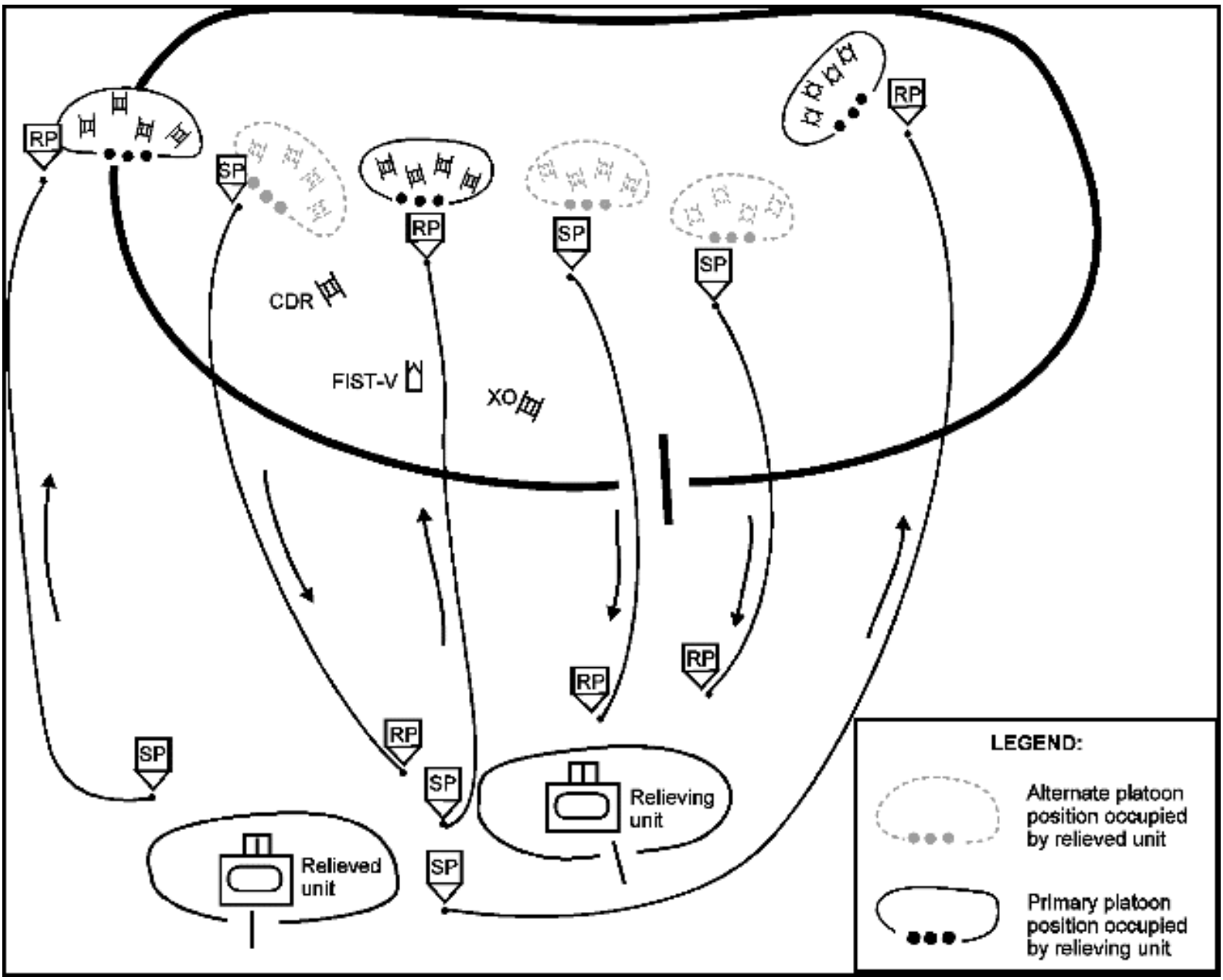


Figure 5-6. Example relief in place by alternate platoon positions.

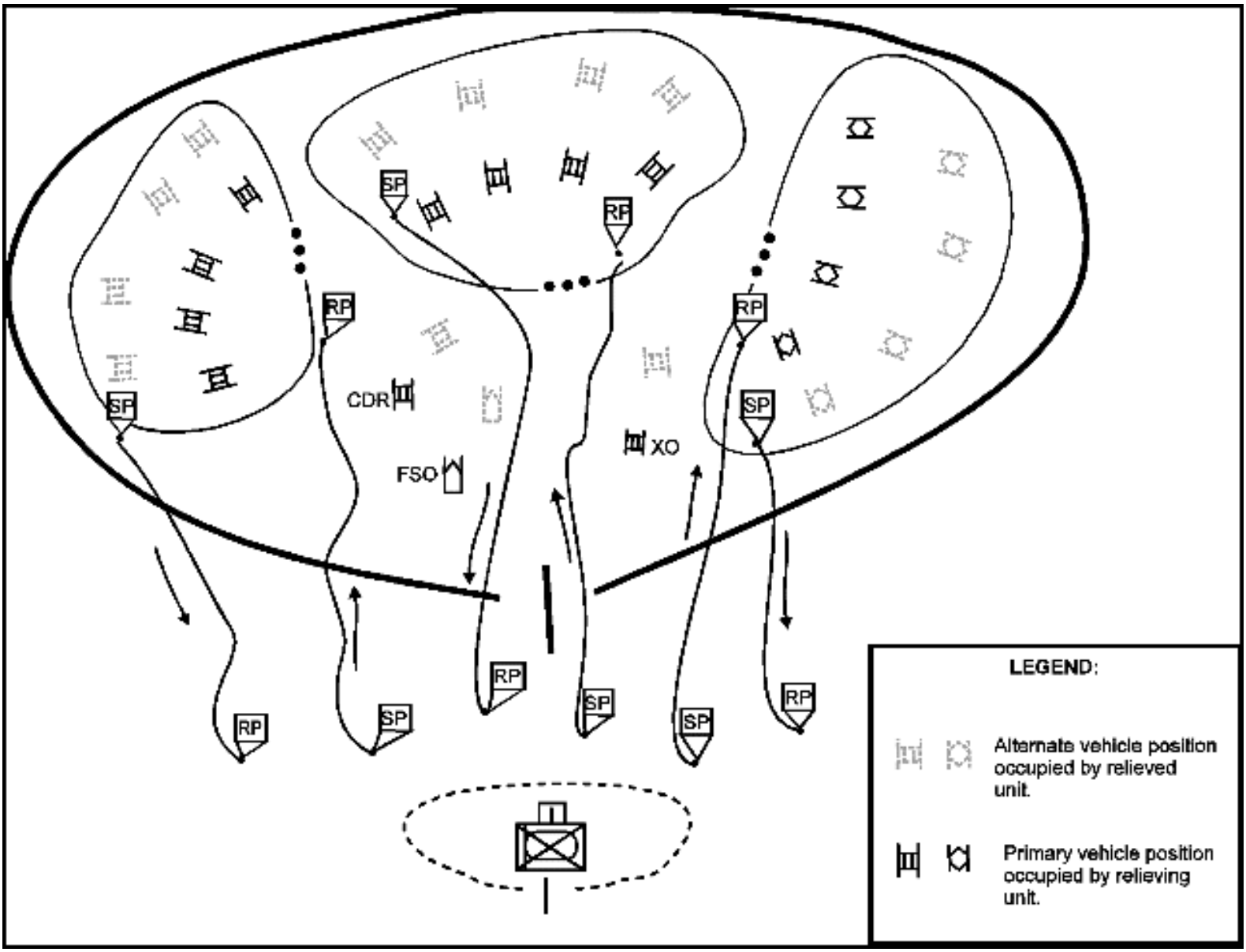


Figure 5-7. Example relief in place by alternate vehicle positions.

SECTION 6 - BREACHING OPERATIONS

Obstacle breaching is a high-frequency task during offensive operations. Breaching entails the employment of a combination of TTP and equipment to project combat power to the far side of an obstacle. The company team commander must understand the challenges presented by various types of obstacles and the capabilities and limitations of the mobility assets the team can employ to defeat them. He must further understand the basic tenets of breaching operations and the types of breaches the company team may be tasked to conduct.

FM 90-13-1 contains a more detailed discussion of breaching operations and threat obstacle employment.

MOBILITY ASSETS

The following paragraphs summarize the capabilities and limitations of the breaching assets available to the company team.

Mine plow

Also known as the mine-clearing blade, the mine plow is used to breach and proof minefields. The system affords good survivability. When fully operational, a tank equipped with a mine plow can quickly clear two 68-inch-wide lanes, one in front of each track. (**NOTE:** The plow's dogbone assembly will detonate the tilt rods of mines in the area between the two plowed lanes; however, only plows equipped with the improved dogbone assembly, known as the IDA, will defeat magnetically activated mines.)

The plow must be dropped at least 100 meters before the tank reaches the minefield. It then is not lifted until the tank is at least 100 meters past the far edge of the minefield. The plow must have 18 inches of spoil to be effective, limiting the tank's speed to 10 mph or less in the lane. The mine plow should be used only in a straight line; it does not work well on hard, rocky, or uneven ground where it cannot maintain adequate spoil. Mine detonation can cause violent upward movement of the blade; the tank's main gun must be traversed to the side during plowing to prevent damage to the gun tube. The plow's lifting straps can become entangled in wire obstacles. Manual lifting of the plow takes at least 10 minutes.

Mine roller

The mine roller is used to identify the forward edges of a minefield and to proof lanes. The roller sweeps a 44-inch path in front of each track and is also equipped with a dogbone assembly. It is also effective at breaching wire obstacles.

The roller, however, is not effective on broken or uneven ground. The mine roller, like the mine plow, will not defeat magnetically fuzed mines unless equipped with the IDA. The main gun must be traversed to the side or rear when contact with a mine is possible or imminent; detonation can throw the roller (or pieces of it) violently upward, possibly damaging the tube.

Mine-clearing line charge

Used to breach wire and mine obstacles, the MICLIC can be either towed or mounted on an M60A1 chassis (this vehicle is known as the AVLM). It clears a lane 100 meters deep and 14 meters wide. (**NOTE:** The MICLIC must be fired 62 meters from the obstacle to get the full 100 meters of depth.) The charge may create two skip zones, where the mines are not detonated, on the right and left side of the center line of the cleared lane. The skip zones, which are about 1.5 meters wide, require all MICLIC lanes to be proofed.

The MICLIC is effective against pressure-activated antitank mines and against mechanically activated antipersonnel mines. Effectiveness is limited against magnetically activated mines, including scatterable mines, and those with multiimpulse (double-impact) or time-delay fuzes. The MICLIC is not effective on severely broken ground where the line charge cannot lay flat. When detonated, the MICLIC has danger area with a radius of 1,600 meters.

Armored combat earthmover

Using its blade, the ACE can defeat berms and antitank ditches. The ACE can also skim a minefield with its blade; however, it is slow and vulnerable in this role and should be employed this way only as a last resort. The vehicle is further limited by its one-man crew.

Armored vehicle launched bridge

The AVLB is primarily employed to cross short gaps, such as narrow streams, antitank ditches, craters, canals, or partially blown bridges. Its span is 18 meters (60 feet) using prepared abutments and 17 meters with unprepared abutments. The capacity of the bridge is one military load class (MLC) 60 vehicle (this is waived for M1-series tanks in combat operations).

The AVLB launcher, which requires 10 meters of overhead clearance for transportation and operation, is most visible and vulnerable during launching of the bridge. An experienced crew can launch the bridge in two to five minutes.

> **NOTE:** The AVLB will soon be replaced by the Wolverine, which is based on an M1-series chassis. The new bridge will be able to support MLC 70 vehicles across a gap of up to 24 meters.

Engineer squad

The most versatile of all breaching assets, the engineer squad can conduct explosive or manual breaches and proofing and can mark lanes through an obstacle. While it is conducting these breaching and proofing operations, however, the squad is extremely vulnerable to enemy direct and indirect fires.

Mechanized infantry or tank squad

If other breaching assets are unavailable, a mechanized infantry or tank platoon can conduct explosive breaches (with hand-emplaced charges) and/or use manual breaching kits (normally consisting of grappling hooks, gloves, and wire cutters). At the same time, however, employment of either type of platoon organization in breaching operations has distinct disadvantages. The pace of the breach will be slow, and the operation will leave the platoon vulnerable to enemy attack. For a more detailed discussion of manual breaching techniques for the mechanized infantry platoon, refer to FM 7-7J.

BREACHING TENETS

In the planning and execution of a successful combined arms breaching operation, the company team commander must apply the five tenets of breaching. These basic principles, described in this discussion, are the following:

- Intelligence.
- Breaching fundamentals.
- Breaching organization.
- Mass.
- Synchronization.

Intelligence

Well-rehearsed drills and SOPs and redundancy in breaching assets can offset a lack of obstacle intelligence (OBSTINTEL) in breaching operations involving simple obstacles or lightly defended obstacles. Detailed OBSTINTEL, however, is imperative for a successful breach of a complex obstacle. Without thorough information on the obstacle itself and the defense it supports, the breach force will be at risk. At a minimum, OBSTINTEL requirements for breach and maneuver planning should cover the following:

- **Bypasses and gaps.** The existence of adequate bypasses will affect the decision of whether a breaching operation is required. Gaps may influence what type of breach will be used.
- **Obstacle location and orientation.** These are factors in where the breach will be conducted.
- **Obstacle composition and depth.** These factors, which are critical to how the breach will be conducted, include the following:

  - Type of mines employed, by target type (antipersonnel, antitank), positioning (buried, surface-laid), and/or method of activation (pressure, mechanical, magnetic).

  - Presence of antihandling devices.

  - Size of the obstacle and whether it is tied into existing

or reinforcing obstacles.

- **Location of the enemy's direct fire weapons (mounted and dismounted).** This influences actions on the objective during the breach, including how to suppress and obscure the enemy.
- **Topography.** This will have an impact of the use of various types of breaching assets. For example, because plows do not work well on rocky or uneven ground, plow settings may have to be adjusted, or the plow may be rendered totally unusable.

Breaching fundamentals

These summarize the four basic steps that are part of every breaching operation. The simplified steps, known by the abbreviation SOSR, are these:

- **Suppress.** Focus all available fires on the enemy to prevent him from placing effective fires on the breach and assault forces.
- **Obscure.** Employ screening or obscuring smoke to prevent enemy acquisition of friendly elements.
- **Secure.** Secure the breach site to prevent the enemy from interfering with obstacle reduction or passage of friendly forces through the cleared lanes. Security must be effective against all types of enemy elements that can influence these actions, including outposts and fighting positions near the obstacle, overwatching units, and counterattack forces.
- **Reduce.** Create lanes through or over the obstacle to allow the assault force to pass through and to enable follow-on forces to accomplish their missions.

Breaching organization

The breach commander designates support, breach, and assault forces. The following paragraphs summarize the responsibilities and actions of the three elements during the breaching operation.

Support force

The support element takes these actions:

- Establish support by fire positions and suppress the enemy with direct and indirect fires to prevent him from placing effective fires against friendly forces.
- Employ or call for smoke to obscure the enemy and/or to screen friendly movement.

Breach force

The breach element takes these actions:

- Search for bypasses.
- Establish breach site security on the near side of the obstacle against mounted and dismounted enemy elements.
- Reduce the obstacle.
- Proof and mark lanes or bypasses.
- Establish breach site security on the far side against mounted and dismounted enemy elements to facilitate passage of the assault force.

Assault force

The assault element takes these actions:

- As necessary, assist the support force with suppression during the initial reduction of the obstacle.
- As necessary, conduct an assault breach of protective obstacles.
- Secure the far side of the obstacle (this is defined as the area that can influence the breach site).
- As directed, conduct additional actions on the objective to destroy enemy elements on the far side of the obstacle.

Mass

Mass, a critical factor in the success of any breaching operation, is achieved when the friendly force is able to fix a majority of the enemy or to isolate or obscure the objective using smoke. The breach commander must plan for 50-percent redundancy in reduction assets. Favorable force ratios can be generated through the employment of additional combat multipliers.

Synchronization

Synchronization can best be achieved in a breaching operation through the use of detailed reverse planning, clear instructions to subordinate elements, effective command and control, and extensive rehearsals. The emphasis is on the steps of SOSR. Planning considerations for synchronization during the breach, listed in a possible reverse sequence, include the following:

- Reverse planning starts with actions on the objective.
- The planned actions on the objective will influence the size and composition of the assault force and the number and location of lanes to be created.
- Lane requirements, topography, and the type of obstacles will determine the type and number of reduction assets task organized to the breach force.
- The ability of the enemy's infantry to interfere with the breach will determine whether the breach site is secured by fires or by force.
- The enemy's ability to mass fires at the breach site will dictate the nature of the required suppression fires (including the composition of the support force and the type and amount of supporting fires).
- The location of the enemy and the availability of clear fields of fire will determine the location of the support force and its support by fire position.

TYPES OF BREACHING OPERATIONS

The following paragraphs cover four major types of breaching operations: deliberate breach, in-stride breach, assault breach, and covert breach. Also included is a discussion of the bypass operation, which the commander must consider as an alternative to conducting an actual breach.

Bypass

When a unit bypasses an obstacle, it physically changes direction, moving along a route that avoids the obstacle. Obstacles should be bypassed whenever possible to maintain the momentum of the operation. Commanders, however, must ensure that conducting the bypass will provide a tactical advantage without exposing the unit to unnecessary danger. If possible, they should conduct a reconnaissance to evaluate tactical considerations, including the following:

- The limits of the obstacle.
- Physical aspects of the bypass route, including location, availability of cover and concealment, and key terrain influencing the route.
- Confirmation that the bypass route will take the unit where it needs to go while avoiding possible enemy ambush sites and kill sacks.

NOTE: For additional considerations related to bypass operations, refer to the discussion of the bypass as a tactical task in Chapter 3 of this manual.

Deliberate breach

The deliberate breach is a scheme of maneuver specifically designed to reduce an obstacle, allowing the unit to continue the mission. The deliberate breach is characterized by thorough reconnaissance, detailed planning, and extensive preparation and rehearsal. Subordinate elements are tasked to perform the roles of support, breach, and assault forces.

In a task force deliberate breach, the company team is most likely to be part of the support or assault force; the engineer team, task organized with plow and roller tanks, serves as the breach force. The task force commander may also form the breach force by task organizing a tank or mechanized infantry company team with one or more engineer platoons. The task force commander is responsible for synchronizing the steps of SOSR.

NOTE: If the task force commander designates the company team to conduct the breach on its own, the team commander task organizes internally for the operation, designating specific elements within the team as support, breach, and assault forces. Success will depend on whether the team has the necessary assets to internally apply SOSR breaching fundamentals.

In-stride breach

Brigades and task forces employ the in-stride breaching technique to quickly overcome unexpected or lightly defended obstacles; they may also use the technique when the obstacle or enemy situation is unclear. Brigade and task force commanders may prepare their units for an in-stride breach by task organizing subordinate task forces or company teams (as applicable) with the additional forces necessary to conduct the operation.

As with the deliberate breach, the task force commander may direct the company team, probably task organized with one or more engineer platoons, to conduct the in-stride breach on its own. The team commander assumes responsibility for designating support, breach, and assault forces and for synchronizing SOSR actions.

Assault breach

When the company team is designated as the assault force in a breaching operation, it may conduct assault breaching operations to penetrate an enemy's protective obstacle belt. This type of breach allows the assault force to penetrate the enemy's defense, destroy his forces, and exploit success by continuing the assault through the objective.

In preparing for the assault breach, the company team commander synchronizes SOSR activities and allocates breaching assets to subordinate platoons. The actual breaching operation is conducted either by engineer squads under platoon control or by plow and roller tanks. Because friendly and enemy forces are likely to be in close proximity during the assault breach, indirect fires must be carefully coordinated with maneuver. The task force mortars are a valuable asset in SOSR activities.

> **NOTE:** Refer to the discussion of assault operations in Chapter 3 of this manual for additional considerations that may be applicable in planning and executing an assault breach.

Covert breach

This special breaching operation is used by infantry and dismounted engineer forces under limited visibility conditions. The covert breach relies on stealth and dismounted maneuver, with the breach force employing quiet, manual lane reduction techniques. This type of breach is most likely to be conducted in operations involving light, light/heavy, or heavy/light forces. (**NOTE:** In a covert breach, suppression from the support force can be either a be-prepared task, initiated if the enemy detects the breach force, or an on-order task, initiated with the start of the assault.)

EXAMPLE OF A DELIBERATE BREACH

In this example, a tank-heavy company team is assigned to conduct a deliberate breach as part of a task force in-stride breach. The team is task organized with two plow tanks and two roller tanks, all of which are in the team's 1st Platoon. It also has an attached engineer platoon, which comprises three engineer squads with four M113s and two towed MICLICs.

The company team is tasked with creating two lanes in an 80-meter-deep minefield, which has a conventional antitank/antipersonnel mix and is bounded on the far side by wire. The commander assigns responsibilities for the operation, including reduction of the obstacle and creation of the lanes, using available intelligence on the obstacle and the enemy as well as results of the team's war-gaming process. Based on this mission analysis, he designates the following responsibilities for his maneuver elements:

- The 1st Platoon (tank), augmented by the engineer platoon, is the breach force.
- The 2d Platoon (mech) is the assault force; it will secure the far side of the obstacle and destroy remaining enemy forces.
- The 3d Platoon (tank) is the support element, assigned to suppress an MRP(+).

The chart in Figure 5-8 provides an example of the assignment of assets for the company team breaching operation.

	LANE 1 PRIMARY	**LANE 1 BACKUP**	**LANE 2 PRIMARY**	**LANE 2 BACKUP**
BREACH	MICLIC	Plow tank, followed by engineer squad	MICLIC	Plow tank, followed by engineer squad
PROOF	Roller tank	Plow tank, followed by engineer squad	Roller tank	Plow tank, followed by engineer squad
MARK	Engineer squad		Engineer squad	

Figure 5-8. Example of company team breaching assets.

Figures 5-9 through 5-13 illustrate an example company team breaching operation. Notes in each illustration list key company team, platoon, and leader actions.

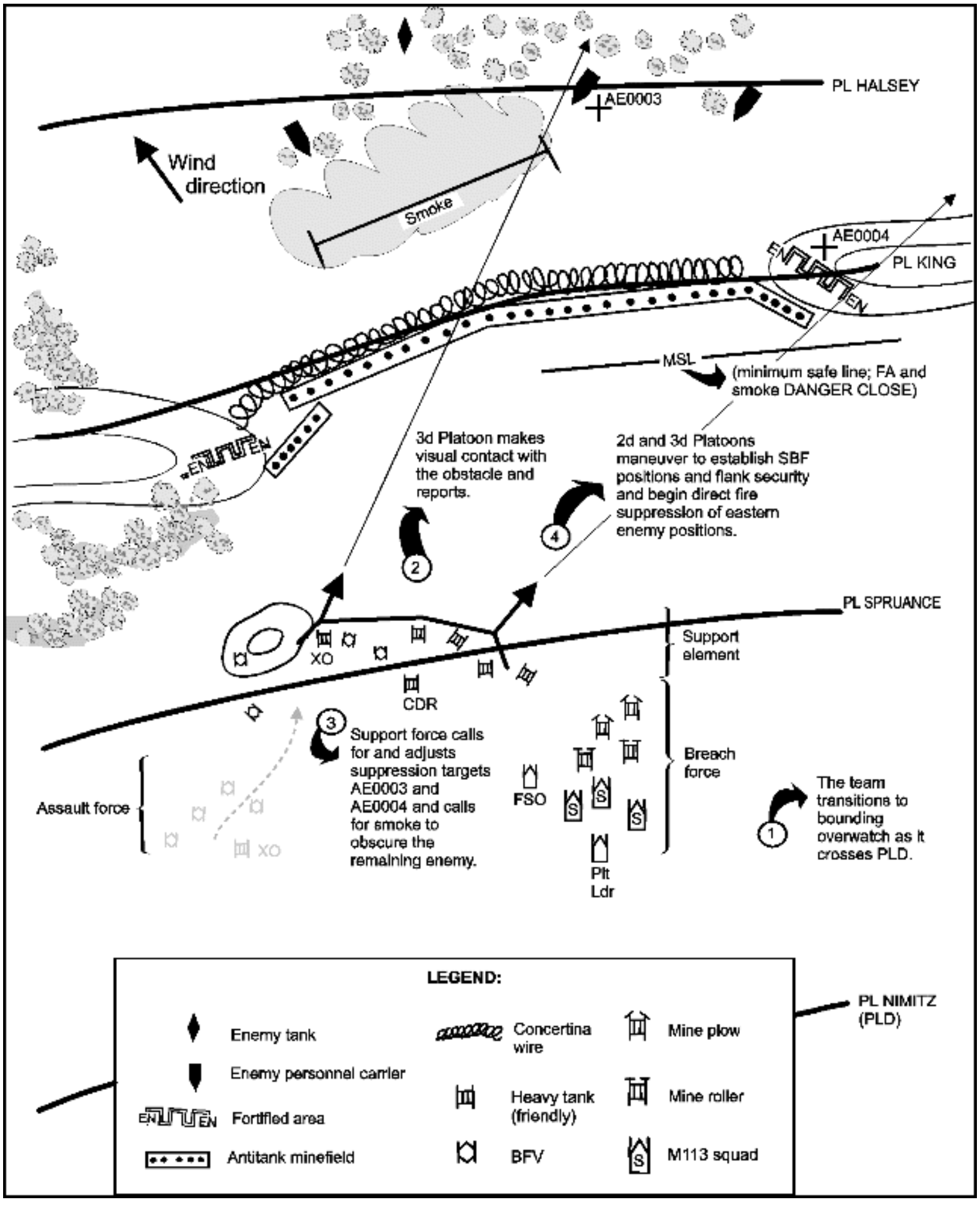

PL HALSEY
AE0003
Wind direction
Smoke
AE0004
PL KING
MSL
(minimum safe line; FA and smoke DANGER CLOSE)
3d Platoon makes visual contact with the obstacle and reports.
2d and 3d Platoons maneuver to establish SBF positions and flank security and begin direct fire suppression of eastern enemy positions.
PL SPRUANCE
XO
CDR
Support element
Support force calls for and adjusts suppression targets AE0003 and AE0004 and calls for smoke to obscure the remaining enemy.
Assault force
FSO
Breach force
Plt Ldr
The team transitions to bounding overwatch as it crosses PLD.
LEGEND:
Enemy tank
Enemy personnel carrier
Fortified area
Antitank minefield
Concertina wire
Heavy tank (friendly)
BFV
Mine plow
Mine roller
M113 squad
PL NIMITZ (PLD)

Figure 5-9. Company team sets the conditions for the breach.

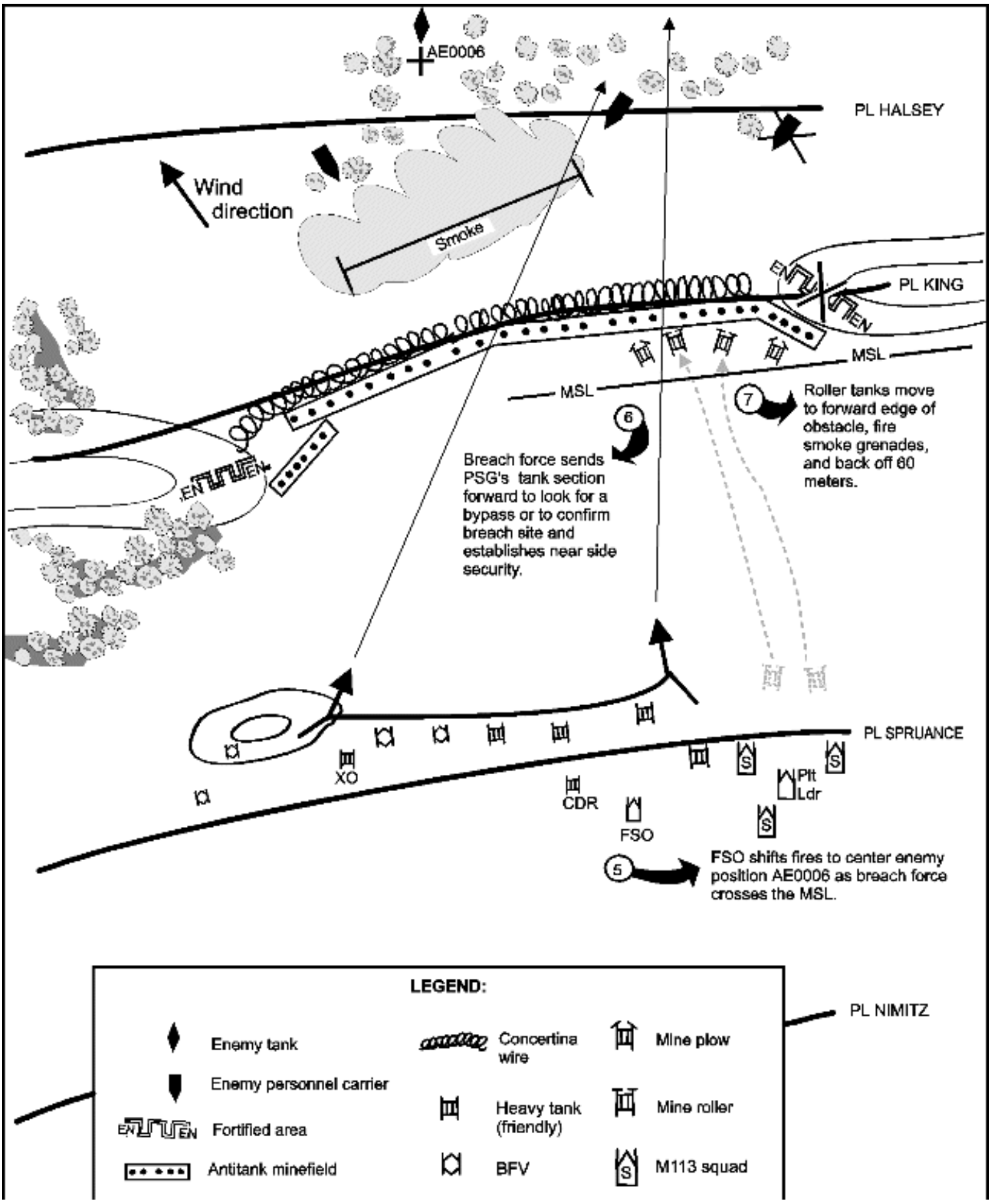


Figure 5-10. Company team establishes security.

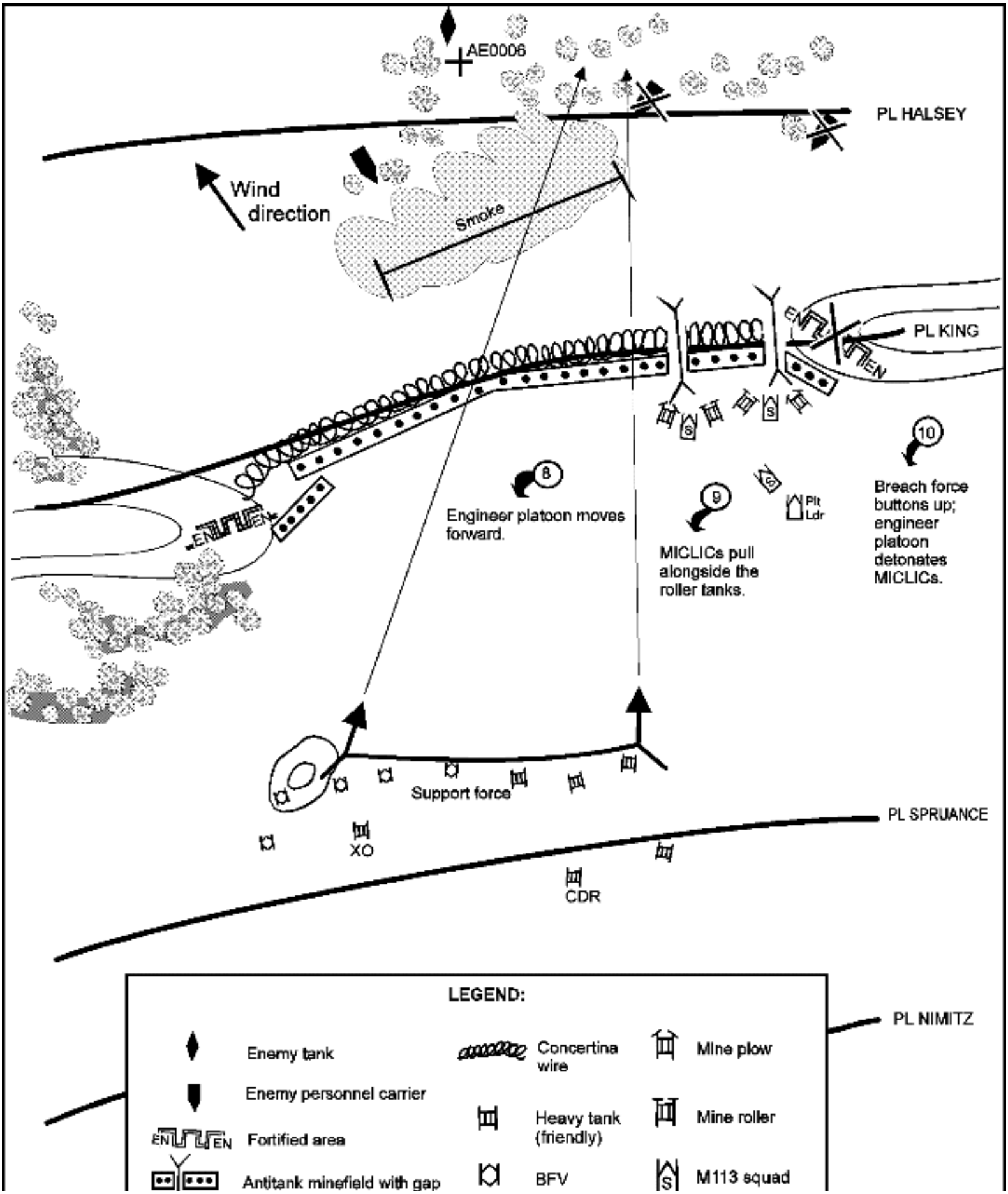
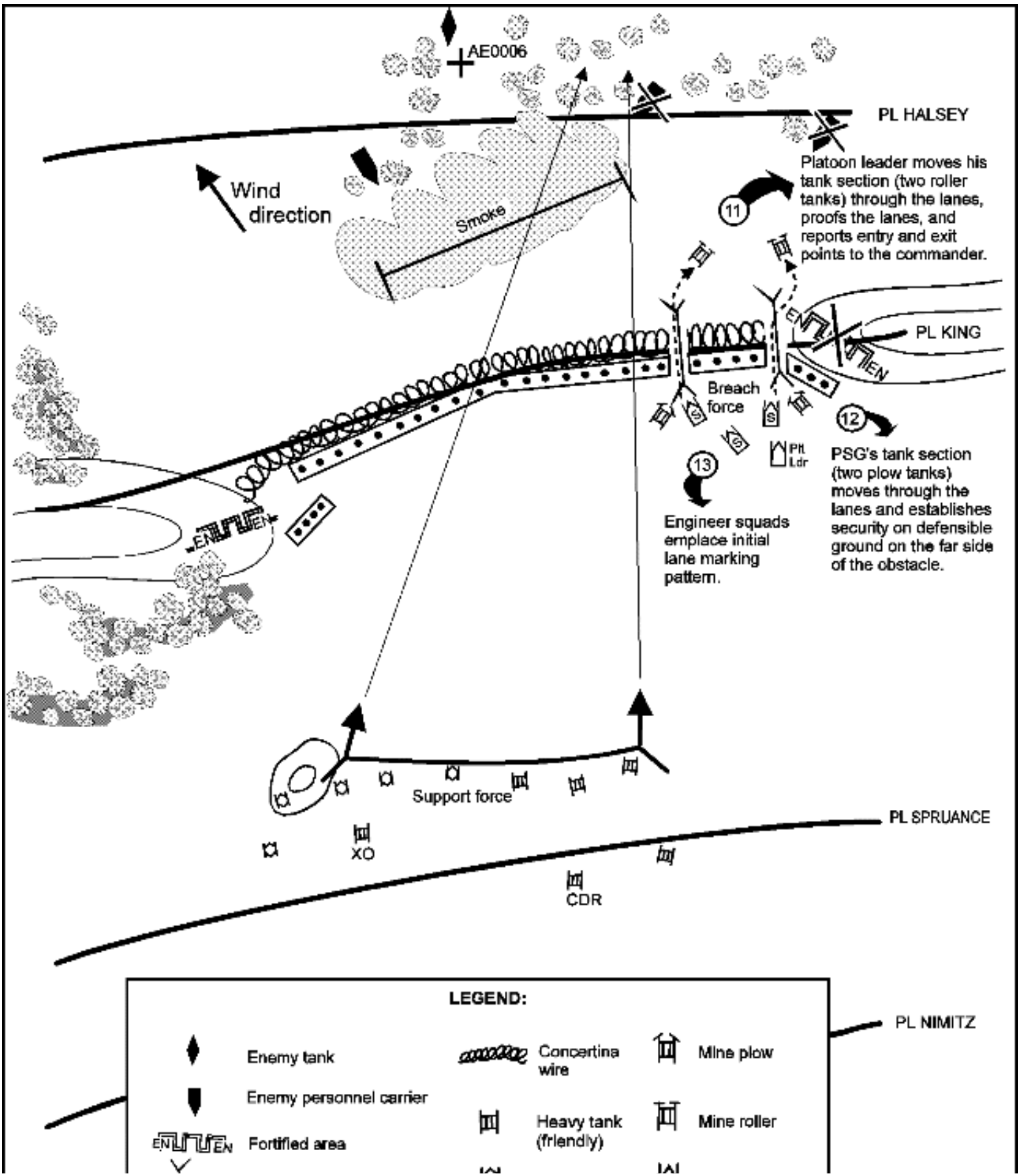
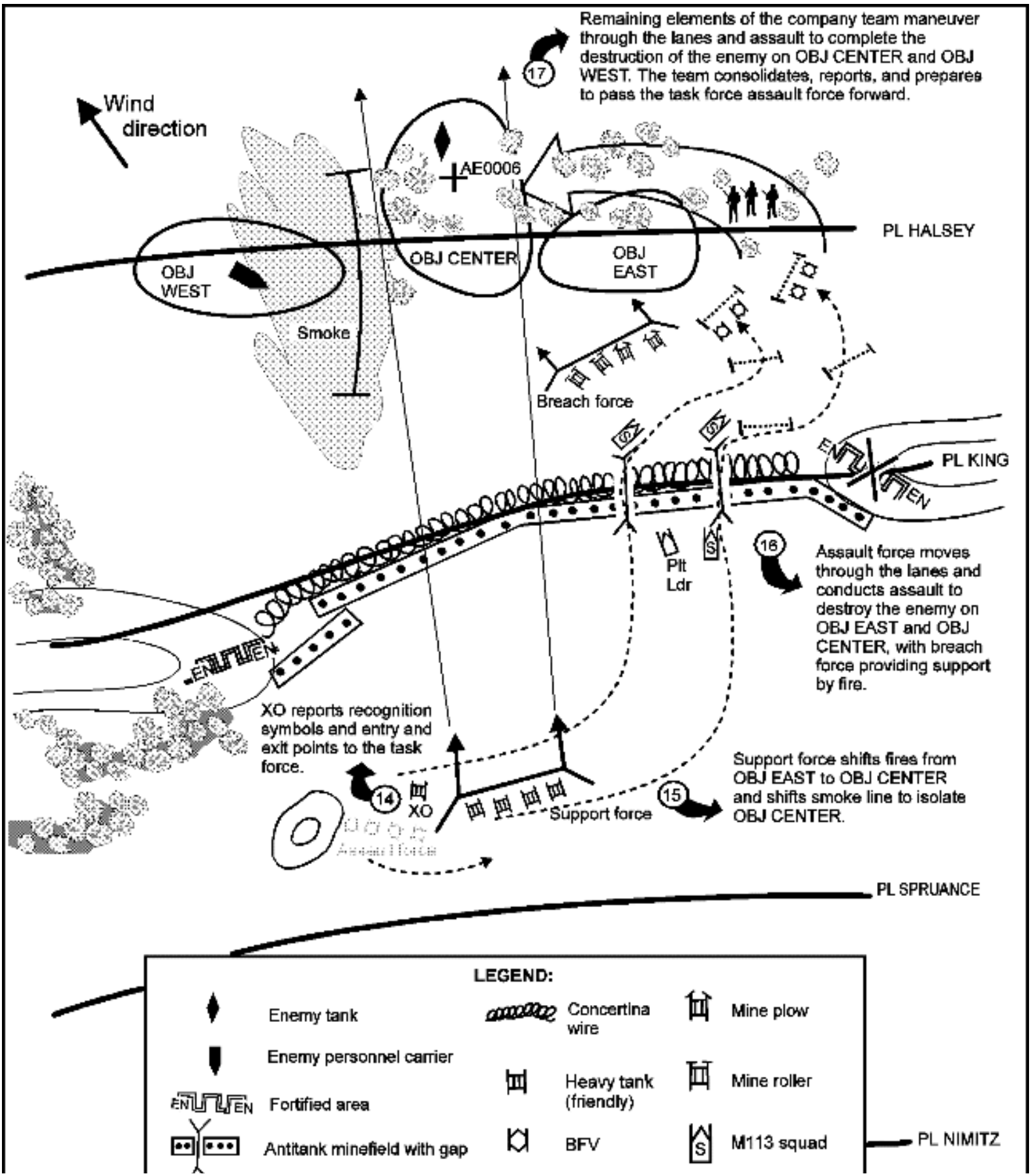


Figure 5-11. Company team conducts the breach.



Antitank minefield with gap | BFV | M113 squad

Figure 5-12. Breach force proofs the lanes and establishes far side security.



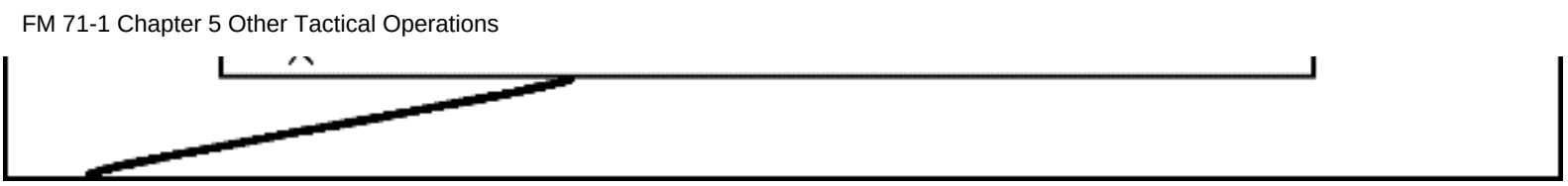


Figure 5-13. Assault force conducts the assault and secures the objective.

SECTION 7 - HASTY WATER CROSSING AND GAP CROSSING OPERATIONS

The company team may take part in three types of water crossing operations: hasty, deliberate, and retrograde. It normally participates in a hasty water crossing as part of a task force and in deliberate or retrograde crossings as part of a brigade or larger element. The team may also conduct a hasty gap crossing independently when supported by attached engineer assets.

METHODS AND PURPOSES OF WATER CROSSING OPERATIONS

Hasty water crossings are decentralized operations to cross inland bodies of water such as canals, lakes, or rivers. These operations include crossing by tactical bridging or by vehicle swimming or fording operations. (**NOTE:** For a detailed explanation of deliberate and retrograde water crossings, refer to FM 90-13.)

The task force commander (or company team commander, if applicable) may choose to conduct a hasty crossing when the momentum of the operation must be maintained, when the banks are lightly held or undefended, and when sufficient CS assets are available to support the crossing. Despite the use of the term "hasty," the commander must use all available time and assets to ensure that the conditions are set for the crossing. The crossing is similar to a breach in that suppression and obscuration normally precede any attempt to cross the obstruction.

COMPANY TEAM CROSSING CAPABILITIES

The company team’s organic water crossing capabilities include the M113’s ability to "swim" and the fording capability of M1-series tanks. The team may also have an AVLB or Wolverine attached for hasty water crossing. Other engineer assets for water crossing operations are covered in more detail in FM 90-13.

Amphibious vehicles Amphibious vehicles like the M113 series should cross bodies of water in groups, preferably by platoons. If there is no current, each group should cross in line formation. An echelon formation should be used to compensate when there is a current. Amphibious vehicles should cross downstream from tank fording sites. In preparing for crossing operations, commanders must take into account the time required to prepare the vehicles for swimming.

Fording vehicles Without special preparation, tanks can ford water obstacles up to 4 feet deep if the stream bed has a solid bottom and the banks have been prepared. (**NOTE:** If tactically feasible, bridges from the AVLB or Wolverine can be used to solidify the bottom of ford sites.) Ford sites should be proofed for obstacles before the crossing begins.

Vehicle launched bridges Units equipped with the AVLB can lay an 18-meter (60-foot) bridge, supporting MLC 60 vehicles, in about four minutes. The bridge can span unprepared gaps of up to 17 meters (57 feet). Units equipped with the Wolverine bridge vehicle can span a gap of more than 24 meters (75 feet) and cross vehicles up to MLC 70.

TASK FORCE HASTY WATER CROSSING OPERATIONS

The task force commander organizes his units into assault, support, and follow and support forces. The company team must be prepared to execute any of these missions as part of a task force water crossing mission.

Assault force Transported by assault boats or air assault aircraft, this element conducts the initial assault across the body of water. It normally seizes immediate objectives on the far side to secure the crossing site for other task force elements. If it has the capability, the assault force then continues the advance from the exit bank to the final objective. Infantry elements establish local security on the exit bank to permit development of the crossing site. Engineers move with the assault force to breach obstacles and open or improve trails.

Support force The support force normally consists of engineer elements and command and control elements from the controlling headquarters. It develops the crossing site, emplaces the crossing means (if applicable), and controls units moving into and away from the crossing site. The controlling commander may also position the support force where it can assist the assault force in the direct assault on the crossing site. The engineers provide these types of support for crossing operations:

- Improve mobility and reduce obstacles at the entrance and exit to the crossing site.
- Improve fording sites.
- Emplace assault boats, rafts, ferries, or bridges as the means of crossing the body of water. Bridges used by supporting engineers include the AVLB, Wolverine, and ribbon or medium girder bridges. In addition, engineers may repair an existing bridge so that it can support the crossing operation.

Follow and support force

The follow and support force's primary mission is to provide protection as the assault force moves to the far side of the water obstacle and seizes its immediate objectives. The follow and support force does this mainly by suppressing defending enemy elements with both direct and indirect fires and by firing or calling for smoke to screen the crossing site from enemy observation. It must also be prepared to take over the assault force's mission.

COMPANY TEAM HASTY GAP CROSSING OPERATIONS

In most circumstances, these operations are limited to "dry" gaps such as irrigation ditches, railroad embankments, and antitank ditches. Operational considerations for a company team hasty gap crossing are similar to those for a breach, with the team task organized into support, breach, and assault forces. (**NOTE:** For a description of each element's responsibilities, refer to the discussion of breaching in Section 6 of this chapter.) The primary crossing means in the company team hasty gap crossing is the AVLB or Wolverine, which moves as part of the breach force. Without a vehicle launched bridge, the team may employ a field expedient method, such as the use of explosives, to facilitate the crossing.

CHAPTER 6

Combat Support

For a unit to achieve its full combat potential, the commander must effectively integrate all available CS assets. This chapter focuses on the CS elements with which the company team is most likely to work: fire support, engineers, air defense, NBC, intelligence, and Army aviation in its CS role. Other CS elements include signal and military police; the company team, however, will very rarely be task organized with those types of units.

> **NOTE:** Additional considerations, procedures, and techniques for integration of CS assets appear throughout this manual. References to such information are included as appropriate in this chapter.

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Section 1	**Fire Support** Fire Support Planning Fire Support Team
Section 2	**Engineer Support** Organization and Organic Equipment Equipment Capabilities Mobility Planning Considerations Countermobility Planning Considerations Survivability Planning Considerations
Section 3	**Air Defense** Systems, Organization, and Capabilities Employment of ADA Systems Weapons Control Status Early Warning Procedures Reaction Procedures
Section 4	**Nuclear, Biological, and Chemical Support** Reconnaissance Support Decontamination Support Smoke Support
Section 5	**Intelligence**
Section 6	**Aviation Combat Support Missions**

Command, Control, and Communications
Air Movement
Aerial Mine Warfare

SECTION 1 - FIRE SUPPORT

Fire support is the collective and coordinated use of indirect fire weapons and armed aircraft in support of the battle plan. Fire support assets include mortars, field artillery cannons and rockets, Army aviation, CAS, and naval gunfire. Support can be either lethal or nonlethal (smoke or illumination).

FIRE SUPPORT PLANNING

Fire support planning is conducted concurrently with maneuver planning at all levels. Task forces and brigades typically use top-down fire support planning, with bottom-up refinement of the plans. The commander develops guidance for fire support in terms of tasks and purposes. In turn, the fire support planner determines the method to be used in accomplishing each task; he also specifies an end state that quantifies task accomplishment.

Individual fire support assets then incorporate assigned tasks into their fire plans. Units tasked to initiate fires must refine and rehearse their assigned tasks. This means that the company team commander will refine the team's assigned portion of the task force fire support plan, ensuring that the designated targets will achieve the intended purpose. He also conducts rehearsals to prepare for the mission and, as specified in the plan, directs the team to execute its assigned targets.

Linking fire suppoort tasks and maneuver purpose

A clearly defined maneuver purpose enables the maneuver commander to articulate precisely how he wants indirect fires to affect the enemy during different phases of the battle. In turn, this allows fire support planners to develop a fire support plan that effectively supports the intended purpose. They can determine each required task (in terms of effects on target), the best method for accomplishing each task (in terms of a fire support asset and its fire capabilities), and a means of quantifying accomplishment.

A carefully developed method of fire is equally valuable during execution of the fire support mission; it assists not only the firing elements but also the observers who are responsible for monitoring the effects of the indirect fires. With a clear understanding of the intended target effects, fire support assets and observers can work together effectively, planning and adjusting the fires as necessary to achieve the desired effects on the enemy.

The following paragraphs describe several types of targeting effects associated with fire support tasks, with examples of how the commander might link a target task to a specific maneuver purpose in his order.

Delay The friendly force uses indirect fires to cause a particular function or action to occur later than the enemy desires. For example, the commander might direct delaying fires this way: "Delay the repositioning of the enemy's antitank reserve, allowing Team B to consolidate on OBJECTIVE BOB."

Disrupt Disrupting fires are employed to break apart the enemy's formation; to interrupt or delay his tempo and operational timetable; to cause premature commitment of his forces; or to otherwise force him to stage his attack piecemeal. Example: "Disrupt the easternmost first-echelon MRB to prevent the enemy from massing two MRBs against Team B and Team D."

Limit Indirect fires are used to prevent an action or function from being executed where the enemy wants it to occur. Example: "Limit the ability of the enemy's advance guard to establish a firing line on the ridge line to the flank of the task force axis of advance to prevent the enemy from fixing the task force main body."

Divert These fires are employed to cause the enemy to modify his course or route of attack. Example: "Divert the enemy's combined arms reserve counterattack to EA DOG to facilitate its destruction by Team D."

Screen This purpose entails the use of smoke to mask friendly installations, positions, or maneuver. Screening fires are normally conducted for a specified event or a specified period of time. Example: "Screen the movement of the counterattack force (Team D) along ROUTE RED to ABF position 21 to prevent the remnants of the enemy MRB from engaging the team."

Obscure Smoke is placed between enemy forces and friendly forces or directly on enemy positions, with the purpose of confusing and disorienting the enemy's direct fire gunners and artillery FOs. Obscuration fires are normally conducted for a specified event or a specified period of time. Example: "Obscure the northernmost MRC to protect our breach force until the breach site is secured."

> **NOTE:** The supported commander may also designate purposes for special munitions such as ADAM/RAAM, Copperhead, or illumination rounds.

FPF planning

FPF are designed to create a final barrier, or "steel curtain," to prevent a dismounted enemy from moving across defensive lines. They are fires of last resort; as such, they take priority over all other fires, to include priority targets. The employment of FPF presents several potential problems. They are linear fires, with coverage dependent on the firing sheaf of the fire support asset(s). In addition, while FPF may create a barrier against penetration by enemy infantry, armored vehicles may simply button up and move through the fires into the friendly defensive position.

FPF are planned targets and thus must have a clearly defined purpose. FPF planning is normally delegated to the company team that is allocated the support. Table 6-1 summarizes the coverage area of several possible FPF arrays, a critical planning factor the team commander must consider in employing FPF.

Table 6-1. Coverage area of FPF assets.

FPF ASSET	COVERAGE AREA

2 mortar tubes (60-mm)	60 meters by 30 meters
4 mortar tubes (81-mm)	150 meters by 40 meters
3 mortar tubes (107-mm)	120 meters by 40 meters
3 mortar tubes (120-mm)	180 meters by 60 meters
6 mortar tubes (120-mm)	350 meters by 60 meters
6 artillery tubes (155-mm)	300 meters by 50 meters

Target refinement

The company team commander is responsible for the employment of indirect fires in his zone or sector. The most critical aspect of this responsibility is target refinement, in which he makes necessary changes to the fire support plan to ensure that targets accomplish the task force or brigade commander's intended battlefield purpose. Rather than merely executing targets without regard to the actual enemy situation, the company team commander and FSO must be ready to adjust existing targets or to nominate new targets that allow engagement of specific enemy forces.

Necessary refinements usually emerge when the team commander conducts war-gaming as part of step 6 (complete the plan) of troop-leading procedures. The war-gaming process allows him to identify required additions, deletions, and adjustments to the task force fire support plan. The team FSO then submits the refinements to the task force FSE for inclusion in the scheme of fires for the operation. (**NOTE:** This is normally only the first step of target refinement, with the commander and FSO making further adjustments as the enemy situation becomes clearer.)

As a specific requirement in defensive planning, the team commander must focus on target refinement for the ground he will "own" during the operation. This usually takes place as part of engagement area development. The commander makes appropriate adjustments to the targets based on refinements to the SITEMP, such as the actual positions of obstacles and enemy direct fire systems.

Because fire support is planned from the top down, cutoff times for target nomination and target refinement are normally specified in the task force OPORD. Commanders must ensure that nominations and refinements meet these deadlines to provide fire support planners with sufficient time to develop execution plans.

Fire support preparation

As noted, although the task force and brigade commanders establish target tasks and purposes and allocate appropriate fire support assets, it is the team commander who must ensure execution of assigned targets. In turn, successful execution demands thorough preparation, focusing on areas covered in the following paragraphs.

Observation plan

In developing the observation plan, the commander must ensure that all targets are covered by both a primary observer and an alternate observer. The plan must provide clear, precise guidance for the observers. Perhaps the most important aspect of the plan is positioning; observers' positions must allow them to see the trigger for initiating fires as well as the target area and the enemy force on which the target is oriented. The commander must also consider other aspects of observer capabilities, including available equipment. For example, the ground/vehicle laser locator designator (G/VLLD) provides first-round fire for effect capability; without it, observers may have to use adjust-fire techniques that take longer and are more difficult to implement. The observation plan must also include contingency plans that cover limited visibility conditions and backup communications.

> **NOTE:** In addition to providing the specific guidance outlined in the observation plan, the commander must ensure that each observer understands the target task and purpose. For example, observers must understand that once the first round impacts, the original target location is of no consequence; rather, they must orient on the targeted enemy force to ensure that fires achieve the intended battlefield purpose.

Rehearsals

The company team commander is responsible for involving his FSO in team- and task force-level rehearsals, for making the team available for any separate fire support rehearsals, and for rehearsing the team's observers in the execution of targets. He should also use rehearsals to ensure that the team's primary and backup communications systems will adequately support the plan.

Target adjustment

In the defense, the commander should confirm target location by adjusting fires as part of engagement area development.

Trigger planning

The commander develops a trigger for each target. The trigger can be a point on the ground, such as an easily recognizable terrain feature or an emplaced marker, or a designated linear control measure. In the defense, triggers should be physically marked on the ground or their location specifically selected and identified during the development of the engagement area. (**NOTE:** Triggers can be marked using techniques similar to those for marking TRPs. Figure 2-17 illustrates some of these methods.)

The trigger line or point must be tied to clearly understood engagement criteria associated with the targeted enemy force. As an example, the commander might use the following order to begin indirect fires: "Initiate target AE0001 when approximately 30 BMPs and 10 T-80s cross TRIGGER LINE ORANGE."

Several factors govern the positioning of the trigger. Especially critical are the enemy's rate of travel and the resulting time required for the enemy force to move from the trigger to the target area. Using this information, the commander can then select the trigger location based on the following considerations:

- The amount of time required to make the call for fire.

- The time needed by the fire support element to prepare for and fire the mission.
- The time required for the task force and/or brigade to clear the fires.
- Any built-in or planned delays in the firing sequence.
- The time of flight of the indirect fire rounds.
- Possible adjustment times.

The company team commander can use the information in Tables 6-2 and 6-3 as he completes the process of determining the location of the trigger in relation to the target area. Table 6-2 lists the time required for the enemy force to move a specified distance at a specified rate of march. Table 6-3 lists the response time required by field artillery assets to prepare for and fire various types of support missions.

Lifting and shifting fires,/U>

As in trigger planning for the initiation of fires, the commander must establish triggers for lifting and/or shifting of fires based on battlefield events, such as the movement of enemy or friendly forces. One technique is the use of a minimum safe line, known as an MSL, when a friendly element, such as a breach force, is moving toward an area of indirect fires. As the element approaches the MSL, observers call for fires to be lifted or shifted, allowing the friendly force to move safely in the danger area.

Table 6-2. Time (in minutes) required to travel a specified distance.

	DISTANCE TRAVELED									
RATE OF MARCH	**1 km**	**2 km**	**3 km**	**4 km**	**5 km**	**6 km**	**7 km**	**8 km**	**9 km**	**10 km**
60 km/hr	1	2	3	4	5	6	7	8	9	10
50 km/hr	1.2	2.4	3.6	4.8	6	7.2	8.4	9.6	10.8	12
40 km/hr	1.5	3	4.5	6	7.5	9	10.5	12	13.5	15
30 km/hr	2	4	6	8	10	12	14	16	18	20
25 km/hr	2.4	4.8	7.2	9.6	12	14.4	16.8	19.2	21.6	24
20 km/hr	3	6	9	12	15	18	21	24	27	30
15 km/hr	4	8	12	16	20	24	28	32	36	40
10 km/hr	6	12	18	24	30	36	42	48	54	60
5 km/hr	12	24	36	48	60	72	84	96	108	120

Table 6-3. Artillery response times.

GRID OR POLAR MISSION (UNPLANNED)	5-7 minutes
PREPLANNED MISSION	3 minutes
PREPLANNED PRIORITY MISSION	1-2 minutes
NOTE: These are approximate times (based on ARTEP standards) needed to process and execute calls for fire on normal artillery targets. Special missions may take longer.	

Clearance of fires

The maneuver commander has the final authority to approve (clear) fires and their effects within his zone or sector. Although he may delegate authority to coordinate and clear fires to his FSO, the ultimate responsibility belongs to the commander. Normally, the FSO will assist the commander by making recommendations on the clearance of fires.

Fire support execution matrix

As a tool in fire support planning and execution, the company team commander may develop a graphic summary outlining the critical elements of the fire support plan and team's role in it. The commander can incorporate this information into his own execution matrix or into a separate fire support execution matrix, as illustrated in Figure 6-1. The company team execution matrix should include, at a minimum, the following information for each target:

- Target number and type, to include FPF designation.
- Allocated fire support asset and munition type.
- Observer and backup observer.
- Trigger.
- Target purpose.
- Target grid.

PHASE **SUPPORT DATA**	**PHASE I (LD to SBF 01)**	**PHASE II (Set conditions for breach from SBF 01)**	**PHASE III: (Team B breach)**	**PHASE IV (Team C assault)**
TARGET/ GRID	AE0001 (PK 10184938)	AE0002 (PK 09005031)	O/O shift AE0001 to AE0003 (PK 10204810) and lift AE0002	O/O lift AE0003
ASSET	155-mm HE	Mortar smoke	155-mm	155-mm

OBSERVER/ BACKUP	Scout platoon will initially call for and adjust fires; FSO adjusts upon arrival at SBF; 1st Platoon leader is backup	FSO (primary)/ 1st Platoon leader (backup)	AE0003: FSO (primary)/ 2d Platoon leader (backup)	FSO (primary)/ 3d Platoon leader (backup)
TRIGGER	Team C crosses PL LYNX	On-call at SBF	Team B crosses PL LION	Team C completes consolidation on OBJ BOB
PURPOSE	Disrupt enemy on OBJ BOB to facilitate maneuver of company team to the SBF position	Obscure enemy to prevent interference with Team B's breach	Disrupt MRB reserve to protect the assault force (Team C)	Protect the assault force (Team C)

Figure 6-1. Example company team fire support execution matrix.

FIRE SUPPORT TEAM

The following paragraphs examine capabilities, procedures, and other considerations that affect the company team FIST and its employment in the fire support mission.

Personnel

FIST personnel for the company team include the team FSO, the fire support sergeant, a fire support specialist, and a radiotelephone operator (RTO). The mechanized infantry FIST also includes three FO parties per company; each party includes an FO and a radio operator and is attached to the supported platoons.

Equipment

The FIST operates out of the M981 FIST-V. This M113-based vehicle is equipped with digital and voice communications links to all available indirect fire support assets. The large targeting head atop the FIST-V houses the G/VLLD, which can accurately determine the range, azimuth, and vertical angle to targets and can designate targets for laser-guided munitions.

Communications

The FIST has the capability to transmit on and/or monitor these four nets:

- The DS battalion fire direction net (digital). The FIST uses this net to relay calls for fire through the task force FSE to supporting artillery assets.
- The company team command net (voice). This net allows the FIST to monitor company team operations and links it to the commander, platoon leaders, and FOs for planning and coordination.
- The task force fire support net (voice). The FIST communicates with the FSE on this net, for which the FSE is the NCS.
- The mortar platoon fire direction net (digital). As necessary, the FIST sends fire missions to the supporting mortar platoon or section using this net.

FIST employment

The company team commander has two options for employment of his FIST. These are described in the following paragraphs.

Option 1

The company team FSO works out of the FIST-V, which he positions where he can most effectively observe and control execution of the fire support plan. The FSO establishes OPs that take maximum advantage of the capability of the G/VLLD to create lethal, accurate fires. He communicates with the commander on the company team command net. This option allows the FSO to maintain effective control of his FOs and to conduct required fire support coordination. He must keep the company team informed at all times of his location and of the routes he will take when moving from OP to OP.

Option 2

The FIST-V is used as a combat observation lasing team (COLT) somewhere within the task force or brigade sector or zone and is controlled by another headquarters. The company team FSO, accompanied by the fire support specialist, rides with the team commander or in another company team maneuver vehicle. He brings two radios and the forward entry device (FED). This option severely degrades the ability of the FIST to support the company team.

Forward observer control

Three options are available to the company team FSO in controlling and communicating with the team's FOs. He selects the one that will provide the most effective support for the team after evaluating the tactical situation, the degree of training and experience of his FOs, and the availability of fire support assets. In each option, the FSO monitors all calls for fire.

Option 1 (decentralized)

Platoon FOs may call for fire directly from the available fire support assets. This option gives the company team FSO the lowest degree of positive control. It therefore requires the highest degree of training and experience for the FOs as well as extensive coordination between the FOs and the FSO.

Option 2 (predesignated) The company team FSO assigns each FO a fire net (and hence a fire support asset). If two or more assets are available (artillery and/or mortars), each FO will have his own asset; this option also allows two FOs to be assigned the same asset. If an FO requires support from an asset other than the one assigned to him, he contacts the FSO for assistance.

Option 3 (centralized) Each FO contacts the FIST with his initial call for fire and is then directed to the fire support asset that the company team FSO determines to be most effective. This option provides the FSO with the highest degree of centralized control; it is also the slowest.

SECTION 2 - ENGINEER SUPPORT

ORGANIZATION AND ORGANIC EQUIPMENT

The engineer company attached to support a heavy task force consists of two engineer platoons and an assault and obstacle platoon.

Engineer platoon

Each engineer platoon is organized into three engineer squads and a headquarters section; it is equipped with four M113s and an ACE. When tasked to conduct breaching operations, the engineer platoon may be reinforced with elements from the engineer company's assault and obstacle platoon.

Assault and obstacle platoon

The assault and obstacle platoon consists of two assault sections and an obstacle section. Each assault section has two AVLBs or Wolverines, two ACEs, and two MICLICs. The obstacle section has two M548s (which may carry the Volcano mine-laying system), two SEEs, two HEMTTs, and an ACE.

Company team role

The company team may be task organized in one of several ways: with an engineer platoon (or squad) and an assault section for breaching operations; with the engineer platoon(s) in emplacement of tactical obstacles during engagement area development; or with the assault and obstacle platoon in constructing survivability positions during BP preparation. In addition, the team may attach its mine plow or roller tanks to the engineer company when the engineers serve as the breach force in a task force breaching operation. (**NOTE:** For missions in which the company team is task organized with an engineer platoon, the team commander should expect the engineer platoon leader to take part in development of the team's plan; the platoon leader will provide expertise in terrain analysis and employment of the engineer assets.)

EQUIPMENT CAPABILITIES

Armored combat earthmover

The M9 ACE, with its front-end blade and rear-end winch, is capable of filling craters and antitank ditches and of digging antitank ditches and vehicle fighting positions. Additional mobility capabilities of the ACE are discussed in the description of breaching operations in Chapter 5 of this manual.

Armored vehicle launched bridge

The AVLB is based on an M60-series or M48-series tank chassis modified to transport, launch, and retrieve an 18-meter (60-foot) bridge. The span is capable of carrying MLC 60 track loads across a 17-meter gap and MLC 70 loads across a 15-meter gap. Refer to the discussion of breaching operations in Chapter 5 and the discussion of gap crossing operations, also in Chapter 5, for additional information on the AVLB's mobility capabilities. (**NOTE:** The AVLB will soon be replaced by the Wolverine. Based on an M1-series tank chassis, the new bridge will be capable of supporting MLC 70 traffic across gaps of up to 24 meters.)

Mine-clearing line charge

The MICLIC is a rocket-propelled explosive line charge; when fired into a minefield, it can create a lane that is 100 meters long and 14 meters wide. The line charges are either trailer-mounted or, as noted in the following paragraph, carried on the AVLM. Refer to the discussion of MICLIC capabilities in Chapter 5.

Armored vehicle launched MICLIC

This vehicle serves as a launch platform for two MICLICs. The AVLM is a modified version of the AVLB.

Small earth excavator

The SEE has a backhoe, a bucket loader, and other attachments, including a handled hydraulic rock drill, a chain saw, and a pavement breaker. The SEE can dig positions for individual, crew-served, and antitank weapons or for Stinger missile teams. It can also be employed to dig in ammunition prestock positions.

Volcano

The Volcano is a scatterable mine system that can be mounted on the back of a five-ton truck, on an M548, or on a UH-60 helicopter. It can rapidly produce tactical minefields with a linear frontage of up to 1,100 meters and a depth of 120 meters. The system can be employed to reinforce existing obstacles; close lanes, gaps, and defiles; provide flank protection for advancing forces; and deny the enemy access to possible air defense sites. Volcano minefields are also ideal for employment when the company team is operating in concert with air and ground cavalry units in conducting flank guard and flank screen missions.

MOBILITY PLANNING CONSIDERATIONS

In mobility operations, the engineer platoon can perform the support operations described in the following paragraphs. (**NOTE:** For a detailed discussion of mobility operations, refer to FM 90-13-1.)

Obstacle reduction

Engineers can reduce obstacles, thereby improving maneuver capability of the unit they are supporting. The discussion of breaching operations in Chapter 5 of this manual covers the engineers' obstacle reduction capability.

Route construction and improvement

The engineers have limited capability to construct, improve, and maintain roads, bridges, and fords. In addition to providing mobility support for offensive operations, they can enhance mobility in the defense, focusing on the ability to shift forces. This effort includes assisting defensive elements in movement to alternate, supplementary, and successive BPs and assisting in the movement of reserve forces to counterattack, blocking, or reinforcing positions.

COUNTERMOBILITY PLANNING CONSIDERATIONS

In their countermobility role, engineers construct obstacles that can destroy the enemy's ability to execute his scheme of maneuver. Commonly used obstacles include minefields, wire obstacles, antitank ditches, road craters, abatises, and log cribs. Engineers can also reinforce terrain and existing obstacles to disrupt, fix, turn, or block the enemy force. The company team, especially its infantry squads, will often assist the engineers in the emplacement of obstacles. (**NOTE:** For a detailed discussion of countermobility operations, refer to FM 90-7.)

Regardless of the type of defense used by the maneuver commander, there are five basic principles for the employment of reinforcing obstacles:

- Obstacles must support the scheme of maneuver.
- They must be integrated with and covered by observed fires.
- Reinforcing obstacles must tie into existing obstacles when possible.
- Obstacles are most effectively employed in depth.
- They should be employed to surprise the enemy.

Obstacle integration

An understanding of obstacle integration will assist the company team commander in implementing the team's portion of the task force obstacle plan. This includes knowledge of obstacle purpose and integration procedures.

Obstacle intent

The task force commander decides how he will use obstacles to support his scheme of maneuver, defining the end result that the combination of fires and obstacles must achieve. His obstacle intent provides purpose and unity of effort for his subordinates' obstacle emplacement. At task force level (as well as at brigade level), obstacle intent identifies the following emplacement factors:

- **Target.** Obstacles are force-oriented combat multipliers. The company team commander and supporting engineers must understand the target of each obstacle so it can be properly designed and sited.
- **Obstacle effect.** An understanding of the higher commander's desired obstacle effect (disrupt, fix, turn, or block) is essential.
- **Relative location.** This is a vital consideration; it ties the target and obstacle effect into the higher commander's scheme of

maneuver.

Obstacle zones, belts, and groups

Commanders use obstacle zones (at division level and higher) and obstacle belts (at brigade level) to define the areas in which subordinates are authorized to employ tactical obstacles. Zones and belts give subordinate commanders flexibility in their use of obstacles. At the same time, however, they help to eliminate conflicts among subordinate elements over obstacle employment while ensuring that the effects of obstacles that are emplaced will support the higher commander's overall plan and scheme of maneuver.

Within the brigade belt, individual task forces are responsible for developing and emplacing obstacle groups. These are collections of individual obstacles designed and arrayed to produce a singular, specific tactical effect on a battalion-size enemy element. At the task force level, obstacle effects are directly linked to the direct and indirect fire plans. Table 6-4 summarizes the echelons of obstacle control and effects.

Table 6-4. Echelons of obstacle control and effects.

Obstacle Control Measure	Echelon	Size of Enemy AA / MC Targeted		Obstacle Effect
		Armored	Light	
Zone	Corps / Division	Division / Brigade	Battalion / Company	
Belt	Brigade	Brigade / Battalion	Brigade / Battalion	
Group	Battalion	Battalion / Company	Company / Platoon	
Individual obstacle	Company	Standard obstacles; tailored to obstacle group effect		N/A

Types of tactical obstacles

The task force employs tactical obstacles to directly attack the enemy's ability to maneuver, mass, and reinforce. These obstacles are used to produce four types of primary effects: to disrupt, to turn, to fix, or to block.

The three types of tactical obstacles (situational, reserve, and directed) are described in the following paragraphs. Refer to the discussion of planning considerations in Chapter 4 of this manual for additional information on the purpose of each type. (**NOTE:** In addition to the three types described here, the company team employs protective obstacles.) Figure 6-2 shows an example countermobility planning matrix that the commander might use to plan time requirements for obstacle construction.

OBSTACLE TYPE	CONSTRUCTION TIME
Disrupting minefield (250 meters by 100 meters)	1.5 platoon hours
Fixing minefield (250 meters by 120 meters)	1.5 platoon hours
Turning minefield (500 meters by 100 meters)	3.5 platoon hours
Blocking minefield (500 meters by 320 meters)	5 platoon hours
Hasty road crater (6 to 10 meters wide)	1.5 squad hours
Abatis (75 meters deep)	4 squad hours
Triple standard concertina wire obstacle (300 meters)	1 engineer platoon hour **OR** 1.5 infantry platoon hours
11-coil concertina wire roadblock	1 squad hour

Figure 6-2. Example countermobility planning matrix.

Situational obstacles

These are obstacles that units plan (and, if possible, prepare) before an operation. Execution, however, is a be-prepared mission based on the actions of the enemy; the unit does not execute situational obstacles unless specific criteria are met. Although situational obstacles can be conventionally emplaced, employment is normally limited to scatterable mine systems, which include the following types:

- **ADAM and RAAM.** These are, respectively, antipersonnel and antitank mines delivered by 155-mm artillery. Depending on the number of aim points and volume of rounds, they can be employed in low-, medium-, or high-density minefields ranging from 100 to 800 meters wide and from 400 to 1,000 meters deep. Both ADAM and RAAM have a safety zone of 860 meters, a short duration of four hours, and a long duration of 48 hours/15 days.
- **Gator.** This mix of antipersonnel and antitank mines is delivered by fixed-wing aircraft. The Gator system has a safety zone of 275 meters, a short duration of four hours, and a long duration of 48 hours/15 days.
- **Volcano.** This modular mine delivery system was described earlier in this section. It can produce a field of antipersonnel and antitank mines measuring 120 meters deep and up to 1,100 meters wide. Volcano minefields can be emplaced by air or

ground systems. They have a safety zone of 235 meters, a short duration of four hours, and a long duration of 48 hours/15 days. (**NOTE:** For detailed information on the design of Volcano minefields based on the desired effect, refer to FM 20-32.)

- **MOPMS.** This system centers on a man-portable dispenser that can emplace 17 antitank mines and 4 antipersonnel mines in a 35-meter semicircle. Mines are dispensed on command using the M71 remote control unit (RCU) or an electronic initiating device, such as the M34 blasting machine. The company team can use MOPMS to create a protective minefield or to close lanes in task force tactical obstacles. The safety zone is 20 meters. MOPMS has a duration of four hours, which can be extended up to three times (a total of 16 hours); mines can be command-detonated using the M71 RCU.

  NOTE: Scatterable mines begin self-destruction at 80 percent of their life cycle.

Reserve obstacles These are on-order obstacles (such as road cratering and bridge demolition) for which the commander restricts execution authority. He usually specifies the unit responsible for emplacing, guarding, and executing the reserve obstacle. He must also clearly identify the conditions under which the obstacle is to be executed. For additional details on reserve obstacles, refer to FM 90-7.

Directed obstacles Most directed obstacles are planned at task force level to achieve a specific obstacle intent. In support of this intent, they are assigned to a specific unit for siting and emplacement.

Obstacle siting

The company team commander and engineer platoon leader work together on obstacle siting during the development of the engagement area (**NOTE:** For a detailed discussion of obstacle siting procedures, refer to FM 90-7. Additional information is provided in the discussion of engagement area development in Chapter 4 of this manual.) The following specific steps apply in this procedure:

- Combat elements should be used to provide security for the engineers as they emplace obstacles.
- The company team marks fire control measures (such as TRPs and artillery targets) in the engagement area.
- Elements from the engineer platoon enter the engagement area and move to the far side of the proposed trace of the obstacle group.
- The engineer platoon leader and company team commander collocate in the defensive positions covering the obstacle.
- Elements from the engineer platoon move along the proposed trace of the obstacle group.
- From the defensive position, the commander, platoon leaders, and vehicle commanders follow the movement of the engineer platoon, ensuring that all points of the obstacle trace can be covered with fires. They maintain communications with the engineers via FM.

- The commander and engineer platoon leader refine the obstacle trace, adjusting the position of individual obstacles as necessary.

The team commander and the emplacing engineer should use a common set of operational "tools" to ensure accurate, effective obstacle siting. These resources include the following:

- The current SITEMP.
- Commander’s intent.
- The fire plan and applicable maneuver graphics.
- Obstacle execution matrix.
- Scheme of obstacles overlay.
- Fire support plan.
- CSS graphics.

Obstacle turnover and transfer

Once an obstacle group is completed, the emplacing element conducts obstacle turnover, transferring control of the obstacles to the owning unit. Turnover procedures should cover the following:

- Mutual identity check.
- Briefing on current enemy and friendly situations.
- Description of obstacle locations, types, marking, and composition. This information may cover the following considerations:

  - Conventional minefields (types of mines, fuzing, and antihandling devices).

  - Scatterable minefields (types of mines, duration, self-destruct times, and safety zone).

  - Other obstacles (including booby traps and other hazards).
- Information on obstacle lanes, including number, locations, marking, closure plans, and information on reserve obstacles (if applicable).
- Coordination requirements, including whether coordination with the FIST is completed or is still required.
- Transfer of graphics and documentation, including minefield records, demolition target folders, orders for the demolition guard, and/or other written records.

SURVIVABILITY PLANNING CONSIDERATIONS

The commander must plan the priority of his survivability effort. His plan should specify a sequence in which vehicle and individual positions will receive dozer and/or ACE support; it should also designate the priority for SEE support (to construction of infantry fighting positions or to emplacement of Class V caches). Survivability specifications for vehicle and individual fighting positions are covered in FM 17-15, FM 7-7J, and FM 5-103. FM 7-7J and FM 5-103 also list the specifications for trench lines and bunkers associated with a strongpoint defense.

Table 6-5 summarizes the amount of time required to prepare various types of vehicle and individual positions using the assets available to the company team. The company team commander can use this information in developing his survivability plan, in establishing digging priorities, and in directing the handoff of digging assets among his platoons. Additional considerations for survivability planning include site security, CSS, and movement times between BPs.

Table 6-5. Survivability planning timetable (time, in hours, required to prepare vehicle and individual positions).

ASSET TYPE OF POSITION	BLADE TEAM (2 ACEs OR 2 dozers)	SEE	MANUAL
M1/BFV hull-defilade	1.5	NA	NA
M1/BFV turret-defilade	3.5	NA	NA
Modified hull-down position ("banana")	1	NA	NA
M113 position	0.6	NA	NA
Two-man fighting position	NA	0.5 *	6 *
Machine gun position	NA	1 *	7 *
Antitank position	NA	1 *	6 *

* An additional five hours is required for these assets to prepare overhead cover for the position.

SECTION 3 - AIR DEFENSE

SYSTEMS, ORGANIZATION, AND CAPABILITIES

In most operational environments, enemy air forces will be operating over the battlefield, attacking friendly ground forces and attempting to destroy them or disrupt their operations. The air defense battalion will provide SHORAD coverage for divisional assets. For close-in protection, however, lower echelons, including the company team, must depend on their own air defense capabilities.

The company team commander must be able to employ all available active and passive air defense measures. The team can mass the fires of its individual and crew-served weapons against any enemy aircraft to provide a significant terminal defense. In addition, every member of the company team must be capable of firing at attacking air platforms.

ADA systems

The air defense commander employs several types of systems to provide low- to high-altitude air defense coverage. At corps level and higher, these systems are the Avenger, the Patriot, THAAD, and MANPADS. At the tactical level, low- to medium-altitude air defense is accomplished by the air defense battalion organic to the division.

Task force organization

A maneuver task force is normally task organized with an air defense platoon equipped with four BSFV or Bradley Linebacker fire units. The company team may have an air defense section moving with it; however, this section normally will remain part of the air defense platoon, responsible for providing DS, GS, or GS-R coverage to the task force.

Task force assets

Air defense systems employed by the task force are described in the following paragraphs.

Stinger

This is the task force's primary air defense weapon system, employing short-range, shoulder-fired, heat-seeking guided missiles. It is designed to counter the threat of advanced helicopters, UAVs and RPVs, high-speed maneuvering aircraft, and cruise missiles. The Stinger has a range in excess of 5 kilometers.

Man-portable system

The Stinger can be employed as a man-portable air defense system, known as MANPADS. The two-man Stinger team, consisting of a gunner and a crew chief, is transported in a HMMWV or BSFV (described in the following paragraph).

Bradley Stinger fighting vehicle

The BSFV provides the air defender with armor protection. The vehicle also gives him the ability to maneuver with the supported force and position the Stinger system forward on the battlefield. The Stinger team must dismount to fire its missiles. The BSFV carries a basic load of six Stinger missiles as its primary air defense weapon; the Bradley's 25-mm chain gun can be used to augment the Stinger and cover dead space to a range of 2,000 meters. The vehicle also carries five TOW missiles.

Bradley Linebacker

This recently developed vehicle replaces the BSFV's TOW system with four ready-to-fire Stinger missiles, housed in the standard vehicle mounted launcher (SVML). The Bradley Linebacker, with its ability to shoot on the move, is designed specifically to provide air defense on the battlefield.

EMPLOYMENT OF ADA SYSTEMS

In offensive situations, BSFV and Bradley Linebacker units will accompany the main attack. They may maneuver with the task force's lead company teams, orienting on low-altitude air avenues of approach. When the unit is moving or in a situation that entails short halts, the Bradley's primary weapon is the 25-mm chain gun, which has an effective range of 2,000 meters. Consequently, to assure mutual support, BSFVs or Linebackers will maneuver no farther than 1,000 meters away from other task force elements. The Stinger gunners on the BSFV can dismount to provide air defense when the unit reaches the objective or pauses during the attack.

In the defense, BSFV or Bradley Linebacker units establish BPs based on available IPB information and the task force commander's scheme of maneuver. Squads are positioned approximately 2 kilometers apart to maximize the air defense vehicles' defensive capabilities. BSFVs and Linebackers are often used to protect counterattacking maneuver units that are vulnerable to detection and attack by enemy air forces.

WEAPONS CONTROL STATUS

The weapons control status describes the relative degree of control in effect for air defense fires. It applies to all weapon systems. The weapons control status is dictated in the task force OPORD and may be updated based on the situation. The three levels of control are the following:

- **WEAPONS FREE.** Crews can fire at any air target not positively identified as friendly. This is the least restrictive weapons control status level.
- **WEAPONS TIGHT.** Crews can fire only at air targets positively identified as hostile according to the prevailing hostile criteria.
- **WEAPONS HOLD.** Crews are prohibited from firing except in self-defense or in response to a formal order. This is the most restrictive control status level.

EARLY WARNING PROCEDURES

While air defense warnings cover the probability of hostile air action over the entire theater of war or operations, local air defense warnings describe with certainty the air threat for a specific part of the battlefield. ADA units use these local warnings to alert Army units to the state of the air threat in terms of "right here, right now." There are three local air defense warning levels:

- **DYNAMITE.** Air platforms are inbound or are attacking locally now.
- **LOOKOUT.** Air platforms are in the area of interest but are not threatening. They may be inbound, but there is time to react.
- **SNOWMAN.** No air platforms pose a threat at this time.

NOTE: Air defense warnings are routinely issued by the area air defense commander for dissemination throughout the theater of war or operations. These warnings describe the general state of the probable air threat and apply to the entire area.

REACTION PROCEDURES

Passive air defense

Passive air defense consists of all measures taken to prevent the enemy from detecting and/or locating the unit, to minimize the target acquisition capability of enemy aircraft, and to limit damage to the unit if it comes under air attack. One advantage the company team can exploit is that target detection and acquisition are difficult for crews of high-performance aircraft. In most cases, enemy pilots must be able to see and identify a target before they can launch an attack.

Guidelines

The company team should follow these guidelines to avoid detection and/or to limit damage:

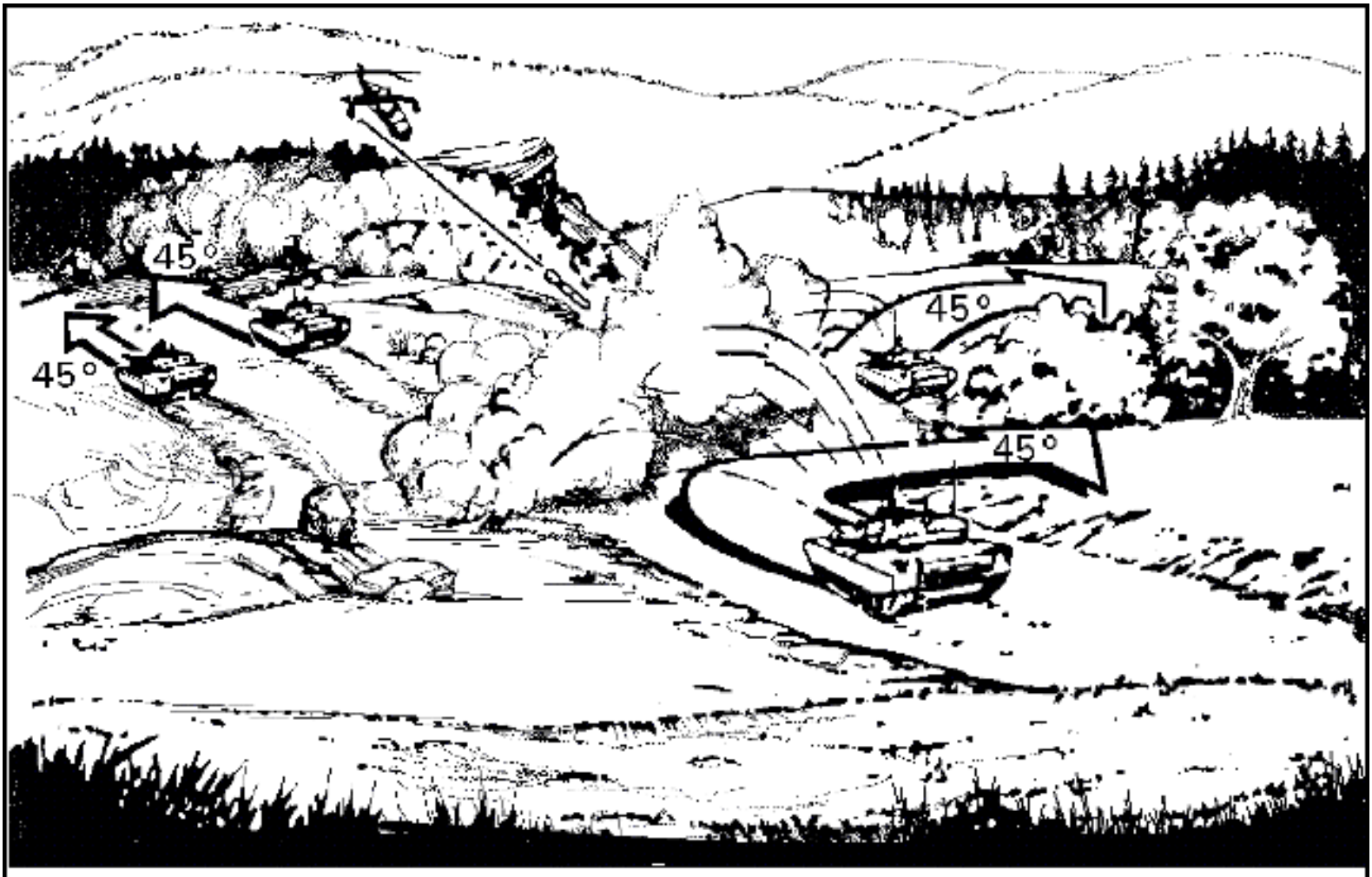
- When stopped, occupy positions that offer cover and concealment; dig in and camouflage vehicles that are exposed. When moving, use covered and concealed routes.
- Disperse vehicles as much as possible to make detection and attack more difficult.
- Wipe out track marks leading to vehicle positions, and eliminate or cover the spoil from dug-in positions
- If moving when an enemy aircraft attacks, disperse and seek covered and concealed positions.
- Do not fire on a hostile fixed-wing aircraft unless it is clear that the aircraft has identified friendly elements. Premature engagement will compromise friendly positions.
- Designate air guards for every vehicle and/or position, and establish and maintain 360-degree security.
- Establish an air warning system in the unit SOP, including both visual and audible signals.

Passive air defense procedures

When the company team observes fixed-wing aircraft, helicopters, or UAVs that could influence its mission, it initially takes passive air defense measures unless the situation requires immediate active measures. This reaction normally will be in the form of each platoon's react to air attack battle drill; however, the commander can initiate specific passive measures if necessary. Refer to the passive air defense guidelines for the company team discussed earlier in this section. (**NOTE:** Passive air defense also includes the company team's preparations for conducting active air defense measures.)

Passive air defense involves these three steps:

- **Step 1 - Alert the company team with a contact report.**
- **Step 2 - Deploy or take the appropriate actions.** If the company team is not in the direct path of an attacking aircraft, the commander or the platoon leaders order vehicles to seek cover and concealment and halt with at least a 100-meter interval between vehicles. The team also may be ordered to continue moving as part of the task force. Figure 6-3 illustrates procedures used to evade enemy aircraft.
- **Step 3 - Prepare to engage.** Fighting vehicle crews prepare to engage the aircraft with machine gun or main gun fire on order of the commander or their platoon leaders.



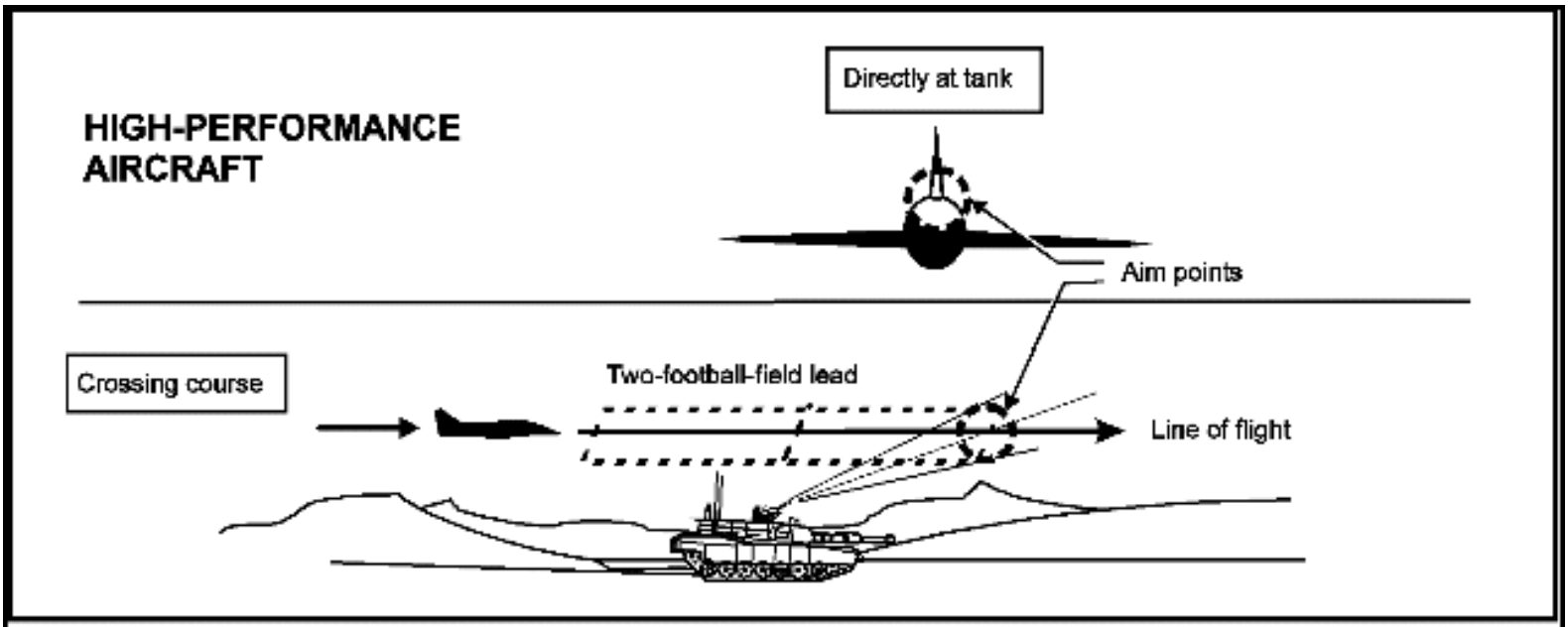
Exposed vehicles move at an oblique angle to the direction of aircraft flight toward the nearest cover or concealment.

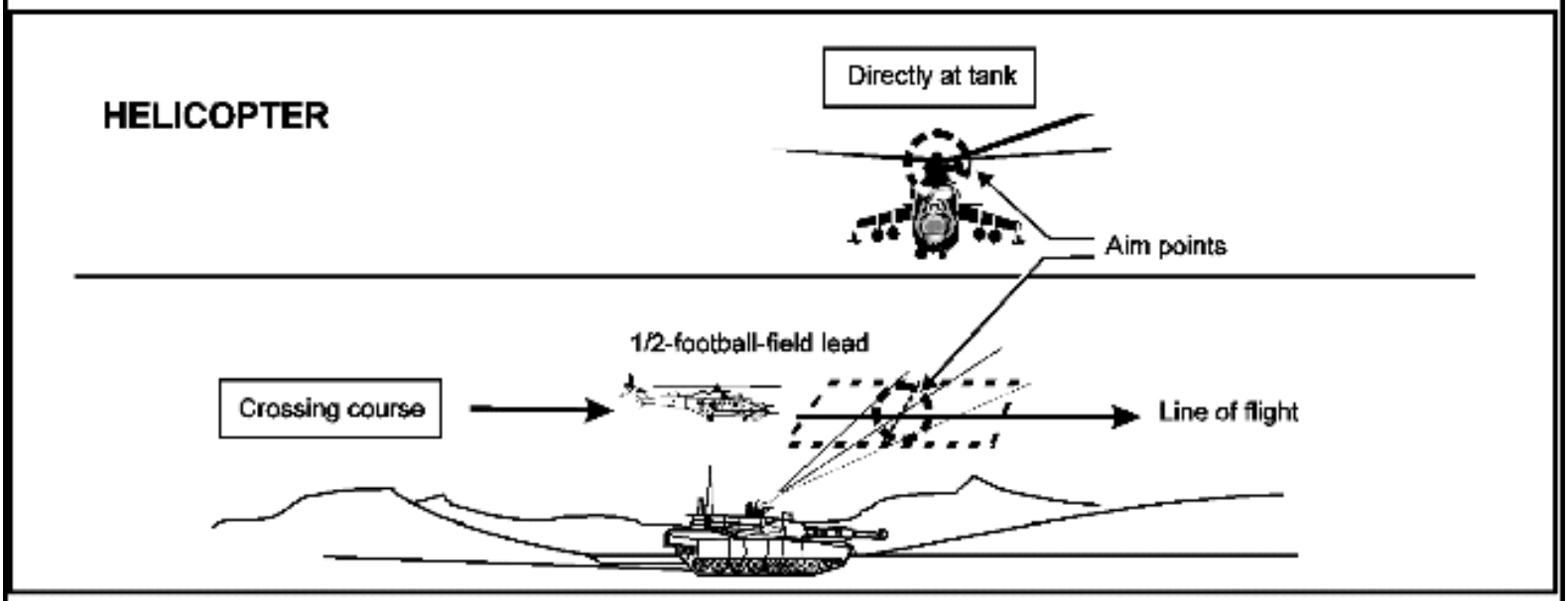
Figure 6-3. Procedures for evading enemy aircraft.

Active air defense

If the commander determines that the company team is in the direct path of attacking aircraft, he initiates active air defense procedures, including react to air attack drills by the team's platoons. Active air defense entails the following steps:

- **Step 1 - Initiate fires.** The primary intent is to force aircraft to take self-defense measures that alter their attack profile and reduce their effectiveness. Leaders may use a tracer burst to designate an aim point for machine gun antiaircraft fires (see Figure 6-4). Volume is the key to effectiveness; tanks and BFVs throw up a "wall of steel" through which aircraft must fly. Effective in company team air defense employment are the tank main gun and TOW and Javelin missiles against hovering attack helicopters, the tank main gun and BFV 25-mm cannon against moving helicopters, and the tank main gun MPAT round against high-performance aircraft.
- **Step 2 - Create a nonlinear target.** Vehicles move as fast as possible at a 45-degree angle away from the path of flight and toward attacking aircraft (as illustrated in Figure 6-3). Each platoon maintains an interval of at least 100 meters between vehicles, forcing aircraft to make several passes to engage the entire platoon.
- **Step 3 - Move quickly to covered and concealed positions and stop.** Vehicles freeze their movement for at least 60 seconds after the last flight of aircraft has passed.
- **Step 4 - Send a SPOTREP.** The commander or XO updates the task force commander on the situation as soon as possible.


HIGH-PERFORMANCE AIRCRAFT
Directly at tank
Aim points
Crossing course
Two-football-field lead
Line of flight


HELICOPTER
Directly at tank
Aim points
1/2-football-field lead
Crossing course
Line of flight

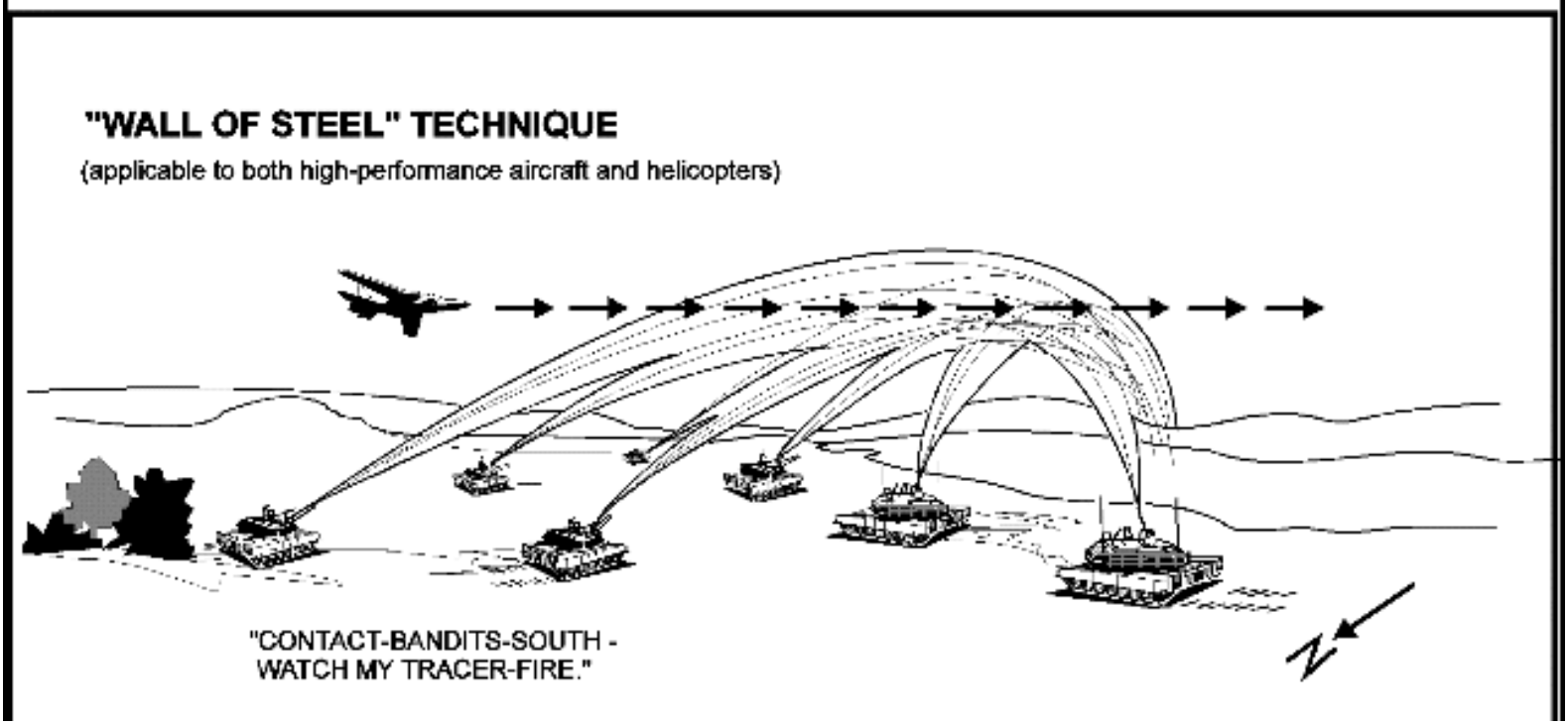

"WALL OF STEEL" TECHNIQUE
(applicable to both high-performance aircraft and helicopters)
"CONTACT-BANDITS-SOUTH - WATCH MY TRACER-FIRE."

Figure 6-4. Machine gun aim points against helicopters and high-performance aircraft.

SECTION 4 - NUCLEAR, BIOLOGICAL, AND CHEMICAL SUPPORT

The company team receives NBC support through the division chemical company. Within the chemical company, specialized platoons provide three basic categories of support: NBC reconnaissance, decontamination, and smoke operations. Elements of the reconnaissance or smoke platoon may be task organized down to brigade or task force level.

RECONNAISSANCE SUPPORT

The division chemical company provides NBC reconnaissance throughout the division area. The NBC reconnaissance platoon, which is organized into four reconnaissance squads, has the capability of locating, identifying, marking, and reporting NBC-contaminated areas. The platoon can also report and mark bypass routes around contaminated areas.

DECONTAMINATION SUPPORT

The chemical company's chemical decontamination platoon is organized into three squads, each equipped with an M12A1 decontamination apparatus. The squads usually work directly with elements of the division in setting up and operating sites for operational and thorough decontamination. The company team may be tasked to work with the decon platoon or one of its squads during the conduct of thorough decontamination operations. (**NOTE:** For a more detailed discussion of decontamination requirements, refer to Appendix G of this manual. Table G-4 provides a complete list of required resources.)

SMOKE SUPPORT

The chemical company provides the division with smoke support through its mechanized smoke platoon. The platoon has the capability of providing both hasty smoke generation and large-area smoke support for tactical operations in the MBA. The smoke platoon consists of seven M1059 mechanized vehicles, each equipped with a caliber .50 machine gun and two smoke generators.

> **NOTE:** For additional information on NBC operations, refer to Appendix G of this manual.

SECTION 5 - INTELLIGENCE

The company team may conduct operations with any of several types of intelligence assets. In stability and support operations, for example, interrogation or counterintelligence teams may work in DS of the company team. While conducting security operations, the team may receive attached intelligence assets, such as GSR or IREMBASS teams.

In most situations, however, attachment of intelligence assets to the company team will be rare. More commonly, these assets will be operating in or near the team's area of operations; they will be attached to or in DS or GS of the task force, brigade, or division. The company team should be prepared to take advantage of information from the intelligence assets. It may also be tasked to provide a degree of tactical and/or logistical support, especially area medical support coverage, for the intelligence elements.

In situations in which the company team works with or supports intelligence assets, leaders of each element share responsibility for conducting coordination early in the operation. Coordination commonly includes exchanging call signs and frequencies; conducting fratricide prevention activities; and sharing basic operational plans, fire support plans, and fire control measures.

SECTION 6 - AVIATION COMBAT SUPPORT MISSIONS

Aviation support is an important, but sometimes overlooked, CS asset. Army aviation elements can provide support to the team in several critical areas, including those covered in the following discussion.

COMMAND, CONTROL, AND COMMUNICATIONS

Aviation units can assist the company team in maintaining these critical functions. They can conduct liaison between separate units, transmit intelligence information, and verify unit situations and locations. They can enhance communications through airborne transmission capabilities and relay equipment. Additional aviation intelligence functions that may aid the company team include target acquisition, reconnaissance, and employment of intelligence-gathering systems.

AIR MOVEMENT

Air movement operations are conducted to reposition units, personnel, supplies, equipment, and other critical combat elements in support of current and/or future operations. These operations include both airdrops and air landings.

AERIAL MINE WARFARE

Aviation units can employ the Volcano scatterable mine system in support of the company team's operations. For a description of Volcano, refer to Section 2 of this chapter.

CHAPTER 7

Combat Service Support

Simply stated, the role of CSS in any military unit is to sustain the force for continuous combat operations. In the company team, the commander has ultimate responsibility for CSS. The XO and the 1SG are the team's primary CSS operators; they work closely with the task force staff to ensure they receive the required support for the team's assigned operations.

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Section 4	**Resupply Operations** Routine Resupply Emergency Resupply Prestock Operations Class IV/V Supply Points and Mine Dumps
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	Health and Hygiene Sick Call and Health Assessment Soldiers Wounded in Action Soldiers Killed in Action
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SECTION 1 - RESPONSIBILITIES

GENERAL GUIDELINES

In most tank and mechanized infantry battalion task forces, CSS assets are assigned to the HHC. The HHC commander then provides each maneuver company team with personnel, equipment and supplies, and other support functions, including POL and transportation requirements. These services are provided by the HHC medical platoon, maintenance platoon, and support platoon.

Within that support structure, the company team must plan, prepare, and execute its portion of the task force CSS plan. Concurrent with other operational planning, the team develops its CSS plan during the mission analysis and refines it in the war-gaming portion of the troop-leading process. CSS rehearsals are normally conducted at both task force and company team levels to ensure the team receives a smooth, continuous flow of materiel and services.

The company team's basic CSS responsibilities are to report and/or request support requirements through the correct task force channels and to ensure that CSS operations are properly executed when support elements arrive in the team area. The XO and 1SG will normally be in charge of these

functions, with guidance and oversight provided by the commander. They must submit accurate personnel and logistical reports, along with other necessary information and requests.

INDIVIDUAL RESPONSIBILITIES

The following paragraphs focus on specific individual responsibilities within the company team's CSS chain.

Executive officer

The XO is the company team's primary CSS planner and coordinator, reporting directly to the commander. During preparations for the operation, he works closely with the 1SG to determine specific support requirements in support of the tactical plan. He then must ensure that proper arrangements are made for delivery of CSS goods and services. The XO also performs these CSS functions:

- Determine the location of the team's resupply point based on data developed during operational planning and the war-gaming process.
- Compile periodic maintenance updates from the platoon leaders, PSGs, the 1SG, and the maintenance team chief and provide updates to the commander as required.
- Along with the 1SG, ensure that the company team is executing CSS operations in accordance with the task force plan.

First sergeant

The 1SG is the company team's primary CSS operator. He executes the team's logistical plan, relying heavily on team and task force SOPs. He directly supervises and controls the combat trains. The 1SG also performs these CSS functions:

- Conduct CSS rehearsals at the company team level and/or integrate CSS into the team's maneuver rehearsals.
- Receive, consolidate, and forward all administrative, personnel, and casualty reports to the task force combat trains.
- Direct and supervise the medical team, moving it forward when the situation requires.
- Establish and organize the company team resupply point.
- Meet the LOGPAC at the LRP, guide it to the company team resupply point, supervise resupply operations there, and if necessary, guide the LOGPAC to its subsequent destination.
- Provide a company team orientation for new personnel and, in consultation with the commander, assign replacements to the team's subordinate elements.
- Supervise evacuation of casualties, EPWs, and damaged equipment.
- Maintain the company team battle roster.

Supply sergeant

The supply sergeant is the company team's representative in the task force field trains. He assembles the LOGPAC and moves it forward to the LRP. The supply sergeant also performs these CSS functions:

- Coordinate with the support platoon leader for resupply of Classes I, III, and V.
- Maintain individual supply and clothing records, and requisition Class II resupply as needed.
- Requisition Class IV and Class VII equipment and supplies.
- Coordinate with the task force PLL section to turn in and/or pick up maintenance documents, routine Class IX supplies, and recoverable materials.
- Pick up replacement personnel and, as necessary, deliver them to the 1SG.
- Receive and evacuate KIAs to the mortuary affairs point in the brigade support area (BSA).
- Transport, guard, and/or transfer EPWs as required.
- Guide the LOGPAC, along with EPWs and damaged vehicles (if applicable), back to the BSA.
- Coordinate with the task force S1 section to turn in or pick up mail and personnel action documents.
- Collect bagged contaminated soil and transport it to collection points as part of LOGPAC procedures.
- Maintain and provide supplies for team field sanitation activities.

Maintenance team chief

The maintenance team chief and the mechanics he supervises are assigned to the task force HHC, but are attached to the company team. The maintenance team chief performs these CSS functions:

- Supervise maintenance and recovery operations.
- Compile DA Forms 2404 and/or 5988 from the PSGs.
- Review the forms, ensure deficiencies and problems are verified by the mechanics, and complete the forms as necessary (for example, adding the parts numbers for required parts).
- Submit the completed forms to the 1SG or XO.
- Develop and implement a tracking system to monitor critical maintenance services, such as the following:
  - Deferred maintenance.
  - AOAP.
  - Services due.
  - Work to be completed by the maintenance team.
  - Status and flow of DA Forms 2404/5988.
  - Status of replacement parts, including parts on order and valid parts requisition numbers.
- Distribute and/or store replacement parts.

- Direct and/or supervise recovery operations to the UMCP.
- Ensure all recoverable parts are turned in.
- As appropriate, supervise turn-in of used or excess POL products and of hazardous waste.
- Advise the XO and 1SG on vehicle recovery, repair, and/or destruction.
- Conduct rehearsals of spill prevention procedures.
- Ensure that soil contaminated during maintenance activities is collected, bagged, and turned in to the supply sergeant.
- Assist the 1SG as required and, in his absence, serve as NCOIC of the company team trains.

Platoon sergeants

Each PSG in the company team performs these CSS functions:

- Ensure crews perform proper maintenance on all assigned equipment.
- Compile all personnel and logistics reports for the platoon and submit them to the 1SG as directed or in accordance with SOP.
- Collect each DA Form 2404/5988 within the platoon, check the forms for accuracy, and submit them to the maintenance team chief.
- Obtain supplies and equipment (all classes) and mail from the supply sergeant and ensure proper distribution within the platoon.

Senior aidman

Like the maintenance team chief and his mechanics, the company team's senior aidman and medics are assigned to the task force HHC but attached to the team. The senior aidman's responsibilities include the following:

- Supervise triage for injured, wounded, and ill friendly and enemy personnel.
- Provide first aid for and stabilize injured, wounded, or ill personnel.
- Under the direction of the 1SG, evacuate those who are seriously wounded.
- Supervise the company team's field sanitation team.
- Conduct sick call as required.
- Assist in training company team personnel in first-aid procedures.
- Advise the team chain of command on the health status of personnel and other health concerns.
- Requisition Class VIII supplies, including combat lifesaver bags and first-aid kits, for the medical team and other company team elements.
- Recommend locations for casualty collection points.
- Supervise the team's combat lifesavers and field sanitation team.

SECTION 2 - TRAINS

COMPANY TEAM COMBAT TRAINS

The most forward CSS element is the company team combat trains, which provide vehicle recovery, medical aid, and maintenance services. The 1SG normally positions the trains and directly supervises CSS operations. The trains normally operate 500 to 1,000 meters (or one terrain feature) to the rear of the company team. (**NOTE:** METT-TC factors ultimately dictate the actual distance.) This gives the team virtually immediate access to essential CSS functions while allowing the trains to remain in a covered and concealed position behind the FLOT. The company team combat trains normally include the following vehicles, with corresponding crews:

- The M88A1 recovery vehicle.
- The maintenance M113.
- The 1SG's M113.
- The medic's M113.
- The commander's and 1SG's HMMWVs.

TASK FORCE COMBAT TRAINS

The task force combat trains are normally positioned close enough to the FLOT to be responsive to forward units, but beyond the range of enemy direct fires. The trains are generally located 4 to 8 kilometers behind the most forward company. The task force trains normally include the CTCP, emergency Class III and Class V elements from the support platoon, the UMCP, and the BAS. The CTCP, BAS, and UMCP are normally located in separate, but nearby, positions; however, they can be collocated to form a base cluster for defense. The CMT's tool truck is normally located in the UMCP.

TASK FORCE FIELD TRAINS

The task force field trains are normally positioned in the BSA. In offensive operations, this usually places them 20 to 25 kilometers behind the task force combat trains; in the defense, the distance is 20 to 40 kilometers to the rear. The company team normally locates its supply section and corresponding vehicles, including the water trailer and the CMT's PLL truck, in the task force field trains.

TRAINS SECURITY

Because security of CSS elements is critical to the success of the company team and task force missions, the company team and task force combat trains and the task force field trains must all develop plans for continuous security operations. Where feasible, they may plan and execute a perimeter defense. The trains, however, may lack the personnel and combat power to conduct a major security effort. In such situations, they must plan and implement passive security measures to provide protection from enemy forces.

COMMUNICATIONS

Fast, reliable communications are critical to the CSS effort. Whether as directed by higher headquarters or as needed to support the company team mission, the 1SG must be able to instantly report the company team's status, including combat losses, and to send resupply and support requests.

As in all tactical situations, the radio is the fastest and most frequently used means for transmitting CSS requests and reports. It is also the least secure means of communications and poses other problems for the company team's CSS operators. The task force A/L net is used for most CSS traffic, but the team may not have enough working radio systems to monitor it. When this is the case, a higher NCS will be forced to enter the company team net when it must contact the team. Another type of problem can arise when company teams enter the A/L net. The transmission of one team may "walk over" another team's report or request. Unit SOPs must specify procedures to be followed in this type of situation to ensure that the task force field and/or combat trains receive all transmissions on a timely basis.

As an alternative, the company team can send CSS reports and requests by messenger or wire. Messengers are slower, but more secure, than radio transmission. Wire communications are also very secure, but are strictly limited in range and/or coverage. In situations where use of the radio is not possible, a messenger can be sent with the resupply or evacuation vehicle. In addition, either messenger or wire is the best means for sending lengthy or complex reports and requests.

SECTION 3 - SUPPLY CONSIDERATIONS

The supply sergeant is responsible for obtaining supplies and delivering them to the company team. He handles small items himself; the assets of the support platoon are employed to deliver bulky or high-expenditure items. Priorities for delivery are established by the commander, but the demands of combat will normally dictate that supplies and equipment in Classes I, III, V, and IX are the most critical to successful operations.

CLASSES OF SUPPLY

Class I Class I includes rations, water, and ice as well as gratuitous issue of items related to health, morale, and welfare. Class I supplies are automatically requested from the brigade on the daily strength report. Rations are prepared in the field trains and delivered with the LOGPAC. MREs stored on combat vehicles are eaten only when Class I resupply, including mess operations, cannot be accomplished.

Class II This supply class includes clothing, individual equipment, MOPP suits, tentage, tool sets, and administrative and housekeeping supplies and equipment. Expendable items such as soap, toilet tissue and insecticide are distributed during LOGPAC operations.

Class III Class III comprises POL products. Unusual Class III requests are normally submitted to the combat trains. POL includes both bulk and package products. Examples of bulk products include JP8 (Army common fuel), diesel, and MOGAS.

Package products are requested and received like Class II and Class IV items; they include 5-gallon and 55-gallon containers; packaged products such as lubricants, grease, hydraulic fluid, and solvents in amounts of 55 gallons or less; and cylinders of liquid and compressed gasses.

Class IV Construction materials, pickets, sandbags, and concertina wire are among the items covered by Class IV. Company team SOP will specify the combat load of Class IV items for each vehicle.

Class V Class V covers all types of ammunition and mines, including C-4 and other explosives.

Class VI Class VI includes personal-demand items ordinarily sold through the exchange system. Examples are candy, tobacco products, soaps, cameras, and film. When a PX is not available, Class VI support is requested through the S1.

Class VII This supply class includes major end items such as tanks, BFVs, and other vehicles. Class VII items are issued based on battle loss reports. Ready-to-fight weapon systems are sent forward with the LOGPAC.

Class VIII Class VIII covers medical supplies. Combat lifesaver bags and first-aid kits are replaced on a one-for-one basis at the BAS.

Class IX Class IX includes repair parts and documents required for equipment maintenance operations. Repair parts are issued in response to a specific request or are obtained by direct exchange of repairable parts, to include batteries for night vision devices and man-portable radios. In combat situations, exchange and cannibalization are the normal means of obtaining Class IX items.

Class X In this class are materials to support nonmilitary programs such as agriculture and economic development. Instructions for request and issue of Class X supplies are provided at division level or higher.

Maps The company team requests maps through the task force S4.

COMBAT LOAD, BASIC LOAD, AND PRESCRIBED LOAD LIST

Combat load The company team's combat load includes the supplies that it physically carries into the fight. Some minimum requirements will be dictated by the task force commander; however, most items will be specified by the company team commander or by unit SOP. Specific combat loads will vary by mission.

Basic load The basic load includes supplies kept by the company team for use in combat. The quantity of most supply items in the basic load is related to the number of days in combat the team may be required to sustain itself without resupply. For Class V, the basic load is a quantity of ammunition, specified by the higher command or by SOP, that the team is required to have on hand to meet combat needs until resupply can be accomplished.

Prescribed load list The PLL specifies the quantity of combat-essential supplies and repair parts that major commanders direct their units to have on hand. In the company team, PLL items are normally carried on the PLL truck located in the task force field trains.

REPORTING

There are few, if any, scenarios in which US military forces will have all the supplies they need for an operation. Because of this, it is essential that every unit's daily logistical reports accurately reflect not only its operational needs but also what supplies and equipment are on hand.

As much as possible, CSS planners try to standardize "push" packages, providing all units with sufficient quantities of each supply item. Together with the commander's guidance for issuance of scarce, but heavily requested, supply items, accurate reporting allows planners to quickly forecast supply constraints and then to submit requisitions to alleviate projected shortages. Conversely, inaccurate or incomplete reporting can severely handicap efforts to balance unit requirements and available supplies. As a result, some units may go into combat without

enough supplies to accomplish the mission while others have an excess of certain items.

SECTION 4 - RESUPPLY OPERATIONS

Resupply operations are generally classified as routine, emergency, or prestock. Cues and procedures for each method are specified in the company team SOP and are rehearsed during team training exercises. The actual method selected for resupply in the field will depend on METT-TC factors.

ROUTINE RESUPPLY

Routine resupply operations cover items in Classes I, III, V, and IX as well as mail and any other items requested by the company team. Whenever possible, routine resupply should be conducted daily, ideally during periods of limited visibility. Because tanks and other major combat vehicles consume large amounts of fuel (for example, M1-series tanks require refueling twice daily during offensive operations), the company team must resupply Class III at every opportunity.

LOGPAC operations

The LOGPAC technique is a simple, efficient way to accomplish routine resupply operations. The key feature is a centrally organized resupply convoy originating at the task force trains. It carries all items needed to sustain the company team for a specific period, usually 24 hours or until the next scheduled LOGPAC. Company team and task force SOPs will specify the exact composition and march order of the LOGPAC.

Preparation

The company team supply sergeant first compiles and coordinates all of the team's supply requests. Based on the requests, he them assembles the LOGPAC under the supervision of the support platoon leader or the HHC commander. He obtains the following items and materials:

- Class I, Class III (bulk and packaged products), and Class V supplies from the support platoon. This will normally entail employment of one or two fuel HEMTTs and one or two cargo HEMTTs.
- Class II, Class IV (basic load resupply only), Class VI, and Class VII supplies from task force S4 personnel in the field trains.
- Routine Class IX supplies and maintenance documents (as required) from the PLL section in the field trains.
- Replacement personnel and soldiers returning from medical treatment.
- Vehicles returning to the company team area from maintenance.
- Mail and personnel action documents (including awards and finance and legal documents) from the task force S1 section.

When LOGPAC preparations are completed, the supply sergeant initiates tactical movement to the LRP under the supervision of the support platoon leader. The supply sergeant and LOGPAC link up with the 1SG at the LRP.

Actions at the LRP When the 1SG arrives at the LRP to pick up the company team LOGPAC, he updates all personnel and logistical reports and is briefed by the field trains OIC on any changes to the tactical or support situation. He then escorts the convoy to the company team resupply point, providing security during movement from the LRP.

Resupply procedures The company team uses either the service station or the tailgate resupply method, both of which are discussed later in this section. The time required for resupply is an important planning factor. It must be conducted as quickly and efficiently as possible, both to ensure operational effectiveness and to allow the company team LOGPAC to return to the LRP on time. Service station resupply of the team can normally be completed in 60 to 90 minutes, although it may take longer. Tailgate resupply usually requires significantly more time than do service station operations.

Return to the LRP Once resupply operations are completed, the LOGPAC vehicles are prepared for the return trip. Company team vehicles requiring recovery for maintenance or salvage are lined up and prepared for towing. KIAs are carried on cargo trucks, fuel trucks, or disabled vehicles. EPWs ride in the cargo trucks and are guarded by walking wounded or other company team personnel. All supply requests and personnel action documents are consolidated for forwarding to the field trains, where the appropriate staff section will process them for the next LOGPAC.

The 1SG or the supply sergeant leads the LOGPAC back the LRP, where he links up with the support platoon leader. Whenever possible, the reunited task force LOGPAC convoy returns to the field trains together. When METT-TC dictates or when the LOGPAC arrives too late to rejoin the larger convoy, the company team vehicles must return to the field trains on their own. Because only minimal security assets will be available, this situation should be avoided.

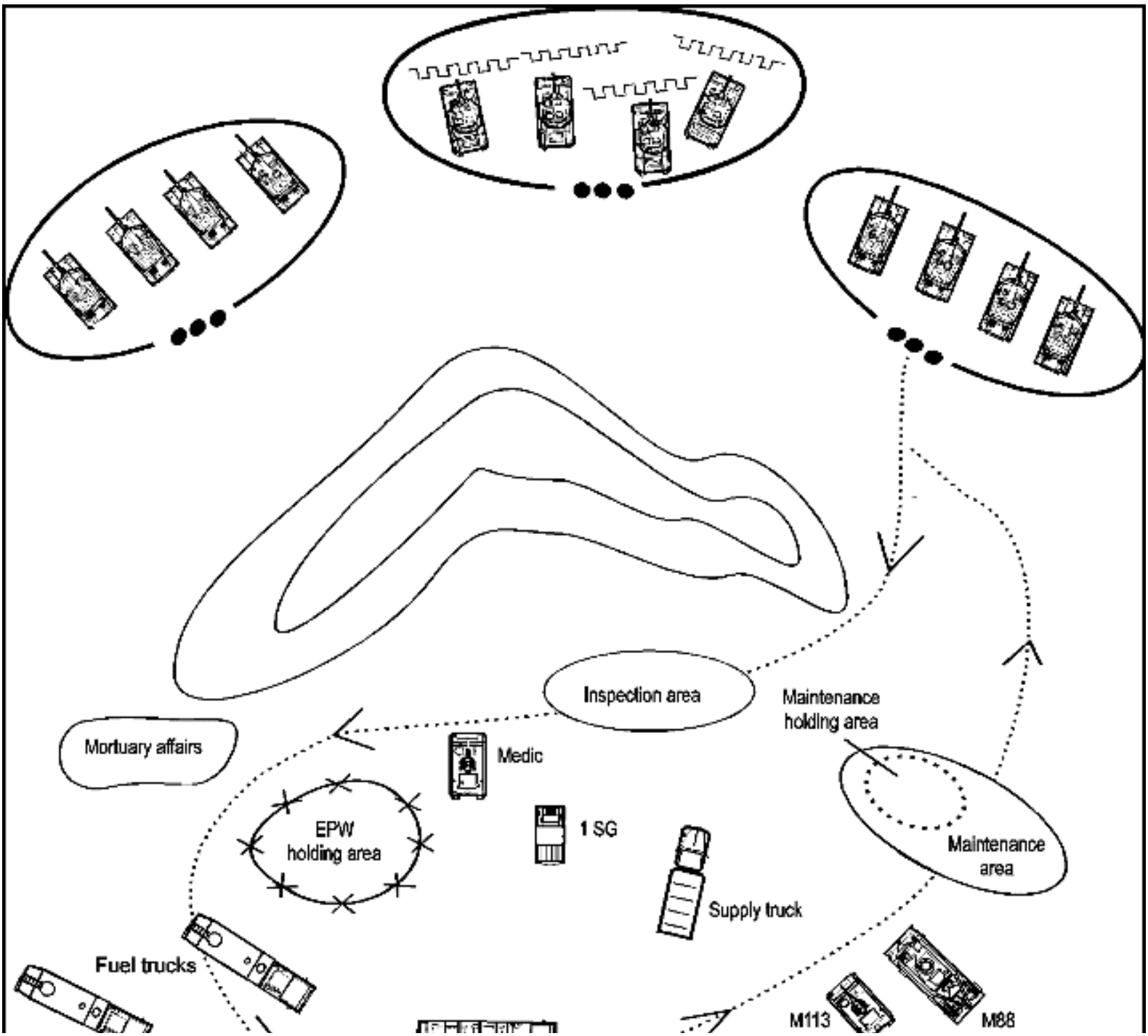
Resupply methods

As directed by the commander or XO, the 1SG establishes the company team resupply point using either the service station or tailgate method. He briefs each LOGPAC driver on which method will be used. When the resupply point is ready, the 1SG informs the commander, who in turn directs each platoon or element to conduct resupply based on the tactical situation.

Service station resupply

With the service station method, vehicles move individually or in small groups to a centrally located resupply point. Depending on the tactical situation, one vehicle or section or even an entire platoon moves out of its position, conducts resupply operations, and then moves back into position. This process continues until the entire company team has been resupplied. Refer to Figure 7-1.

In using this method, vehicles enter the resupply point following a one-way traffic flow; only vehicles requiring immediate maintenance stop at the maintenance holding area. Vehicles move through each supply location, with crews rotating individually to eat, pick up mail and sundries, and refill or exchange water cans. When all platoon vehicles and crews have completed resupply, they move to a holding area, where, time permitting, the platoon leader and PSG conduct a PCI.



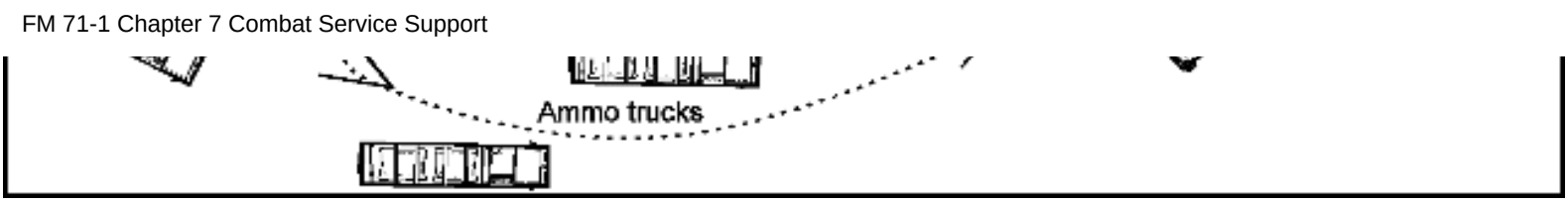


Figure 7-1. Service station resupply method.

Tailgate resupply

The tailgate method is normally used only in assembly areas. Combat vehicles remain in their vehicle positions or back out a short distance to allow trucks carrying Class III and Class V supplies to reach them. Individual crewmen rotate through the feeding area, pick up mail and sundries, and fill or exchange water cans. Any EPWs are centralized and guarded. KIAs, with their personal effects, are brought to the holding area, where the 1SG takes charge of them. Refer to Figure 7-2.

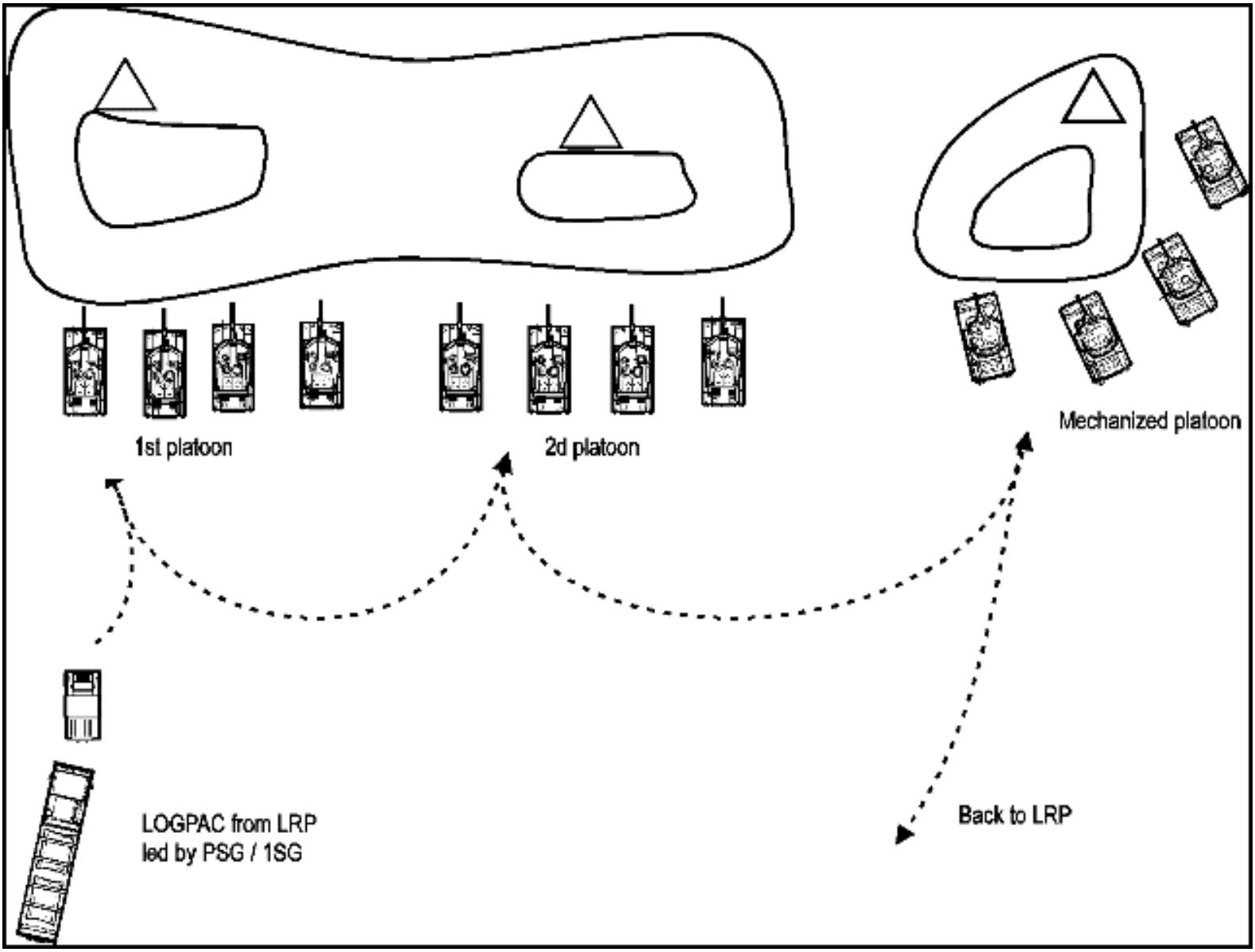


Figure 7-2. Tailgate resupply method.

EMERGENCY RESUPPLY

Occasionally (normally during combat operations), the company team may have such an urgent need for resupply that it cannot wait for a routine LOGPAC. Emergency resupply may involve Classes III, V, and VIII, as well as NBC equipment and, on a rare occasions, Class I. The task force will usually use support platoon and medical assets located in the task force combat trains to conduct emergency resupply of the company team.

Emergency resupply can be conducted using either the service station or tailgate method, although procedures may have to be adjusted when the company team is in contact with the enemy. In the service station method, individual vehicles pull back during a lull in combat on order of the commander or platoon leader; they conduct resupply and then return to the fight. With tailgate resupply, the company team brings limited supplies forward to the closest concealed position behind each vehicle or element.

PRESTOCK OPERATIONS

Prestock resupply, also known as pre-positioning, is most often required in defensive operations. Normally only Class V items are pre-positioned. Class III supplies can be pre-positioned; however, this requires company team vehicles to refuel before moving into fighting positions during initial occupation of the BP or to move out of their fighting positions to conduct refueling operations at the rear of the BP. Figures 7-3 and 7-4 illustrate two methods of pre-positioning supplies.

Prestock operations must be carefully planned and executed at every level. All leaders, down to vehicle commander and squad leader, must know the exact locations of prestock sites, which they verify during reconnaissance or rehearsals. The company team must take steps to ensure survivability of the prestock supplies. These measures include digging in prestock positions and selecting covered and concealed positions. The team commander must also have a plan to remove or destroy pre-positioned supplies to prevent the enemy from capturing them.

During offensive operations, mobile pre-positioning can be employed by loading supplies on trucks and positioning them forward on the battlefield. This technique works well if the company team expects to use a large volume of fire, with corresponding ammunition requirements, during a fast-moving operation.

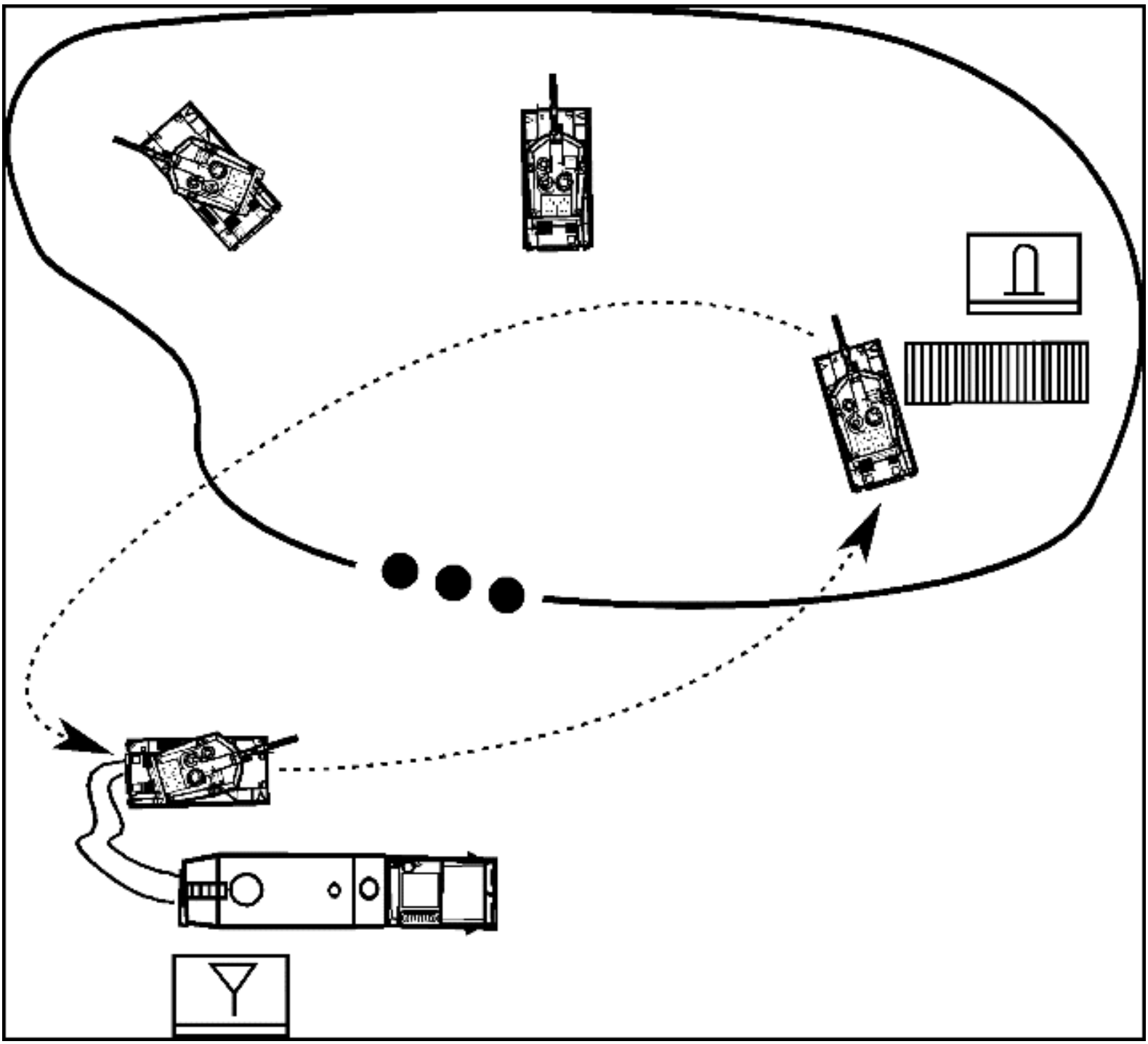


Figure 7-3. Prestock resupply operations - method 1 (central Class V prestock site).

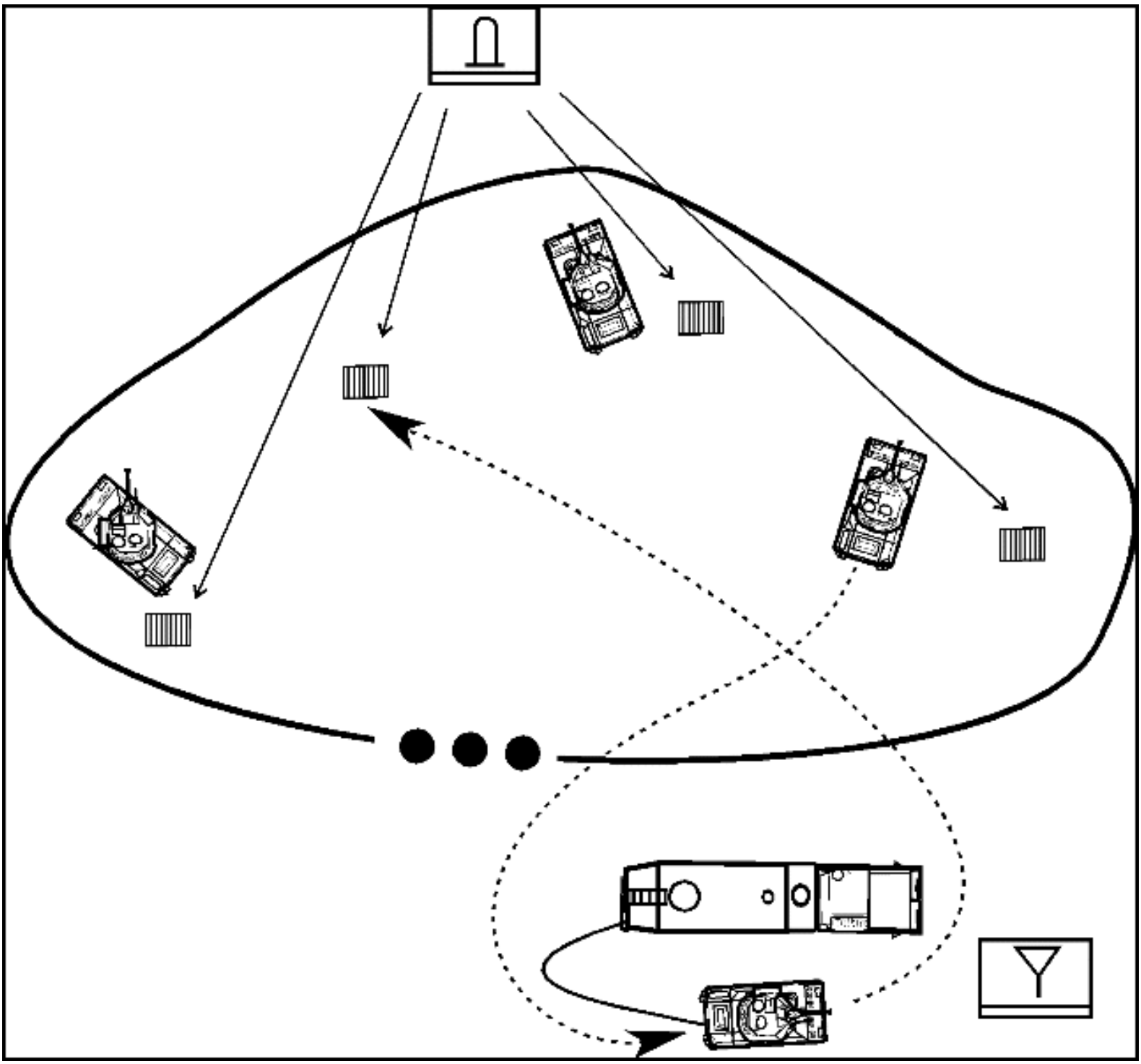


Figure 7-4. Prestock resupply operations - method 2 (Class V prestock site for each vehicle).

CLASS IV/V SUPPLY POINTS AND MINE DUMPS

These sites are important elements of task force resupply operations. For a more detailed discussion of Class IV/V supply points and mine dump operations, refer to FM 90-7.

Class IV/V supply points

Class IV/V supply points stock construction and barrier materials; they are also the sites at which the task force receives and transfers control of mines pushed forward by corps and/or division throughput haul assets. The task force has responsibility for establishing the supply point and for transporting materials from the point to locations in the task force area where the supplies are needed. The site is normally run by the task force S4 or his NCOIC, assisted by an NCO from the task force's attached engineer company. Other task force elements, including the company team, may be tasked to provide personnel for supply point operations. These soldiers play a crucial role in organizing the site, unpacking the barrier materials, loading them onto transport vehicles, and as necessary, helping to transport the materials forward. (**NOTE:** The task force may supplement the supply point with mine dump sites to better support engineer platoons in establishing obstacles on the ground. Refer to the following discussion.)

Mines dumps

The mine dump is the most forward mine resupply node, although it is not normally a permanent supply point. It is the site at which mines are task organized into mine strip packages and then are inspected, prepared, and loaded into emplacing vehicles. Mine dump operations are primarily handled by an engineer company or platoon. When a mine dump supports an obstacle the company team has responsibility for siting, however, the team will normally augment the unit operating the dump. Table 7-1 illustrates how many mines a given number of soldiers can process in a given time period; this is a critical planning factor in mine dump operations.

Table 7-1. Processing schedule for mine dump operations.

Processing element	Quantity of mines processed
2-man team	25 mines/hour
Squad (8 soldiers)	100 mines/hour
Platoon	300 mines/hour 3,600 mines/day
Company	10,800 mines/day
NOTE: Processing rates are based on a speed of 2 minutes per mine processed by a 2-man team, with soldiers working 50 minutes per hour and 12 hours per day.	

SECTION 5 - MAINTENANCE OPERATIONS

Proper maintenance is the key to keeping vehicles, equipment, and other materials in serviceable condition. It is a continuous process that starts with preventive measures taken by each vehicle crew and continues through repair and recovery efforts by higher-level maintenance personnel. It includes the services involved in inspecting, testing, servicing, repairing, requisitioning, recovering, and evacuating.

As a general guideline, repair and recovery are performed as far forward as the situation allows. When vehicles and equipment cannot be repaired on site, they must be evacuated to the rear for necessary repairs. Table 7-2 shows normal time guidelines for maintenance at each level of support. (**NOTE:** These guidelines indicate normal repair times only; they do not account for recovery time or for time spent awaiting repair parts.)

Table 7-2. Vehicle repair and maintenance time guidelines.

MAINTENANCE/REPAIR SITE	TIME GUIDELINE
On site	Less than 2 hours
UMCP	2 to 6 hours
FSB/field trains	6 to 24 hours
DSA	24 to 36 hours

COMPANY TEAM ROLE

"Flow" of maintenance forms and repair parts

Company team maintenance functions begin with PMCS, a daily crew responsibility, and crew-level preparation of the prescribed maintenance forms (DA Forms 2404 and/or 5988, as applicable). These forms are the primary means through which the crew obtains repair parts; they follow a pathway, described in the following paragraphs, from crew level to the task force field trains and back; the company team XO and the maintenance team chief supervise the "flow" of these critical maintenance documents and of repair parts.

Vehicle commanders collect their crews' maintenance forms each day; they give the forms to the PSG, who consolidates them for the platoon. The PSG in turn gives the forms to the maintenance team chief, who reviews and verifies problems and deficiencies and requisitions Class IX items needed for maintenance and repairs. During the next LOGPAC operation, the completed forms are given to the 1SG or supply sergeant, who transfers them to maintenance personnel in the task force field trains.

In the field trains, PLL clerks issue the required repair parts they have on hand; they order any other required parts and assign a document

number and status for the ordered parts. The maintenance forms, amended with the document numbers and status of ordered parts, are returned to the company team supply section (along with the issued repair parts). The amended forms and repair parts are transported via the LOGPAC to the company team area. The maintenance team chief works with PSGs and vehicle commanders to distribute the repair parts and to verify the accuracy and status of the parts on order.

Maintenance sequence The vehicle crew conducts initial maintenance, repair, and recovery actions on site. Once it is determined that the crew cannot repair or recover the vehicle or equipment, the platoon contacts the 1SG, who in turn dispatches the CMT to the vehicle's location. If the CMT needs additional assistance, the team chief or the 1SG requests it from the BMO.

Location of the CMT During offensive operations, the CMT usually follows one terrain feature behind the company team. In the defense, it is normally located one terrain feature or 1 to 2 kilometers behind the company team. This positioning enhances security and allows for quick reaction when support is requested by the platoons. In some situations, METT-TC factors may dictate that the CMT be positioned at the UMCP to further enhance security and survivability.

CROSS-ATTACHMENT CONSIDERATIONS

The number of mechanics in the company team combat trains, as well as their specialties, should reflect the number and types of vehicles in the team. As an example, a tank team should have at least one BFV hull mechanic, with appropriate manuals, in its trains; the team will also detach a tank hull mechanic to the corresponding mechanized infantry team.

UMCP OPERATIONS

When a vehicle or piece of equipment cannot be fixed quickly on site, it is moved to the task force UMCP, where it is repaired by the maintenance platoon or MST. When not involved in on-site actions, the CMT may assist with operations in the UMCP. Vehicles that cannot be repaired within the established timelines or that would overload the UMCP's capability are recovered to the field trains or FSB.

DESTRUCTION

When a vehicle or piece of equipment cannot be recovered or is damaged beyond repair, the crew reports the situation to the commander. He will give permission for destruction of the materiel if that is the only way to prevent enemy capture. Crewmen remove all radios, crew-served weapons, ammunition, personal items, and other serviceable items and parts; they also take all classified materials or paperwork that could be of intelligence value to the enemy. The crew then destroys the vehicle or equipment using procedures specified in the team SOP.

SECTION 6 - HEALTH SERVICE SUPPORT

Effective, timely medical care is an essential factor in sustaining the company team's combat power during continuous operations. The commander must ensure that the team's leaders and its medical personnel know how to keep soldiers healthy, how to save their lives if they are wounded or injured, and how to make them well once injury or illness occurs.

HEALTH AND HYGIENE

The commander and all leaders, in conjunction with the company team senior aidman and field sanitation team, must emphasize and enforce high standards of health and hygiene at all times. This "preventive maintenance" approach should cover all aspects of the soldier's health and well-being, including the following:

- Daily shaving to ensure proper fit of the protective mask.
- Regular bathing and changing of clothes.
- Prevention of weather-related problems. These include cold-weather injuries such as frostbite, trench foot, and immersion foot and heat-related injuries like heat exhaustion and heat stroke. Soldiers must understand the effects of such conditions as sunburn and windchill.
- Effective field sanitation measures, including unit waste control, waste disposal activities and facilities, water purification, rodent control, food service sanitation, and use of insect repellents.
- Battle fatigue prevention, including strict implementation of the unit sleep plan.

SICK CALL AND HEALTH ASSESSMENT

In noncombat situations, the company team senior aidman will conduct sick call as needed. This will be coordinated through the 1SG and conducted either at the team's position or during LOGPAC operations. In addition, the senior aidman will check with vehicle crews as often as possible to assess their medical needs and to gauge the overall health of the company team. He briefs the commander regularly on sick call activities and on the results of his health assessment.

SOLDIERS WOUNDED IN ACTION

Medical treatment of wounded or injured soldiers during combat operations is a continuous, progressive operation that occurs in a series of separate, but interlocking, stages. It involves personnel, equipment, and facilities at virtually every level of the organization.

Company team responsibilities

The normal "flow" of medical treatment for combat casualties is from the combat lifesaver to the company team senior aidman at the casualty collection point to medics at the BAS. In addition, company team leaders play an important role in obtaining and providing medical services for their WIAs. The following paragraphs discuss the individual responsibilities of company team personnel in this process.

Combat lifesaver

Along with the vehicle commander, the combat lifesaver is almost always the first person on the scene to begin the process of treating wounded and injured personnel. With the help of the vehicle commander and company team and platoon aidmen, the combat lifesaver provides initial first aid to WIAs. He prepares them for medical evacuation or returns them to duty status after rendering first aid. Whenever possible, the company team commander should ensure that there is at least one combat lifesaver on each team vehicle at all times.

Vehicle commander

The vehicle commander is responsible for ensuring that wounded or injured crewmen receive immediate first aid and that the commander is informed of casualties. He coordinates with the 1SG and company team senior aidman for ground evacuation or with the 1SG or commander for aerial evacuation. The vehicle commander ensures that casualty feeder and witness statement forms are completed and routed to the proper channels. (**NOTE:** The casualty feeder card stays with the wounded soldier; witness statements are given to the 1SG.)

Senior aidman The senior aidman is both the company team's primary medical treatment practitioner and the supervisor of all battlefield medical operations. The latter role encompasses numerous responsibilities. The senior aidman works closely with the commander to ensure all members of team understand what to do to provide and/or obtain medical treatment in combat situations. He oversees the training of combat lifesavers and, once combat begins, directs their actions. He assists the vehicle commanders and the 1SG in arranging WIA evacuation.

The senior aidman is also responsible for monitoring the vital paperwork that is part of the medical treatment and evacuation process. He must ensure that DA Form 1156 (the casualty feeder report) remains with each WIA until the soldier reaches a source of definitive medical care (a surgeon or physician's assistant) in the task force main aid station or field aid station. (**NOTE:** The Form 1156 is collected at the aid station by designated medical personnel or members of the task force S1 section; it is sent to the S1 section for further processing through administrative channels in the task force field trains.) If a soldier's remains cannot be recovered, the senior aidman ensures that the crew completes DA Form 1155 (witness statement) as quickly as possible and ensures that the form is given to the 1SG for processing.

First sergeant The 1SG supervises and coordinates casualty operations, collects witness statements and submits them to the S1, and submits the battle loss report to the task force TOC. Perhaps his most important duty is managing the company team's personnel status during combat operations; as necessary, he directs cross-leveling among platoons and vehicle crews to alleviate personnel shortages. The 1SG also supervises the completion and processing of DA Forms 1155 and 1156; refer to the discussion of these forms in the paragraph covering the senior aidman's duties.

Commander The commander has overall responsibility for medical services; his primary task is to prepare the team to properly treat and/or evacuate casualties. In this role, he works closely with others in the team medical process to ensure that they fully understand the responsibilities described in the previous paragraphs and are proficient in required medical skills. The commander designates the location for the company team's casualty collection point and ensures that all vehicle commanders record the location on appropriate overlays. He also develops and implements appropriate SOPs for casualty evacuation; an example is standardized vehicle markings based on the severity of casualties carried on particular vehicles.

Evacuation procedures

When combat begins and casualties occur, the first step is initial treatment of the WIAs. As noted, treatment is provided by combat lifesavers, platoon medics, the company team senior aidman, or any other crewmen qualified in first aid. Vehicle commanders arrange for evacuation of WIAs to the casualty collection point, which is normally set up in a covered and concealed location to the rear of the platoon position.

> **NOTE:** Before casualties are evacuated to the collection point or beyond, leaders should remove all key operational items and equipment, including SOIs, maps, position location devices, and laser pointers. Every unit should establish an SOP for handling the weapons and ammunition of its WIAs.

At the collection point, the senior aidman conducts triage of all casualties, takes the necessary steps to stabilize their condition, and initiates the process of moving them to the rear for further treatment. He assists the PSG and vehicle commanders in arranging either ground transport or aerial evacuation (MEDEVAC or CASEVAC). (**NOTE:** Refer to the discussion of aerial evacuation in Section 10 of this chapter.)

When aerial evacuation is not absolutely necessary or when these assets are not available, the team has these options for transporting casualties:

- The senior aidman can transport them to the BAS himself. He turns the WIAs over to the task force medical team, obtains any needed medical supplies, and returns to the company team location. (**NOTE:** The 1SG's M113 can be equipped with litters for use in medical evacuation.)
- Casualties can be transported by the task force medical platoon's ambulance section. Although ambulances are task force assets, they can be task organized as needed. In many cases, they are habitually associated with the company team. The team's assigned ambulance moves WIAs to the AXP, then returns to the team location.

In either option, task force medical elements assume responsibility for moving WIAs to the BSA for further treatment and evaluation. There, the FSB medical company will hold them for up to 72 hours. The wounded soldiers will then be returned to duty or sent farther to the rear for additional care.

SOLDIERS KILLED IN ACTION

The company team commander will designate a location for the collection of KIAs. All personal effects remain with the body, while equipment and issue items become the responsibility of the vehicle commander until they can be turned over to the 1SG or supply sergeant. As a rule, KIA remains should not be transported on the same vehicle as wounded soldiers. The commander will send a letter of condolence to the soldier's next of kin, normally within 48 hours of the death.

SECTION 7 - PERSONNEL SERVICES

Personnel services include clothing exchange and showers, awards and decorations, leaves and passes, command information, mail, religious services, financial services, legal assistance, rest and relaxation, and any other service designed to enhance or maintain the soldier's health, welfare, and morale. The following paragraphs discuss several of these functions.

POSTAL, FINANCIAL, AND LEGAL SERVICES

Postal services

Incoming mail is sorted at the task force trains and is then given to the 1SG or a certified mail handler from the company team for the next LOGPAC. All outgoing and returned mail is given to the 1SG or mail handler during resupply and is turned over to the S1 section when the LOGPAC returns to the field trains.

Financial services

Pay inquiries and allotment changes are collected by the 1SG or supply sergeant during resupply and are then submitted with other S1 actions when the LOGPAC returns to the field trains. When requested actions are completed, the S1 annotates actions taken and gives a copy of the document to the 1SG or supply sergeant, who returns it to the soldier's PSG (or the soldier) at the next LOGPAC.

Legal services

Requests for legal action should be submitted in writing to the S1 during the LOGPAC. As necessary, the S1 will either prepare all required documents and return them to the soldier or inform the company team commander of the time and location at which legal proceedings, such as a hearing, will be conducted.

UNIT MINISTRY TEAM

The UMT, composed of the chaplain and his assistant, provides religious services and counseling for the company team's soldiers; this includes soldiers who are in confinement or under arrest, as well as EPWs, detainees, and refugees. The chaplain conducts funeral or memorial services as necessary. The UMT also plays an important part in the primary care of casualties suffering from battlefield stress. The chaplain's assistant accompanies the chaplain during all activities, providing armed security and maintaining the UMT vehicle. He assists the chaplain in ministering to injured or wounded personnel and in preparing religious services.

PUBLIC AFFAIRS

The PAO is the commander's official spokesman and handles the functions of public and command information and community relations. He provides the commander with public affairs advice and services covering all matters of solider and media interest. All requests from the media for interviews with any company team member should be directed to the task force PAO or S1.

EPW PROCESSING AND EVACUATION

EPWs and captured enemy equipment and materials are excellent sources of combat information and intelligence. This information, however, will be of tactical value only if prisoners and materials are processed and evacuated to the rear quickly. In any tactical situation, the company team will have specific procedures and guidelines for handling prisoners and captured materials; these measures are prescribed in team and task force SOPs and in the commander's OPORD. Basic principles for handling EPWs are covered by the "five-S" procedures: search, segregate, silence, speed, and safeguard. Handling procedures also include tagging of prisoners and all captured equipment and materials.

In addition to initial processing, the capturing element is responsible for providing guards and transportation to move prisoners to the designated EPW collection points. Prisoners normally will be carried on vehicles already heading toward the rear, such as tactical vehicles being moved for repair or replacement or supply vehicles returning from LOGPAC operations. The capturing element also has responsibility for feeding the EPWs, providing them with medical treatment, and safeguarding them until they reach the collection point.

At the collection point, the 1SG generally assumes responsibility for providing security for the EPWs and for transporting them to the task force trains. He must be prepared to use any available personnel as guards, including the walking wounded or soldiers moving to the rear for reassignment.

SECTION 8 - REORGANIZATION AND WEAPON REPLACEMENT

REPLACEMENT AND CROSS-LEVELING OF PERSONNEL

Replacements for wounded, killed, or missing personnel are requested through the S1. Returning or replacement personnel arriving with the LOGPAC should already have been issued all TA-50 equipment, MOPP gear, and other items, including their personal weapons.

Within the company team, each platoon leader will cross-level personnel among his crews, with the 1SG controlling cross-leveling from platoon to platoon. Soldiers from disabled or destroyed vehicles will be used to fill out crews until replacement personnel and vehicles arrive at the company team CP.

REPLACEMENT AND SALVAGING OF EQUIPMENT

Lost, damaged, or destroyed equipment will be replaced through normal supply channels and brought forward with the LOGPAC. When vehicles are evacuated to the rear for extended periods, crews will remove any serviceable equipment or parts for use on other company team vehicles.

INTEGRATION AND PREPARATION FOR COMBAT

To maintain effective, consistent combat power, the company team must have specific plans and procedures that allow each element to quickly integrate replacement personnel and equipment. Unit SOP should define how soldiers and equipment are prepared for combat; it covers such areas as uploading, load plans, PCCs and PCIs, and in-briefings.

WEAPON SYSTEM REPLACEMENT OPERATIONS

WSROs are conducted to provide units with fully operational, ready-to-fight replacement weapon systems; they cover both vehicle and crew-served systems. The division provides replacement weapon systems to battalions based on the brigade priorities. At brigade level, systems normally covered by WSROs are tanks with four-man crews, mortars with four-man crews, and BFVs with three-man crews. Before these weapon systems are brought forward for delivery to the company team, the higher headquarters will supervise the completion of all necessary PCCs.

SECTION 9 - CSS PLANNING CONSIDERATIONS

DEVELOPMENT OF THE CSS PLAN

The company team commander develops his CSS plan by first determining exactly what supplies he has on hand and then accurately predicting his support requirements. To do this, he uses available information from his mission analysis and from war-gaming the plan with his subordinate leaders. This process is important not only in confirming the validity of the CSS plan but also in ensuring that the team's support requests are submitted as early as possible.

The commander can formulate his CSS execution plan and submit support requests to the task force based on the results of his COA analysis and of the war-gaming and refinement of the maneuver plan. The CSS plan should provide answers to a variety of operational questions, such as the following examples:

- Based on the nature of the operation and specific tactical factors, what types of support will the company team need?
- In what quantifies will this support be required? The discussion will also cover these questions:

  - Will emergency resupply be required during the battle?

  - Does this operation require prestock supplies?
- What are the composition, disposition, and capabilities of the expected enemy threat and how will this affect CSS operations during the battle? The discussion will also cover these questions:

  - Where and when will the expected contact occur?

  - Based on the nature and location of expected contact, what are the company team's expected casualties and vehicle losses?

  - What impact will the enemy's special weapons

capabilities (such as NBC) have on the battle and on expected CSS requirements?

- How many EPWs are expected and where?

- How will terrain and weather affect CSS operations during the battle? The discussion will also cover these questions:

  - What ground will provide optimum security for trains elements?

  - What ground will provide optimum security for maintenance and casualty collection points?

  - What are the company team's vehicle and casualty evacuation routes?

  - What are the team's "dirty" routes for evacuation of contaminated personnel, vehicles, and equipment?

- When and where will the company team need CSS? The discussion will also cover these questions:

  - Based on the nature and location of expected contact, what are the best sites for the maintenance collection points?

  - Based on the nature and location of expected contact, what are the best sites for the casualty collection points? Where will the EPW collection points be located?

  - What LRPs will be active, and when, during the battle?

- What are the criteria and triggers for the movement of the company combat trains?

- What are the support priorities (by element and type of support)?

  - Which platoon has priority for emergency Class III resupply?

  - Which platoon has priority for emergency Class V resupply?

- Will there be lulls in the battle that will permit support elements to conduct resupply operations in relative safety? If no lulls are expected, how can the company team best minimize the danger to the CSS vehicles that will provide the required support?

- Based on information developed during the CSS planning process, which resupply technique should be used?

BRIEFINGS AND REHEARSALS

As in all operational areas, thorough briefings and comprehensive rehearsals are important keys to effective CSS planning. These activities play a critical role in ensuring that the company team can execute its CSS plans efficiently, on time, and with the fewest possible problems. They allow the commander, his subordinate leaders, and each crewman to discover potential problem areas and to develop contingency plans to take care of unforeseen difficulties.

At both the task force and company team levels, commanders have several options for conducting CSS rehearsals. One is to integrate the CSS rehearsal into the unit's larger maneuver rehearsals. Another alternative is to have the unit's CSS operators conduct a separate rehearsal. Within the company team, for example, the commander could direct the XO and 1SG to rehearse CSS operations with the team's PSGs, maintenance team chief, and senior aidman.

SECTION 10 - AVIATION CSS MISSIONS

AERIAL SUSTAINMENT

Aerial sustainment is the movement of personnel, equipment, material, and supplies by utility, cargo, and fixed-wing assets for operations other than air assault and combat support. These air movements are considered CSS missions because the aviation forces are not task organized with combined arms forces and because they do not move forces or assets whose primary mission is to engage or destroy enemy forces.

CASUALTY EVACUATION

Casualty evacuation (CASEVAC) is an important part of the combat health support process. It is an aviation mission in which aircraft directly support ground units by providing transportation for WIAs from forward areas to the BSA or other designated collection and treatment facilities. CASEVAC operations include battlefield pickup of casualties, evacuation of casualties to initial treatment facilities, and subsequent movement of casualties to treatment facilities within the combat zone. Aeromedical assets are also employed to move medical personnel, supplies, and equipment.

> **NOTE:** An important distinction must be made between the terms CASEVAC and MEDEVAC. CASEVAC can be performed by any Army aviation utility aircraft when tasked by the maneuver commander. CASEVAC requests are made through

aviation channels. MEDEVAC is the process of moving casualties and/or patients while providing them with medical care en route. Most aviation units are not equipped or staffed to perform MEDEVAC, which is requested through medical channels. Refer to the discussion of evacuation procedures in Section 6 of this chapter.

APPENDIX A

Combat Orders

Combat orders are the means by which commanders receive and transmit information, from the earliest notification that an operation will occur through the final phases of execution. They are absolutely critical to mission success. In a tactical situation, the company team commander and his subordinate leaders work with these vital tools on a daily basis; obviously, they must have precise knowledge both of the formats of various types of orders and of procedures for developing effective orders. At the same time, they must ensure that every member of the company team understands how to receive and respond to each type of order.

The company team commander must be familiar with the formats of warning orders, OPORDs, and FRAGOs. He must be able to convert these into concise, yet thorough, orders for the team's subordinate leaders. This appendix includes a sample company team OPORD format and discusses the related technique of using execution matrixes. Warning orders and FRAGOs vary in format depending on the purpose of the order and the information available in a given situation; these orders are covered in Chapter 2 of this manual.

CONTENTS

Section 1	**Operation Orders**
Section 2	**Execution Matrix**

SECTION 1 - OPERATION ORDERS

When sufficient time and information are available, the company team commander will normally issue a complete OPORD as part of troop-leading procedures. The OPORD provides subordinate leaders with the essential information required to conduct the operation and to carry out the commander's intent.

Whenever possible, the OPORD is issued in writing and briefed orally in the five-paragraph format. This helps to ensure that required information is presented in a logical, organized manner. Although the five-paragraph format is straightforward, every commander will develop techniques that allow him to make a clearer, more concise OPORD presentation. Presentation and visualization techniques are discussed in Chapter 2 of this manual. Figure A-1 illustrates a sample company team OPORD format.

Figure A-1. Sample company team OPORD format.

PARAGRAPH 1 - SITUATION

a. Enemy forces (and battlefield conditions).

(1) Weather and light data.

- Precipitation.
- Temperature
- Other weather conditions (such as wind, dust, or fog).
- Light Data

BMNT: _____ Sunrise: _____
Sunset: _____ EENT: _____
Moonrise: _____ Moonset: _____
Percent Illumination: _____

(2) Terrain (factors of OCOKA).

- Observation and fields of fire.
- Cover and concealment.
- Obstacles.
- Key terrain.
- Avenues of approach.

(3) Enemy forces.

- Identification.
- Composition/order of battle.
- Recent activities.
- Strength.
- Current location.
- Most probable course of action.
- Most dangerous course of action.
- Weaknesses.

b. Friendly forces.

- Higher commander's concept of the operation.
- Higher commander's mission.
- Adjacent unit missions/locations.
- Unit(s) providing fire support.
- Other units supporting the task force.

c. Attachments and detachments.

- Time(s) of attachment.
- Time(s) of detachment.
- Support relationship(s).

PARAGRAPH 2 - MISSION.

PARAGRAPH 3 - EXECUTION.

Commander's intent.

a. Concept of the operation.

(1) Scheme of maneuver.

- Offensive operations
  - Passage of lines.
  - Axis or route
  - Movement formations.
  - Movement techniques.
  - Actions on contact (prior to objective).
  - Actions at obstacles.
  - Aactions on the objective (decisive point).
  - Consolidation and reorganization.
  - On-order and be-prepared missions.
- Defensive operations.
  - Security operations.
  - Passage of lines of forward forces.
  - Battle handover.
  - Defense of initial and successive BPs.
  - Displacement.
  - Counterattack.
  - Consolidation and reorganizartion.

(2) Fires.

- Purpose of indirect fires.
- Priority of fires.
- Allocation.
- Triggers.
- Restrictions/coordinating instructions
- Allocation and use of special fires (such as smoke, illumination, or CAS).

(3) Reconnaissance and surveillance.

(4) Intelligence.

(5) Engineer support.

- Purpose of engineer effort.
- Priority of engineer effort.
- Priority of engineer support.
- Obstacle overlay.
- Obstacle list.
- Restrictions/coordinating instructions.

(6) Air Defense.

(7) Information operations.

b. Tasks to maneuver units.

- Task and purpose.
- On-order missions.
- Specific instructions.

c. Tasks to CS units.

- Task and purpose.
- On-order missions.
- Specific instructions

d. Coordinating instructions.

- Time or condition when a plan or order becomes effective.
- Commander's critical information requirements (CCIR).
- Risk reduction control measures.
- ROE and/or ROI.
- Environmental considerations and control measures,
- Force protection control measures.

PARAGRAPH 4 - SERVICE SUPPORT.

a. Concept of support.

- Organization of company team trains.
- Location of company team trains (in each phase of the operation).
- Current location of task force combat and field trains.
- Current location of task force UMCP.
- Current location of task force aid station(s).
- Current and future designated MSRs and LZs.

b. Material and service.

(1) Supply

- Class I.
- Class III.
- Class V.
- Class IX.

(2) Transportation.

- Location of task force supply route.
- Location of LRPs and collection points.
- Priority of movement on task force MSR.

(3) Service.

- Location of mortuary services.
- Procedures for evacuation of KIA personnel.

(4) Maintenance.

- Location of maintenance collection points (in each phase of the operation).
- Location of UMCP during the battle.
- Method of marking damaged vehicles.
- Task force recovery plan.

c. Medical evacuation and hospitalization.

- Location of casualty collection points (in each phase of the operation).
- Location of task force aid station(s) during the battle.
- Method of marking vehicles with wounded/KIA.
- Procedures for evacuation of wounded.

d. Personnel.

- Procedures for handling EPWs and location of company team EPW collection points.
- Location of task force EPW collection points.
- Personnel replacement.

e. Civil/military cooperation.

- Civil affairs assets and POCs.
- Mission of civil affairs elements.
- Curfews.
- Collateral damage restrictions.
- Additional ROE/ROI considerations.

PARAGRAPH 5 - COMMAND AND CONTROL

a. Command.

- Location of company team commander and XO.
- Location of task force commander and XO.
- Location of task force main CP.
- Succession of command.

b. Signal.

- SOI in effect.
- Radio communications restrictions.

- Radio listening silence and the time it is effect.

- Alternate frequencies and time or condition for changing frequencies.

- Visual and pyrotechnic signals.
  - During passage of lines.
  - During movement.
  - During breaching operations.
  - On the objective.
  - During defensive operations.
  - Emergency signals.
- Code words and reports specific to the operations.
- COMSEC guidelines and procedures.

SECTION 2 - EXECUTION MATRIX

The execution matrix, a tool that can help the commander to complete and execute the plan, shows the most critical tasks or events of the operation in a matrix format. The commander can use it to supplement his formal OPORD as well as to assist him during the conduct of a mission. The matrix can also help to enhance subordinate leaders' understanding of the mission.

To construct a basic execution matrix for any operation, the commander lists his subordinate elements along one axis of the matrix and the events or phases of the operation along the other axis. In the corresponding boxes, he fills in the information that tells his subordinate leaders what each element is doing during each step of the operation.

Information in these blocks may include movement instructions (including order of march, movement technique, and movement formation); information on direct fire or observation responsibilities (such as TRPs or sectors); locations of indirect fire targets, triggers, and decision points; and virtually anything else the commander considers critical to the execution of the mission. Figure A-2 shows an example of a basic execution matrix.

ELEMENT **EVENT**	**COM-MANDER**	**FSO/ ENGINEER**	**1ST PLATOON**	**2D PLATOON BFV**	**INFANTRY SQUADS**	**3D PLATOON**	**CSS**	**XO**
CRP REACHES TRP 2	**Order unit to respond**	**Secure BP 21; observe OP 20 area**	**Hide**	**OP 20 and BFVs destroy CRP before it reaches the bridge; displace to BP 21**	**Hide**	**Hide**	**CP 4**	**Secure BP 32; send SITREP to task force**
FSE REACHES TRP 2	**Order all platoons to occupy positions, with OPs recovered**		**BP 11**	**Hide**	**Hide**	**Hide**	**CP 4**	**Send SITREP to task force**

FSE (MRC+) CROSSES TRIGGER LINE	**Order 1st Platoon to fire**		**BP 11**	**Hide**	**Hide**	**Hide**	**CP 4**	**Send SITREP to task force**
AGMB REACHES TRP 2		**Call AB4006; O/O call AB4003**	**BP 11 Near half**	**BP 21 Far right**	**Hide**	**BP 31 Far left**	**CP 4**	**Observe OP 30 area**
AGMB(-) REACHES TRP 4	**Order 1st and 3d Platoons to displace**	**Fire FPF 4001**	**Displace to BP 32 Near half**	**BP 21 Far right**	**BP 21 Protect flank**	**Displace to BP 12 Far left**	**Displace to CP 5**	**Displace to protect trains; report to task force**
CONPLAN 1								
CONPLAN 2								

Figure A-2. Sample execution matrix.

APPENDIX B

Road Marches and Assembly Areas

When not in contact with the enemy, the company team may have to move long distances to position itself for future operations or to move from garrison to training areas. This type of movement, called a road march, is planned at company team and task force levels.

An assembly area, either the initial assembly area before movement begins or the forward assembly area following the move, is a site at which the unit gathers to prepare for future operations. Preparation activities include receiving and issuing orders, servicing and repairing vehicles, receiving and issuing supplies, and taking care of the personal needs of members of the company team.

CONTENTS

Section 1	**Tactical Road Marches** March Columns Planning Considerations Quartering Party Control Measures Actions During the March Actions on Contact Actions at the RP
Section 2	**Assembly Areas** Quartering Party Operations Occupation of the Assembly Area Actions in the Assembly Area

SECTION 1 - TACTICAL ROAD MARCH

The main purpose of the road march is to relocate rapidly, not to gain contact. It is conducted using fixed speeds and timed intervals. The discussion in this section examines tactical procedures and considerations for the road march.

MARCH COLUMNS

The following paragraphs outline the three primary road march techniques. The commander bases his decision on the formation to be used during the march on which technique is employed. (**NOTE:** The road march is usually executed in column formation.)

Open column

The open column technique is normally used for daylight marches, though it can be used at night with blackout lights or thermal vision equipment. The distance between vehicles varies, normally from 50 meters to 200 meters, depending on light and weather conditions.

Close column The close column technique is normally used for marches conducted during periods of limited visibility. The distance between vehicles is based on the ability to see the vehicle ahead; it is normally less than 50 meters.

Infiltration The infiltration technique involves the movement of small groups of personnel or vehicles at irregular intervals. It is used when sufficient time and suitable routes are available and when maximum security, deception, and dispersion are desired. Of the three road march techniques, infiltration provides the best possible passive defense against enemy observation and detection.

PLANNING CONSIDERATIONS

Standard tasks the company team commander (and subordinate leaders, as necessary) may perform prior to a tactical road march include the following:

- Designate a marshaling area to organize the march column and conduct final inspections and briefings.
- Conduct a METT-TC analysis to determine the enemy situation, including the probability of air or ground attack.
- Establish detailed security measures.
- Designate the movement route, including the SP, required checkpoints, and the RP. Additional control measures that the team may be required to identify include critical areas, defiles, choke points, rest and maintenance stops, and danger areas.
- Organize, brief, and dispatch the quartering party.
- Specify the march speed, movement formations, vehicle and serial intervals, catch-up speed, lighting, and times of critical events.
- Plan for indirect fire support and contingency actions, and rehearse actions on contact. Contingency plans should cover vehicle breakdowns, lost vehicles, and accidents.
- Coordinate for CSS, including refueling, mess operations, vehicle recovery, local police assistance, and medical evacuation.

QUARTERING PARTY

Whether the company team is conducting the road march independently or as part of a task force, it will normally send out a quartering party to assist it in moving to and occupying a new assembly area. Dispatched prior to the departure of the main body, the company team quartering party assists the task force quartering party in reconnoitering the route of march. It then conducts its own reconnaissance of the feeder route from the RP to the proposed assembly area and of the assembly area itself. If either the route or the assembly area proves unsatisfactory, the quartering party recommends changes to the commander. (**NOTE:** If the task force does not send a quartering party, the company team party assumes sole responsibility for reconnoitering the route of march from SP to RP.)

Once the road march begins, members of the quartering party serve as guides along the feeder route and in the assembly area. The size and

composition of the party is usually dictated by unit SOP, although it can be adjusted based on specific tactical requirements. Refer to Section 2 of this appendix for a more detailed discussion of quartering party duties and procedures.

CONTROL MEASURES

The commander uses the control measures discussed in the following paragraphs to assist in controlling the company team during the road march.

Graphics

Road march graphics should include, at a minimum, the SP, the RP, and the route, which have the following characteristics:

- The SP location represents the beginning of the road march route. It should be located on easily recognizable terrain. It is far enough away from the company team's initial position to allow individual elements to organize into the march formation at the appropriate speed and interval. The commander should determine the time required to move to the SP. This will help the team to arrive at the SP at the time designated in the task force OPORD and to continue movement onto the route of march without stopping.
- The RP marks the end of the route of march. It is also located on easily recognizable terrain. Elements do not halt at the RP. They continue to their respective positions with assistance from guides, waypoints, and/or other graphic control measures.
- The route is the path of travel connecting the SP and RP.

Digital overlays

Digital overlays, which serve as a backup to maps with overlays, can provide valuable assistance for digitally equipped units. They display waypoints and other information concerning unit locations along the route of march, not only assisting the units in navigating accurately but in maintaining situational awareness as well.

Critical points

These are locations along the route of march where terrain or other factors may interfere with movement or where timing is critical. They are represented using checkpoints. The SP, RP, and all checkpoints are considered critical points.

Strip maps

A strip map can be used to assist in navigation. It should include the SP, RP, checkpoints, marshaling areas, and ROM sites; it also lists the distances between these points. Detailed "blowup" sketches should be used for marshaling areas, locations of scheduled halts, ROM sites, and other places where confusion is likely to occur. Strip maps are included as an annex to the movement order; if possible, a copy should be provided to all vehicle drivers.

Visual signals

When radio silence is observed during a road march, hand-and-arm signals, flags, and lights may be employed as the primary means of passing messages between vehicles and between moving units.

Traffic control

Road guides and traffic signs may be posted at designated traffic control points by the headquarters controlling the march. At critical points, guides assist in creating a smooth flow of traffic along the march route. Military police, members of the task force scout platoon, or designated elements from the quartering party may serve as guides. They should have equipment or markers that will allow march elements to identify them in darkness or other limited visibility conditions. There is normally an RP for every echelon of command conducting the road march (that is, there will be a task force RP, followed by a company team RP). Traffic problems may arise if actions at each of these points are not well rehearsed.

ACTIONS DURING THE MARCH

Movement to the SP

The company team must arrive at the SP at the time designated in the task force OPORD. The team commander may need to designate a marshaling area in which the quartering party and the main body can organize their march columns and conduct final inspections and briefings before movement. If the situation dictates, units may move directly to the column from their current positions. To avoid confusion during the initial moveout, leaders of all team elements should conduct a reconnaissance of the route to the SP, issue clear movement instructions, and conduct thorough rehearsals, paying particular attention to signals and timing.

Orientation

Every vehicle in the formation has an assigned sector of orientation. Each vehicle commander should additionally assign sectors of observation to crewmen to achieve 360-degree observation.

Halts

While taking part in a road march, the company team must be prepared to conduct both scheduled and unscheduled halts.

Scheduled halts

These are conducted to permit maintenance, refueling, and personal relief activities and to allow other traffic to pass. The time and duration of scheduled halts are established in the movement order. Unit SOP specifies actions to be taken during halts; the first priority must always be to establish and maintain local security. A maintenance halt of 15 minutes is usually taken after the first hour of the march, with a 10-minute halt every two hours thereafter.

During long marches, the unit may conduct a refuel on the move (ROM) operation. The composition of the ROM site will depend both on OPSEC considerations and on the refueling capability of assets at the ROM site. The OPORD will specify the amount of fuel or the amount of time at the pump for each vehicle. It will also give instructions for OPSEC at the ROM site and at the staging area to which vehicles move after refueling.

Unscheduled halts The company team conducts unscheduled halts when the unit encounters unexpected obstacles or contaminated areas or when a disabled vehicle temporarily blocks the route. Whenever an unscheduled halt occurs, each vehicle commander sends a messenger to the vehicle to his front; the messenger obtains (or, if applicable, provides) information on the reason for the halt and on required follow-on actions. The movement commander then takes any further actions required to determine and/or eliminate the cause of the halt.

A disabled vehicle must not be allowed to obstruct traffic for lengthy periods. The crew should move the vehicle off the road immediately, report its status, establish security, and post guides to direct traffic. If possible, the crew repairs the vehicle and rejoins the rear of the column. Vehicles that drop out of the column should return to their original positions only when the column has halted. Until then, they move at the rear just ahead of the trail element, which usually comprises the maintenance team with the M88 recovery vehicle and some type of security (the XO will normally handle security if he is not part of the quartering party). If the crew cannot repair the vehicle, the vehicle is recovered by the trail element.

> **NOTE:** Security during halts normally involves a combination of dispersion, weapons orientation, clearance of terrain that dominates the route of march, and employment of infantry squads to secure danger areas.

ACTIONS ON CONTACT

If enemy contact occurs during the road march, the company team executes actions on contact as described in Chapter 3 of this manual.

ACTIONS AT THE RP

The company team moves through the task force RP without stopping. The team's guide picks up the unit there and guides it to the company team RP (normally at the entrance to the team's position in the new assembly area). Each platoon then picks up its own assigned guide and follows the guide's signals to its position in the assembly area. Depending on terrain and the equipment available (GPS or POSNAV), guides and marking materials may be posted at or near exact vehicle locations (assembly areas procedures are covered in the following section).

SECTION 2 - ASSEMBLY AREAS

An assembly area is a site at which maneuver units prepare for future operations. A well-planned assembly area will have the following characteristics:

- Concealment from enemy ground and air observation.
- A location on defensible terrain.
- Good drainage and a surface that will support tracked and wheeled vehicles.
- Suitable entrances, exits, and internal roads or trails.
- Sufficient space for dispersion of vehicles and equipment.

QUARTERING PARTY OPERATIONS

Normally, the company team employs a quartering party (also known as an advance party) to assist in the occupation of an assembly area. The quartering party is established in accordance with task force or team SOP; for example, it may comprise one vehicle per platoon along with a vehicle from the headquarters section. It is normally led by the company team XO or 1SG or by a senior NCO. The quartering party's actions in preparing the assembly area include the following:

- Reconnoiter for enemy forces and NBC contamination.
- Evaluate the condition of the route to the assembly area and the suitability of the area itself (drainage, space, internal routes). (**NOTE:** If the area is unsatisfactory, the party requests permission from the commander to find a new location.)
- Organize the area based on the commander's guidance; designate and mark tentative locations for platoons, CP vehicles, and trains.
- Improve and mark entrances, exits, and internal routes.
- Mark bypasses and/or remove obstacles (within the party's capabilities).
- Mark tentative vehicle locations.

OCCUPATION OF THE ASSEMBLY AREA

Once the assembly area is prepared, the quartering party awaits the arrival of the company team, maintaining surveillance and providing security of the area within its capabilities. Quartering party members guide the team as a whole from the task force RP to the team RP; they then guide individual elements from the team RP to their locations in the assembly area. SOPs and prearranged signals and markers (for day or night occupation) should be used to assist vehicle commanders in finding their positions. The key consideration is to move quickly, both to clear the route for other units and to assume designated positions in the assembly area.

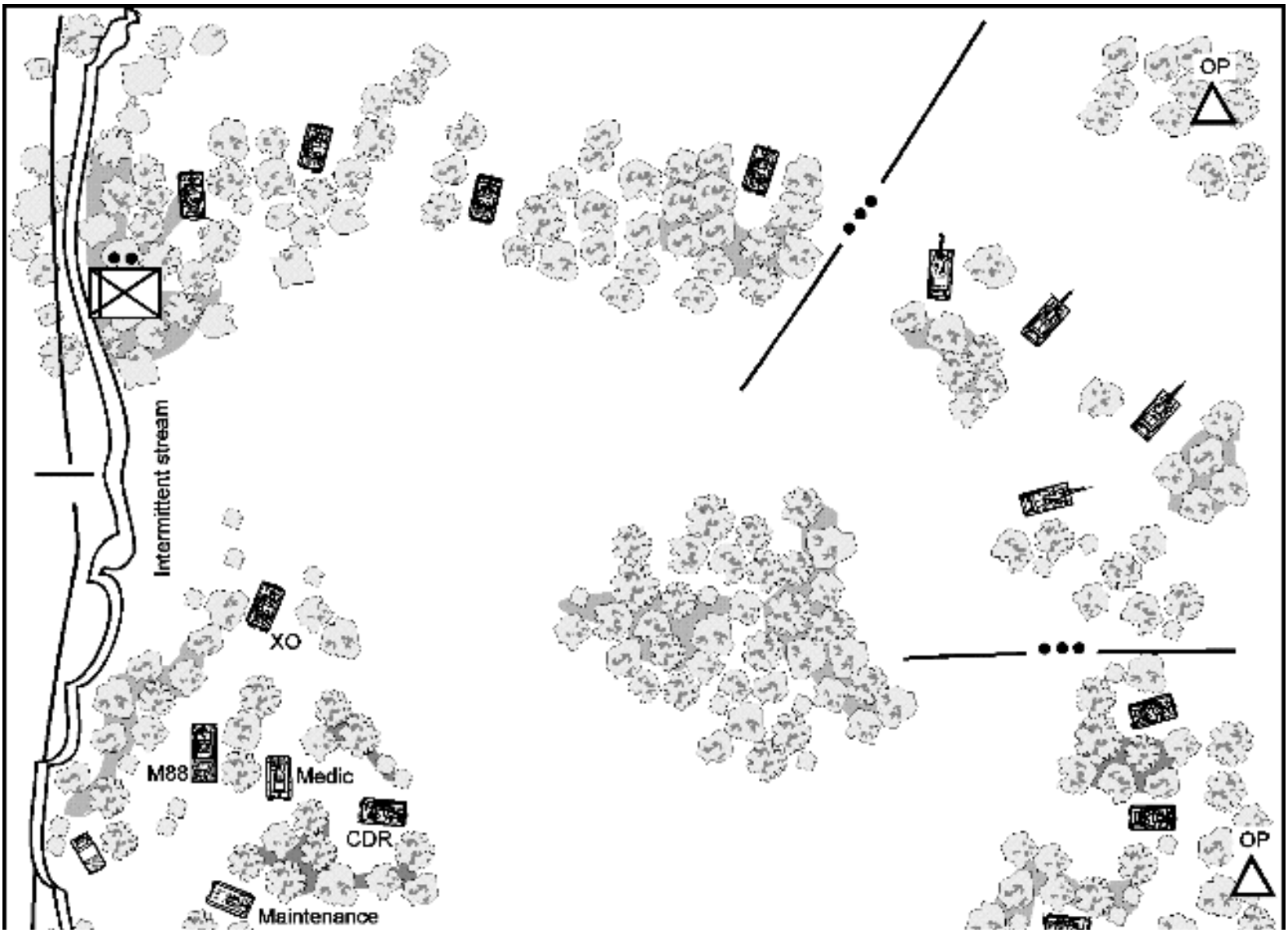
The company team may occupy the assembly area as an independent element or as part of a task force (see Figure B-1). In either situation, the team occupies its positions upon arrival using the procedures for hasty occupation of a BP. The commander establishes local security and coordinates with adjacent units. He assigns weapons orientation and a sector of responsibility for each platoon and subordinate element. If the team occupies the assembly area alone, it establishes a perimeter defense. (**NOTE:** Figure 4-14 illustrates a perimeter defense for an assembly area.)

> **NOTE:** Refer to Chapter 4 of this manual for discussions of hasty occupation of a BP and conduct of a perimeter defense and to Appendix M for information on OPSEC procedures.

ACTIONS IN THE ASSEMBLY AREA

Following occupation, the company team and its individual elements can prepare for future operations by conducting troop-leading procedures and priorities of work in accordance with task force and team OPORDs. These preparations include the following:

- Establish and maintain security (at the appropriate REDCON level).
- Employ infantry squads to implement security measures as necessary, including protection against enemy infiltration.
- Conduct troop-leading procedures.
- Perform maintenance on vehicles and communications equipment.
- Verify weapon system status; conduct boresighting, prepare-to-fire checks, test-firing, and other necessary preparations. (**NOTE:** The company team normally must coordinate test-firing activities with its higher headquarters.)
- Conduct resupply operations, including refueling and rearming.
- Conduct rehearsals and other training for upcoming operations.
- Conduct PCCs and PCIs based on time available.
- Eat, rest, and conduct personal hygiene activities.
- Adjust task organization as necessary.
- Account for company team personnel and assigned sensitive items.
- Reestablish vehicle load plans.



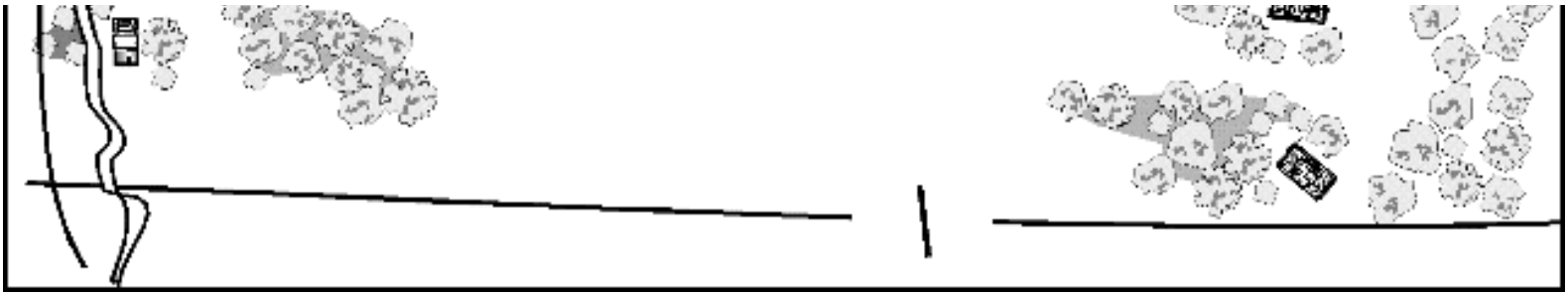


Figure B-1. Example company team assembly area (occupation as part of a task force).

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APPENDIX C

Risk Management

Risk is the chance of injury or death for individuals and damage to or loss of vehicles and equipment. Risks, and/or the potential for risks, are always present in every combat and training situation the company team faces. Risk management must take place at all levels of the chain of command during each phase of every operation; it is an integral part of all tactical planning. The company team commander, his subordinate leaders, and all soldiers must know how to use risk management, coupled with fratricide reduction measures, to ensure that the mission is executed in the safest possible environment within mission constraints.

The primary objective of risk management is to help units protect their combat power through accident prevention, enabling them to win the battle quickly and decisively, with minimum losses. This appendix outlines the five-step process leaders can use to identify hazards and implement a plan to address each identified hazard.

CONTENTS

Step 1	**Identify Hazards**
Step 2	**Assess Hazards to Determine Risks**
Step 3	**Develop Controls and Make Risk Decisions**
Step 4	**Implement Controls**
Step 5	**Supervise and Evaluate**

STEP 1 - IDENTIFY HAZARDS

A hazard is a source of danger. It is any existing or potential condition that could entail injury, illness, or death of personnel; damage to or loss of equipment and property; or some other sort of mission degradation. Tactical and training operations pose many types of hazards.

The company team’s leaders must identify the hazards associated with all aspects and phases of the team’s mission, paying particular attention to the factors of METT-TC. Risk management must never be an afterthought; leaders must begin the process during their troop-leading procedures and continue it throughout the operation.

Figure C-1 lists possible sources of risk that the team might face during a typical tactical operation. It is organized according to the factors of METT-TC.

SOURCES OF BATTLEFIELD RISK

MISSION

- Duration of the operation.
- Complexity and clarity of the plan. (Is the plan well developed and easily understood?)
- Proximity and number of maneuvering units.

ENEMY

- Knowledge of the enemy situation.
- Enemy capabilities.
- Availability of time and resources to conduct reconnaissance.

TERRAIN AND WEATHER

- Visibility conditions, including light, dust, fog, and smoke.
- Precipitation and its effect on mobility.
- Extreme heat or cold.
- Additional natural hazards, such as broken ground, steep inclines, and water obstacles.

TROOPS

- Equipment status.
- Experience the units conducting the operation have working together.
- Danger areas associated with company team's weapon systems.
- Soldier/leader proficiency.
- Soldier/leader rest situation.
- Degree of acclimatization to environment.
- Impact of new crewmembers.
- Impact of new leaders.

TIME AVAILABLE

- Time available for troop-leading procedures and rehearsals by subordinates.
- Time available for PCCs/PCIs.

CIVILIAN CONSIDERATIONS

- Applicable ROE and/or ROI.
- Potential stability and/or support operations involving contact with civilians (such as NEOs, refugee or disaster assistance, or counterterrorism).
- Potential for media contact/inquiries.

Figure C-1. Examples of potential hazards.

STEP 2 - ASSESS HAZARDS TO DETERMINE RISKS

Hazard assessment is the process of determining the direct impact of each hazard on an operation (in the form of hazardous incidents). Use these steps:

- Determine which hazards can be eliminated or avoided.
- Assess each hazard that cannot be eliminated or avoided to determine the probability that the hazard can occur. This is done using the five degrees of probability: frequent, likely, occasional, seldom, and unlikely. Refer to Table C-1 for a summary of the degrees of probability.
- Assess the severity of hazards that cannot be eliminated or avoided. Severity, defined as the result or outcome of a hazardous incident, is expressed by the degree of injury or illness (including death), loss of or damage to equipment or property, environmental damage, or other mission-impairing factor (such as unfavorable publicity or loss of combat power). Hazard assessment uses four degrees of severity: catastrophic, critical, marginal, or negligible. Table C-2 provides a summary of the degrees of severity for hazards.
- Taking into account both the probability and severity of a hazard, determine the associated risk level (extremely high, high, moderate, and low). The standard risk assessment matrix shown in Table C-3 uses the probability/severity correlation to assign a level of risk. Table C-4 summarizes the four risk levels. (**NOTE:** The risk level descriptions in Table C-4 include alphanumeric designators for the probability/severity correlation. For example, a hazard that is frequent and catastrophic is designated as IA; a hazard at the other end of the risk spectrum, designated IVE, would be unlikely to occur and be of negligible severity.)

Table C-1. Degrees of hazard probability (likelihood that a hazard will affect a tactical operation).

Degree of probability (with frequency criteria) **Affected personnel/item**	**FREQUENT (A)** Occurs continuously or very often	**LIKELY (B)** Occurs several times	**OCCASIONAL (C)** Occurs sporadically	**SELDOM (D)** Remote possibility; could occur at some time	**UNLIKELY (E)** Almost certain not to occur (although not impossible)
Individual item	Occurs very often in service life; expected to occur several times over duration of specific operation	Occurs several times in service life; expected to occur during specific operation	Occurs at some time in service life; as likely as not to occur during specific operation	Occurs in service life, but only remotely possible; not expected to occur during specific operation	Occurrence not impossible, but can be assumed almost never to occur in service life; can be assumed not to occur during specific operation

Fleet or inventory of items	Occurs continuously in service life of during specific operation	Occurs at a high rate, but intermittently (at regular intervals, often, or generally)	Occurs several times in service life	Occurs as isolated incident; possible to occur at some time in service life, but rarely; usually does not occur	Occurs very rarely (almost never or improbable); incidents may occur in service life
Individual soldier	Occurs very often in career; expected to occur several times during specific operation; always occurs	Occurs several times in career; expected to occur during specific operation	Occurs at some time in career; may occur during specific operation, but not often	Occurs as isolated incident in career; remotely possible, but not expected to occur during specific operation	Occurrence not impossible, but can be assumed almost never to occur during specific operation
All soldiers exposed	Occurs continuously during specific operation	Occurs at a high rate, but intermittently	Occurs sporadically (irregularly, sparsely, or sometimes)	Occurs rarely (as isolated incident) within exposed element or population	Occurs very rarely, although not impossible

Table C-2. Degrees of hazard severity.

Degree of severity **Affected unit/ personnel/item**	**CATASTROPHIC (I)**	**CRITICAL (II)**	**MARGINAL (III)**	**NEGLIGIBLE (IV)**
Unit	Total or near-total loss of mission capability; mission failure	Significantly/severely degraded mission capability and/or unit readiness	Degraded mission capability and/or unit readiness	Little or no adverse impact on mission capability

Personnel	Death or permanent total disability; unacceptable casualties	Permanent partial disability; temporary total disability (duration exceeds 3 months	Lost-day injuries or illness (duration does not exceed 3 months)	First aid or other minor medical treatment required
Equipment/ property	Loss of major or mission-critical systems/equipment; major property (facility) damage; severe environmental damage	Extensive (major) damage to systems/ equipment; significant damage to property and environment	Minor damage to systems/equipment, property, and environment	Slight damage to systems/equipment, but they remain functional/serviceable; little or no environmental damage
Collateral damage	Unacceptable collateral damage	Significant collateral damage	Minor collateral damage	Little or no collateral damage

Table C-3. Risk assessment matrix for hazards.

Degree of probability **Degree of severity**	**Frequent (A)**	**Likely (B)**	**Occasional (C)**	**Seldom (D)**	**Unlikely (E)**
Catastrophic (I)	E	E	H	H	M
Critical (II)	E	H	H	M	L
Marginal (III)	H	M	M	L	L
Negligible (IV)	M	L	L	L	L

Legend for levels of risk:

E - extremely high risk H - high risk M - moderate risk L - low risk

NOTE: Refer to Table C-4 for a description of the four levels of risk.

Table C-4. Levels of risk.

Level of risk **Type of effects**	**Extreme high (E)**	**High (H)**	**Moderate (M)**	**Low (L)**

Mission capability	Mission failure if hazardous incidents occur during operation	Significantly degraded mission capability (in terms of not completing mission to standard or not accomplishing all parts of mission) if hazards occur during operation	Degraded mission capability (in terms of not completing mission to standard) if hazards occur during operation	Little or no impact on mission capability
Personnel/property loss	Frequent or likely probability of catastrophic loss (IA or IB); frequent probability of critical loss (IIA)	Occasional to seldom probability of catastrophic loss (IC or ID); likely to occasional probability of critical loss (IIB or IIC); frequent probability of marginal loss (IIIA)	Unlikely probability of catastrophic loss (IE); probability of critical loss is seldom (IID); likely or occasional probability of marginal loss (IIIB or IIIC); frequent probability of negligible loss (IVA)	Unlikely probability of critical loss (IIE); probability of marginal loss is no more than seldom (IIID or IIIE)

STEP 3 - DEVELOP CONTROLS AND MAKE RISK DECISIONS

Developing controls

After assessing each hazard, develop one or more controls that will either eliminate the hazard or reduce the risk (probability and/or severity) of potential hazardous incidents. A list of example controls is included in the discussion of implementing controls (step 4).

Making risk decisions

A key element in the process of making a risk decision is determining whether accepting the risk is justified or, conversely, is unnecessary. The commander must compare and balance the risk against mission expectations. He alone decides if the controls are sufficient and acceptable and whether to accept the resulting residual risk. If he determines the risk is unnecessary, he directs the development of additional controls or alternative controls; as another option, he can modify or reject the selected COA for the operation.

Leaders can use the risk assessment matrix (see Table C-3) in conjunction with the commander's guidance on risk decisions. The matrix can be useful in determining and communicating risk decision authority. When the matrix is used as a guide for risk decision authority, however, it should be tailored to specific mission requirements. For example, the decision authority to accept high residual risk resulting from a hazard assessed as having catastrophic severity and a frequency of seldom may be retained at the highest authority level. On the other hand, the same level of accident risk (high) may be delegated to a lower level when the potential loss is less extensive or less likely.

STEP 4 - IMPLEMENT CONTROLS

Controls are the procedures and considerations the unit uses to deal with an identified hazard. Implementing controls is the most important part of the risk management process; this is the chain of command's contribution to the safety of the unit. Leaders of the company team integrate specific controls into OPLANs, OPORDs, SOPs, and rehearsals. They then ensure that all crewmembers are briefed on and understand the controls.

If the leaders have conducted a thoughtful risk assessment, the controls will be easy to implement, enforce, and follow. Examples of risk management controls include the following:

- Thoroughly brief all aspects of the mission, including related hazards and controls.
- Conduct thorough PCCs and PCIs.
- Allow adequate time for rehearsals at all levels.
- Drink plenty of water, eat well, and get as much sleep as possible (at least 4 hours in any 24-hour period).
- Use buddy teams.
- Enforce speed limits, use of seat belts, and driver safety.
- Establish recognizable visual signals and markers to distinguish maneuvering units.
- Enforce the use of ground guides in assembly areas and on dangerous terrain.
- Establish marked and protected sleeping areas in assembly areas.
- Limit single-vehicle movement.
- Establish SOPs for the integration of new personnel.

STEP 5 - SUPERVISE AND EVALUATE

During mission execution, it is imperative that leaders ensure risk management controls are properly understood and executed. Leaders must continuously evaluate the unit's effectiveness in managing risks to gain insight into areas that need improvement.

Supervision

Leadership and unit discipline are the keys to ensuring that effective risk management controls are implemented. All leaders are responsible for supervising mission rehearsals and execution to ensure standards and controls are enforced. In particular, NCOs must enforce established safety policies as well as controls developed for a specific operation or task. Techniques include spot checks, inspections, SITREPs, confirmation briefs, and buddy checks.

During the mission, leaders must continuously monitor risk management controls, both to determine whether they are effective and to modify them as necessary. Leaders must also anticipate, identify, and assess new hazards. They ensure that imminent danger issues are addressed on the spot and that ongoing planning and execution reflect changes in hazard conditions.

Evaluation

Whenever possible, the risk management process should also include an after-action review to assess the unit's performance in identifying risks and preventing hazardous situations. Leaders should then incorporate lessons learned from the process into unit SOPs and plans for future missions.

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APPENDIX D

Fratricide Prevention

Fratricide is defined as the employment of friendly weapons that results in the unforeseen and unintentional death or injury of friendly personnel or damage to friendly equipment. Fratricide prevention is the commander's responsibility. He is assisted by all leaders across all operating systems in accomplishing this mission.

CONTENTS

Section 1	**The Role of Training**
Section 2	**Effects of Fratricide**
Section 3	**Causes of Fratricide**
Section 4	**Fratricide Risk Assessment**
Section 5	**Fratricide Prevention Techniques**

SECTION 1 - THE ROLE OF TRAINING

The underlying principle of fratricide prevention is simple: Leaders who know where their soldiers are, and where they want them to fire, can keep those soldiers alive to kill the enemy. At the same time, leaders must avoid at all costs any reluctance to employ, integrate, and synchronize all required operating systems at the critical time and place. They must avoid becoming tentative out of fear of fratricide; rather, they strive to eliminate fratricide risk through tough, realistic, combined arms training in which each soldier and unit achieves the set standard.

Training allows units and soldiers to make mistakes, with the goal of reducing or eliminating the risk of errors occurring in combat. A key role of the company team training program is to teach tank and BFV crews what targets to engage and when to engage them. Just as important, crews must learn and practice restraint in what and when to engage; for example, every tank or BFV commander must know that he must confirm the target as hostile before issuing and executing any fire command.

Eliminating the risk of fratricide is no less critical as a training standard than are other mission requirements. All leaders must know all aspects of the applicable training standard, including fratricide prevention, and then ensure their soldiers train to that standard. For a detailed discussion of crew duties and responsibilities in fratricide prevention, refer to FM 17-12-1-1.

SECTION 2 - EFFECTS OF FRATRICIDE

Fratricide results in unacceptable losses and increases the risk of mission failure; it almost always affects the unit's ability to survive and function. Units experiencing fratricide suffer these consequences:

- Loss of confidence in the unit's leadership.
- Increasing self-doubt among leaders.
- Hesitancy in the employment of supporting combat systems.
- Oversupervision of units.
- Hesitancy in the conduct of night operations.
- Loss of aggressiveness in maneuver (fire and movement).
- Loss of initiative.
- Disrupted operations.
- General degradation of unit cohesiveness, morale, and combat power.

SECTION 3 - CAUSES OF FRATRICIDE

The following paragraphs discuss the primary causes of fratricide. Leaders must identify any of the factors that may affect their units and then strive to eliminate or correct them.

Failures in the direct fire control plan

These occur when units do not develop effective fire control plans, particularly in the offense. Units may fail to designate target engagement areas or adhere to target priorities, or they may position their weapons incorrectly. Under such conditions, fire discipline often breaks down upon contact.

The company team can use a number of techniques and procedures to help prevent such incidents. An example is "staking in" vehicle and individual positions in the defense, using pickets to indicate the left and right limits of each position. An area of particular concern is the additional planning that must go into operations requiring close coordination between mounted elements and infantry squads. For example, because of the danger posed by discarding petals, sabot rounds should be fired over friendly infantry elements only in extreme emergencies.

Land navigation failures

Units often stray out of assigned sectors, report wrong locations, and become disoriented. Much less frequently, they employ fire support weapons from the wrong locations. In either type of situation, units that unexpectedly encounter an errant unit may fire their weapons at the friendly force.

Failures in combat identification	Vehicle commanders and gunners cannot accurately identify thermal or optical signatures near the maximum range of their systems. In limited visibility conditions, units within that range may mistake one another for the enemy.
Inadequate control measures	Units may fail to disseminate the minimum necessary maneuver fire control measures and fire support coordination measures; they may also fail to tie control measures to recognizable terrain or events. As the battle develops, the plan then cannot address obvious branches and sequels as they occur. When this happens, synchronization fails.
Failures in reporting and communications	Units at all levels may fail to generate timely, accurate, and complete reports as locations and tactical situations change. This distorts the tactical "picture" available at each level and can lead to erroneous clearance of supporting fires.
Weapons errors	Lapses in individual discipline can result in fratricide. These incidents include charge errors, accidental discharges, mistakes with explosives and hand grenades, and use of incorrect gun data.
Battlefield hazards	A variety of explosive devices and materiel may create danger on the battlefield: unexploded ordnance; unmarked or unrecorded minefields, including scatterable mines; booby traps. Failure to mark, record, remove, or otherwise anticipate these threats will lead to casualties.

SECTION 4 - FRATRICIDE RISK ASSESSMENT

Figure D-1 is a worksheet for evaluating fratricide risk in the context of mission requirements. The worksheet lists six mission-accomplishment factors that affect the risk of fratricide, along with related considerations for each factor. Leaders should assess the potential risk in each area (low, medium, or high) and assign a point value to each (one point for low risk, two for medium risk, three for high risk). They then add the point values to calculate the overall fratricide assessment score.

The resulting score is used only as a guide, however. The leader’s final assessment must be based both on observable risk factors like those on the worksheet and on his "feel" for the intangible factors affecting the operation. Note that descriptive terms are listed only in the low- and high-risk columns of the worksheet. The assessment of each factor will determine whether the risk matches one of these extremes or lies somewhere between them as a medium risk.

SECTION 5 - FRATRICIDE PREVENTION TECHNIQUES

As discussed in Appendix C of this manual, leaders of all units, including the company team, must identify and assess the risks they will face in tactical and training situations. They then must develop and implement controls to limit or, if possible, eliminate the hazards. The five-step risk assessment process outlined in Appendix C is applicable for determining fratricide risk as well. The following list provides examples of fratricide prevention techniques the company team may use:

- Ensure that all soldiers understand the formations and schemes of maneuver employed by adjacent units.
- Keep soldiers calm and confident by ensuring that they clearly understand the friendly and enemy situations.
- Use wingmen to make dual confirmation of enemy sightings prior to engagement; however, avoid becoming too hesitant to fire.
- Implement and enforce the unit's direct fire weapons control status (WEAPONS FREE, WEAPONS HOLD, or WEAPONS TIGHT).
- Whenever the enemy situation is vague, implement a more restrictive weapons control status level, but do not take the initiative away from subordinate elements.
- To prevent battlefield "surprises" when soldiers are fatigued, ensure they receive more, not less, intelligence and operational guidance. Do not, however, oversupervise them or overwhelm them with irrelevant information.
- Take additional steps in offensive and defensive planning and rehearsals to ensure soldiers understand the correct orientation.
- Establish and enforce procedures to clear direct and indirect fires.
- Plan and rehearse actions on contact.

	Potential risk categories (with variable conditions and point values)		
Factors affecting fratricide	**Low risk (1 point)**	**Medium risk (2 points)**	**High risk (3 points)**
UNDERSTANDING OF THE PLAN			
Commander's intent	Clear		Vague
Complexity	Simple		Complex
Enemy situation	Known	———	Unknown
Friendly situation	Clear		Unclear
ROE/ROI	Clear		Unclear
ENVIRONMENTAL FACTORS			

Intervisibility	Favorable		Unfavorable
Obscuration	Clear		Obscured
Battle tempo	Slow		Fast
Positive target identification	100 %		None (0 %)
CONTROL MEASURES			
Command relationships	Organic		Joint/combined
Audio communications	Loud / clear		Jammed
Visual communications	Easily seen		Obscured
Graphics	Standard		Not understood
SOPs	Standard		Not used
Liaison personnel	Proficient		Untrained
Location/navigation	Sure		Unsure
EQUIPMENT (compared to US equipment)			
Friendly	Similar		Different
Enemy	Different		Similar
TRAINING			
Individual proficiency	MOS-qualified		Untrained
Unit proficiency	Trained		Untrained
Rehearsals	Realistic		None
Habitual relationships	Yes		No
Endurance	Alert		Fatigued
PLANNING TIME (based on 1/3 - 2/3 rule)			
Higher headquarters	Adequate		Inadequate
Own unit	Adequate		Inadequate
Subordinate elements	Adequate		Inadequate
Overall risk assessment (by total point value)	**Low risk 26 - 46 points**	**Medium risk 42 - 62 points**	**High risk 58 - 78 points**

NOTE: Point values alone may not accurately reflect fratricide risk. The commander must tailor his assessment to the unit's requirements.

FIGURE D-1. Fratricide risk assessment worksheet.

APPENDIX E

Continuous Operations

US forces execute continuous operations to maintain constant pressure on the enemy without regard to visibility, terrain, and weather conditions. The ability to effectively sustain this pressure is often a key to success on the battlefield. It is also the most difficult challenge that Army units face, placing enormous stress on soldiers, vehicles, and equipment alike. Continuous operations demand that units conduct planning, preparation, and execution activities around the clock while maintaining effective OPSEC at all times.

Numerous factors, which will vary with each situation, influence the actions and requirements of friendly forces during continuous operations. The tempo will range from slow to fast. Some units may remain in constant enemy contact, or under the threat of contact, for several days. Other units will operate in low-threat areas with only a remote possibility of contact. Throughout the area of operations, enemy forces will, at any given moment, be attempting to acquire intelligence information and gain the tactical advantage.

The company team commander must understand the demands of continuous operations under all possible conditions. He must provide his soldiers with the leadership and training they will need to meet the challenges of the battlefield.

CONTENTS

Section 1	**Leadership and Training**
	Leadership Training
Section 2	**Planning and Preparation**
	Readiness and Stand-to Work Plan Rest Plan

SECTION 1 - LEADERSHIP AND TRAINING

Preparation for continuous operations starts prior to combat with leadership and individual training. The following discussion focuses on leadership and training activities the company team commander should initiate within the unit. These will help to reduce the degradation of combat effectiveness that can occur as a natural consequence of continuous operations.

LEADERSHIP

The commander uses his leadership abilities to instill a sense of trust and confidence within the company team. In doing so, he helps his subordinates to develop the skills they need to effectively lead their own elements. Leadership guidelines at all levels of the team include the following:

- **Build and maintain soldier resources.** An essential element of this principle is individual fitness, both physical and mental. Develop and enforce a well-rounded program of physical fitness training. Ensure that soldiers' diets provide balanced nutrition and that they receive proper medical care, including current immunizations. Conduct morale-building activities, such as unit social and athletic functions, and encourage soldiers to take advantage of available leisure time.
- **Maintain high standards.** Demand both personal and professional excellence of all leaders and soldiers in the unit. Lead by example. This helps to create a powerful desire in each soldier to accomplish the mission.
- **Develop individual confidence.** Take a genuine interest in all soldiers in both personal and professional matters. This fosters a "family" atmosphere that builds confidence within each soldier and leads to strong unit cohesion.
- **Develop unit confidence.** Confidence flows from the top down. Bold, audacious, selfless service builds esprit, morale, and commitment to the unit and its mission.

TRAINING

Thoughtfully designed and competently conducted training is the foundation on which the company team commander builds unit success. Guidelines for effective training include the following:

- **Conduct realistic training.** Realism in training situations can help to reduce the stress that soldiers will experience when they face actual combat.
- **Cross-train all critical skills.** Cross-training ensures that the commander will always have soldiers available to perform, or assist with, critical tasks. The more important the task in the company team scheme of maneuver, the higher its priority for cross-training.
- **Make physical fitness a priority.** Soldiers who are physically fit can fight off the effects of fatigue and can recover more quickly from the exhausting labors involved in combat operations.
- **Foster a spirit of the fight.** As with unit confidence, a bold, audacious attitude creates a fight-to-win spirit within the unit, spurring soldiers to do everything needed to accomplish the mission.

SECTION 2 - PLANNING AND PREPARATION

Time management is the key to success in continuous operations. During the planning and preparation phases of an operation, the commander dictates priorities of security, work, and rest. These priorities, in conjunction with REDCON levels, enable the commander to develop his unit's timeline. He then uses troop-leading procedures to outline time requirements and disseminate them to the platoon leaders. (**NOTE:** Refer to Chapter 2 of this manual for a detailed discussion of troop-leading procedures. Appendix M covers OPSEC procedures.)

READINESS AND STAND-TO

Readiness conditions

REDCON levels allow quick responses to changing situations and ensure completion of necessary work and rest plans. The commander uses the REDCON status as a standardized way to adjust the unit's readiness to move and fight. Refer to Figure E-1 for characteristics of the four REDCON levels.

REDCON-1. Full alert; unit ready to move and fight.

- NBC alarms and hot loop equipment stowed; OPs pulled in.
- All personnel alert and mounted on vehicles; weapons manned.
- Engines started.
- Company team is ready to move immediately.

NOTE: A variant of REDCON-1 is REDCON-1.5; the same conditions apply except that the vehicles are not started in REDCON-1.5.

REDCON-2. Full alert; unit ready to fight.

- Equipment stowed (except hot loop and NBC alarms).
- Precombat checks complete.
- All personnel alert and mounted in vehicles; weapons manned.

(**NOTE:** Depending on the tactical situation and orders from the commander, dismounted OPs may remain in place.)

- All (100 percent) digital and FM communications links operational.
- Status reports submitted in accordance with task force SOP.
- Company team is ready to move within 15 minutes of notification.

REDCON-3. Reduced alert.

- Fifty percent of the unit executes work and rest plans.
- Remainder of the unit executes security plan. Based on the

commander's guidance and the enemy situation, some personnel executing the security plan may execute portions of the work plan.

- Company team is ready to move within 30 minutes of notification.

REDCON-4. Minimum alert.

- OPs manned; one soldier per platoon designated to monitor radio and man turret weapons.
- Digital and FM links with task force and other company teams maintained.
- Company team is ready to move within one hour of notification.

Figure E-1. REDCON levels.

Stand-to Stand-to encompasses all actions taken to bring the company team to a maximum state of preparedness. Times for stand-to are derived from the task force commander's OPORD. Unit SOP should specify stand-to requirements, which will usually include procedures for sending and receiving reports, use of accountability checks for personnel and equipment, and criteria for assuming REDCON levels 1 and 2. (**NOTE:** Stand-to procedures for digitized units include the updating of POSNAV systems, IVIS synchronization, and completion of log-on for SINCGARS radios.)

WORK PLAN

The work plan enables subordinate leaders and soldiers to focus their efforts in preparing vehicles, equipment, and themselves for operations. Refer to Chapter 2 of this manual for a detailed company team timeline for troop-leading procedures and the associated preparations and priorities of work.

REST PLAN

The rest plan allows some soldiers to sleep while other crewmen conduct priorities of work and maintain security. To be effective in sustained combat, a soldier should get a minimum of 4 hours of uninterrupted sleep every 24 hours. Less than 4 hours of sleep can significantly degrade combat performance.

Planning and decision-making are among the skills that suffer most dramatically when soldiers cannot get enough sleep. The commander must ensure that subordinate leaders either have rest plans of their own or are following his rest plan as directed.

The company team SOP must provide for an adequate division of duties to allow leaders to get sleep. This may require key leaders to share duties. When soldiers are tired, confirmation briefings become critical whenever orders are issued, even for the simplest task.

APPENDIX F

Limited Visibility Operations

The company team may conduct limited visibility operations to accomplish the following purposes:

- Achieve surprise.
- Gain positions of advantage by means of stealth.
- Exploit success and maintain momentum.

Darkness obviously has the most dramatic effect on the ability of soldiers to see the battlefield, but there are other conditions that restrict visibility as well:

- Weather conditions, including rain, snow, fog, and sandstorms.
- Dust.
- Smoke.
- Obscuration factors caused by weapons firing and movement of soldiers and equipment.

If it is to use its superior technology and basic combat skills to sustain continuous operations and destroy the enemy, the company team must train to fight effectively in all types of visibility conditions. The team should first master the execution of tasks under optimum visibility conditions and then continue its training in progressively more difficult situations.

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Section 1	**Equipment**
	Command and Control and Leader Systems Vehicle Systems Crew-served System Sights Individual Equipment Visible and Nonvisible Lignt Control
Section 2	**Navigation**
Section 3	**Vehicle Identification**
Section 4	**Tactical Movement and Attack**
	Planning Preparation Execution
Section 5	**Limited Visibility Defense**

Planning
Preparation
Execution

SECTION 1 - EQUIPMENT

The company team is equipped with a variety of equipment, described in the following paragraphs, that enhances its ability to operate under limited visibility conditions.

COMMAND AND CONTROL AND LEADER SYSTEMS

The following devices are available to the company team's leaders for use in signaling and target designation:

- IR signaling devices. These generate an IR light source that is visible through passive sights; they can be used for marking a variety of locations, such as TRPs, passage points, sectors of fire, obstacles, checkpoints, and routes.
- IR pointers or IR laser designators. Infantry platoon leaders and squad leaders can use these to designate targets, allowing them to focus fires more effectively and enhancing their command and control capability. These systems project IR light onto the target and are visible in passive sights.

VEHICLE SYSTEMS

Vehicles organic to the company team are equipped with the following devices applicable to limited visibility operations:

- Driver's night vision viewer (AN/VVS-2 passive sight). This system may soon be replaced by a driver's thermal viewer.
- Gunner's primary sight, commander's extension, and ISU thermal sights.
- CITVs on the M1A2 and M2A3/M3A3.

CREW-SERVED SYSTEM SIGHTS

Several of the company team's organic systems are equipped with sights that allow them to be used effectively in limited visibility conditions. These crew-served systems include the following:

- M2 HB machine gun AN/TVS-5 (thermal sight heavy).
- M60 machine gun AN/TVS-4 (thermal sight medium).
- M249 SAW thermal sight medium.
- GSR AN/UAS-11 thermal sight.
- Antitank missile AN/UAS-12 thermal sight.

Table F-1 lists the comparative characteristics, capabilities, and limitations of passive and thermal sight systems.

Table F-1. Comparison of passive and thermal sights.

PASSIVE SIGHTS	THERMAL SIGHTS
Limited by amount of available light.	Not affected by light conditions.
Can be "washed out" by bright flashes of light.	Not affected by flashes of light.
Narrow field of view.	Choice of wide or narrow field of view.
Poor depth perception.	Poor depth perception.
Excellent capability for identifying sources of light, including IR.	Unable to detect sources of light.
Adverse weather conditions limit the range of the sight and may render it useless.	Adverse weather conditions limit the range of the sight. On the other hand, the target acquisition capability of the sight may exceed the capability of the LRF to receive a return and compute an automatic ballistic solution.

INDIVIDUAL EQUIPMENT

The following equipment used by individual crewmen enhances the company team's limited visibility capability:

- PVS-7 and PVS-7B passive vision devices.
- AN/PVS-4 (passive vision device for the M16A2).
- Aiming lights for infantrymen's individual weapons.

VISIBLE AND NONVISIBLE LIGHT CONTROL

On the battlefield of the future, it is highly likely that any significant enemy will have access to various types of night vision devices. Obviously, the enemy will use these devices any way he can to gain the advantage. There is a related problem as well. If used improperly by friendly soldiers, aiming lights, laser pointers, and IR illumination not only will be of no tactical advantage, but may also give away the locations of friendly forces to an enemy element with night vision capability.

Commanders must establish positive controls over the use of such devices, establishing and enforcing unit SOPs at all levels. As an example, the use of mortar-fired illumination rounds, both visible and nonvisible (IR), should be controlled centrally because of the effects that the illumination may have on units adjacent to one calling for the rounds. Smaller IR illumination rounds, such as those fired from a grenade launcher, should be controlled at platoon or squad level. Visible and nonvisible chemical lights can be very helpful on the battlefield if employment is standardized and carefully controlled. Otherwise, use of chem lights can be counterproductive, even giving away friendly positions.

SECTION 2 - NAVIGATION

The commander uses several tools and techniques to help him navigate in limited visibility conditions: the GPS and/or POSNAV, terrain association, and the compass and odometer method. When they are fired to create a ground-burst effect, artillery or mortar illumination rounds can be helpful in confirming locations.

SECTION 3 - VEHICLE IDENTIFICATION

The problem of vehicle identification is compounded in limited visibility conditions. Vehicle commanders must be able to distinguish the vehicles of the company team and of other friendly elements from those of the enemy. Most unit SOPs cover vehicle marking and identification procedures. In addition, the commander may elect to use the following techniques to enhance command and control and to help prevent fratricide:

- Attach color-coded lights or chemical lights to the rear of the turret or hull.
- Replace the brake light cover with color-coded plastic (such as green, blue, or yellow).
- Use luminous or thermal tape to "outline" vehicles or to mark battle boards.
- Use radio and digital systems to provide the commander with frequent updates of friendly unit locations.

SECTION 4 - TACTICAL MOVEMENT

The fundamentals for executing tactical movement and attacks discussed elsewhere in this manual are applicable during periods of limited visibility. The following paragraphs cover additional considerations for the planning, preparation, and execution of these operations when visibility is restricted.

PLANNING

The commander and subordinate leaders must pay particular attention to routes, formations, and navigational aids. They must conduct a thorough route reconnaissance to identify locations where the unit could become disoriented. This reconnaissance must also focus on finding rough or restricted terrain that will be more difficult to negotiate in limited visibility. Such terrain may require a change in formation or movement technique or employment of dismounted ground guides.

PREPARATION

The commander conducts rehearsals in as many types of adverse conditions as possible to prepare the company team for potential command and control problems. He must stress light discipline. During the PCI, he should view each vehicle using a passive sight to ensure that sources of light have been dimmed or covered so they are not visible. During confirmation briefings and rehearsals, the commander must ensure that all leaders understand the unit's projected actions during each phase of the operation. One technique is to designate waypoints or phase lines as trigger points for the company team's actions.

EXECUTION

The company team commander and subordinate leaders must assume that the enemy possesses the same limited visibility observation capabilities as their own unit. Vehicle commanders use the PVS-7 and CITV (as applicable) to assist their drivers with navigation and to enhance situational awareness. Use of terrain to mask movement and deployment remains critical since limited visibility may create a false sense of protection from observation. During movement, the distance between vehicles is reduced to allow them to observe each other and to decrease the time necessary to react to enemy contact.

When the company team encounters enemy elements, an effective technique is to have the vehicle that makes contact fire a steady burst of machine gun fire in the direction of the enemy to orient the rest of the team. The team must adhere strictly to applicable control measures, especially those covering the employment of direct fires.

SECTION 5 - LIMITED VISIBILITY DEFENSE

The defensive fundamentals covered in this manual are applicable in limited visibility situations; the following paragraphs outline additional considerations for planning, preparation, and execution of the defense in limited visibility.

PLANNING

The company team commander and subordinate leaders conduct a thorough reconnaissance, usually during daylight hours, to mark positions and routes. They must keep in mind that obscurants that limit visibility may also degrade the effectiveness of their thermal sights and LRFs. This may force them to designate alternate BPs that are closer to the company team's engagement area(s). In marking their positions, they use material that will facilitate occupation either in daylight or under limited visibility conditions.

PREPARATION

The commander ensures that trigger lines, TRPs, and artillery targets are "thermalized" to allow for positive identification during limited visibility. Examples of how to mark TRPs are shown in Chapter 2. Used with a sector sketch during direct fire engagements, thermalized TRPs also help vehicle commanders to more accurately estimate the range to their targets when smoke or other factors inhibit the use of the LRF. Ideally, rehearsals of occupation and displacement are conducted in limited visibility conditions; the same applies to preparation and occupation of fighting positions and to any necessary repositioning.

OPSEC is strictly enforced during all phases of defensive preparation. OPs are critical in providing security and early warning of enemy activities. The commander emplaces mounted OPs to take advantage of the capabilities of his vehicles' thermal sights in scanning the team's assigned sector and the engagement area. Dismounted OPs provide local security and augment mounted OPs with short-range observation and the ability to act as listening posts.

EXECUTION

As the company team enters the execution phase, the commander must ensure that all leaders thoroughly understand the occupation and displacement criteria and that they strictly enforce all fire control measures. Vehicle commanders use sketch cards and the CITV (if applicable) to estimate target range when visibility factors prevent use of the LRF.

APPENDIX G

Nuclear, Biological, Chemical, and Smoke Operations

Because many potential adversaries have the capability to employ nuclear, biological, and chemical weapons, the company team must prepare to fight in an NBC environment, as well as to collect, process, and disseminate NBC hazard information. To survive and remain effective on the battlefield, the team must be proficient in the three fundamentals of NBC defense: contamination avoidance, NBC protection, and decontamination. The company team NBC NCO conducts NBC training and assists and advises the commander in planning NBC operations. Additional-duty NBC personnel, designated in the team SOP, serve as crewmen for platoon NBC vehicles, as the decontamination team, and as chemical agent detection and radiological survey/monitoring teams. Refer to FM 3-3, FM 3-3-1, FM 3-4, and FM 3-5 for additional information on NBC operations.

Smoke is used extensively by enemy and friendly elements in both offensive and defensive operations. The company team's success on the battlefield may depend on how well the commander understand the effects of smoke on enemy and friendly acquisition systems in various weather conditions.

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Section 1	**Contamination Avoidance**
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	Planning Considerations for Smoke Employment Uses of Smoke Sources of Smoke Tactical Considerations in Smoke Operations Countermeasures Against Enemy Smoke

SECTION 1 - CONTAMINATION AVOIDANCE

Avoidance is the most important fundamental of NBC defense because the best way to survive is to avoid being the object of a chemical or nuclear attack. Avoiding contaminated areas minimizes the risk of additional casualties; it also prevents the degradation of combat power that results when a unit must operate in MOPP level 3 or 4 for extended periods of time. In addition, the unit is not required to spend the time and resources needed for decontamination. Contamination avoidance measures include using passive avoidance techniques, locating contaminated areas, identifying NBC agents, warning other members of the company team as well as other units, and reporting NBC threats to higher headquarters.

GENERAL AVOIDANCE MEASURES

Passive avoidance

Passive avoidance measures can decrease the possibility of NBC attack or reduce the effects of an attack already under way. Effective use of concealment, dispersion, prepared positions, OPSEC, and signal security reduces the company team's chances of being acquired as a target. The team should continually analyze its vulnerability to NBC attack and take appropriate protective measures.

Detection, alarms, and reporting

Attacks and contamination must be detected quickly and reported to adjacent units and higher headquarters. The company team must have an effective method of quickly giving the alarm in the event of an NBC attack. Alarms can be passed by radio, audible signals, or hand-and-arm signals. Company team SOPs should specify criteria for increasing or reducing the MOPP level; they should also cover procedures for the marking of vehicles and MOPP suits with detection paper, for employing detection teams, and for submitting the required NBC reports following an NBC attack or when contamination is encountered.

Reconnaissance and evaluation

Whenever possible, all movement routes and future positions should be reconnoitered for nuclear and chemical contamination. Quartering party personnel should be prepared to conduct monitoring operations; if they detect contaminated areas, they identify, report, and mark them. The quartering party can then evaluate the location and type of hazard (nuclear radiation or chemical agent) to determine the best plan for bypassing, crossing, or operating in the contaminated area. Based on the situation, the company team commander must be able to implement protective measures specified in the SOP to minimize personnel losses and limit the spread of contamination.

BIOLOGICAL DEFENSE

The key protective measure against a biological attack is maintaining a high order of health, personal hygiene, and sanitation discipline. Biological attacks are difficult to detect. If an attack occurs, the chances of survival are better if personnel are healthy and physically fit and maintain good personal hygiene. Keeping the body clean helps to prevent ingestion of biological agents. Small cuts or scratches should be covered and kept germ-free by means of soap, water, and first-aid measures. Since insects may carry biological agents, soldiers should prevent insect bites by keeping clothes buttoned and skin covered and by using approved insect repellents. The biological integrated detection system (BIDS) is a corps- or division-level asset that can detect and identify biological agents.

After an attack, the company team must assume that all surfaces have been exposed to germs. Do not eat food or drink water that may be contaminated. Eat or drink only food or water that has been stored in sealed containers; consume it only after washing and cleaning the outside of the container. All water must be boiled for at least 15 minutes.

DEFENSE BEFORE A NUCLEAR ATTACK

The best defense against a nuclear attack is to dig in. Unit defensive positions, which range from individual foxholes to full-scale improved fighting positions, should be prepared whenever the tactical situation permits. Personnel should keep their individual weapons, equipment, clothing, and other issue items in their vehicles. Inside the vehicle, equipment and any loose items must be secured because the blast wave can turn unsecured objects into lethal missiles. Supplies, explosives, and flammable materials should be dispersed and protected.

Reverse slopes of hills and mountains give some nuclear protection. The initial radiation and the heat and light from the fireball of a nuclear blast tend to be absorbed by hills and mountains. The use of gullies, ravines, ditches, natural depressions, fallen trees, and caves can also reduce nuclear casualties.

DEFENSE BEFORE A CHEMICAL ATTACK

Attack preparations

The company team commander and subordinate leaders must ensure that all personnel have their protective masks available and must make sure each mask fits and functions properly. The team commander will determine the appropriate MOPP level based on the higher headquarters' designated MOPP level and IPB information; he cannot reduce the MOPP level below that directed by higher headquarters. All personnel should wear the proper protective clothing in accordance with the MOPP level designated by the commander. The commander may consider having vehicle drivers begin offensive operations in MOPP 4 when it is likely that the enemy will use chemical or biological weapons; this will allow the unit to continue to move while the rest of the crew goes to MOPP 4. All equipment and supplies should be protected from liquid chemical contamination by keeping them organized and covered.

Chemical alarms

The M8A1 automatic chemical agent alarm system is the primary means of detecting an upwind chemical attack. The system provides two essential elements of survival: detection of a toxic agent cloud and early warning to troops in the monitored position.

The company team commander, in coordination with the NBC NCO and subordinate leaders, decides where to place the chemical alarms. In stationary operations, first determine the wind direction. Then place available detector units upwind of the nearest unit position to be protected; detector units should be no more than 150 meters upwind of that unit position. Space available detector units approximately 300 meters apart, and make sure each detector unit is connected to an alarm unit by telephone cable (NB-1). Position the alarm units near radiotelephone assets; this makes it easy to alert the unit to an attack. Operation of the alarm can be affected by blowing sand or dust, rain, sleet, snow, tropical conditions, and temperatures below 40 degrees Fahrenheit (4.5 degrees Celsius).

SECTION 2 - NBC PROTECTION

Soldiers on the integrated battlefield face a combination of nuclear, biological, chemical, and conventional attacks. If the company team cannot avoid an NBC hazard, it must be prepared to protect personnel and equipment from the effects of exposure. The type and degree of protection required is based on the unit's mission and the hazard. Note that the line between contamination avoidance and protection is not distinct. Many actions contribute to both areas of NBC defense.

MOPP LEVELS AND SOP REQUIREMENTS

The key to effective protection in an NBC environment is the company team's proficiency in automatically and correctly implementing NBC defense SOPs. Individual and unit protection against chemical attack or contamination hinges on effective use of the MOPP and on individual proficiency in basic NBC skills. The five levels of MOPP, shown with corresponding equipment requirements in Table G-1, should also be outlined in the SOP.

Table G-1. MOPP levels and equipment requirements.

MOPP level Equipment	MOPP READY	MOPP 0 (ZERO)	MOPP 1	MOPP 2	MOPP 3	MOPP 4	Command (mask only)
Mask	Carried	Carried	Carried	Carried	Worn [1]	Worn	Worn
Overgarment	Ready [3]	Available [4]	Worn [1]	Worn [1]	Worn [1]	Worn	
Vinyl overboots	Ready [3]	Available [4]	Available [4]	Worn	Worn	Worn	
Gloves	Ready [3]	Available [4]	Available [4]	Available [4]	Available [4]	Worn	
Helmet protective cover	Ready [3]	Available [4]	Available [4]	Worn	Worn	Worn	
Chemical protective undergarment [2]	Ready [3]	Available [4]	Worn [2]	Worn [2]	Worn [2]	Worn [2]	

1. In hot weather, coat or hood can be left open for ventilation.
2. The chemical protective undergarment is worn under the BDU (this primarily applies to armor vehicle crewmen and special operations forces).
3. These items must be available to the soldier within two hours, with a second set available within six hours.
4. These items must be positioned within arm's reach of the soldier.

ALARMS AND SIGNALS

When an NBC attack is recognized, everyone in the company team must receive the warning and assume the appropriate MOPP level (see Table G-1). Soldiers in immediate danger need warnings they can see or hear. The alarm or signal must be simple and unmistakable if it is to produce a quick and correct reaction. Units that are not immediately affected need the information as well, either to prepare for the hazard or to change plans.

If an NBC hazard is located, the contaminated area should be marked. The NBC warning and reporting system (NBCWRS) and standardized contamination markers contribute to orderly warning procedures. Warning methods include automatic alarms (M8 series), vocal alarms (a shout of "GAS" is the most frequently used alarm), nonvocal alarms (horn blasts or banging of metal-to-metal objects), and visual alarms, most commonly the appropriate hand-and-arm signals.

DEFENSE DURING A NUCLEAR ATTACK

Dismounted defense

Immediately drop flat on the ground (face down) or to the bottom of a foxhole or other low area, with head toward the blast. Cover as much exposed skin as possible. Close your eyes. Remain down until the blast wave has passed and debris has stopped falling. Stay calm, check for injury, check weapons and equipment for damage, and prepare to continue the mission.

Mounted defense

As time permits, take the following actions:

- Position the vehicle with the rear facing the blast and the gun pointed away from the blast.
- Lock the brakes.
- Secure loose equipment inside the vehicle to prevent injuries and equipment damage.
- Secure all exterior components that could be damaged by the blast (such as water cans, duffel bags, and antennas) inside the vehicle.
- Turn off all radios as well as turret and master power.
- Close and lock all hatches, including ballistic shields.
- Wear your helmet and protect your eyes.
- Stow the CITV (M1A2) or TOW (BFV).

DEFENSE AFTER A NUCLEAR ATTACK

General actions

Once the attack has ended, the company team and subordinate elements should be prepared to take these actions:

- Prepare and submit NBC-1 nuclear reports.
- Organize survivors; assist and treat casualties.
- Secure and organize equipment.
- Repair and reinforce the BP.
- Improve protection against possible fallout.
- Begin continuous monitoring.
- Prepare to move, on order, to a less hazardous area if the radiation dose rate reaches a hazardous level after fallout has ended.

Operating in the contaminated area

When operating in or crossing radiologically contaminated areas, vehicles should be closed tightly. Crewmen should wear their protective masks; cargoes should be covered by tarps or tenting. Mission permitting, vehicles should keep their speed down to prevent dust and should maintain adequate following distance to stay out of the dust raised by preceding vehicles.

After the unit exits a contaminated area, personnel, equipment, and cargo should be checked for contamination and, if necessary, decontaminated. Dose rates should be monitored closely to ensure compliance with the OEG. The RES should be updated daily.

Fallout warning

The first person to detect the arrival of fallout is usually a member of the radiological survey and monitoring team. As soon as the recorded dose rate reaches 1 cGy/hr (or rad per hour) or higher, he issues a fallout warning. All personnel hearing the warning relay it to others. If the mission allows, soldiers should get into a shelter with overhead cover and stay there until given an "ALL CLEAR" signal or until otherwise directed to move. If the unit cannot take cover, decontamination becomes more important and, in many cases, more difficult.

Radiological monitoring

The company team commander designates a point in the team area where readings will be taken and notes the grid coordinates of the point. He directs the monitor operator to take readings at least once each hour from this point; he makes sure the operator zeroes or resets the radiacmeter before taking each reading and uses the device properly. The operator must immediately report all readings showing the presence of radiation, as well as the time of these readings. The NBC NCO, in coordination with the commander, uses this information and the location of the readings to prepare an NBC-4 report. The operator monitors continuously if any of the following conditions occur:

- A reading of 1 cGy/hr or more is obtained.
- A fallout warning is received.
- A nuclear burst is seen, heard, or reported.
- An order to monitor is received.
- The unit begins to move.

Continuous monitoring continues until readings show a dose rate of less than 1 cGy/hr or until operators are directed to stop.

Tactical dosimetry

The company team will normally be issued eight dosimeters (either IM-93 or DT-236 radiacmeters). Before the operation begins, the commander ensures that all dosimeters are zeroed (this applies to the IM-93 only). The AN/VDR-75 reads the DT-236; the PP-1578 zeroes the IM-93. The following considerations and procedures apply in conducting dosimetry:

- If a charger for the IM-93 is not available, note the original reading on the dosimeter and adjust subsequent readings accordingly.
- Make sure survey readings are reported accurately.
- Collect readings at least once daily.
- Average the readings, round to the nearest 10, and report this average to higher headquarters.

DEFENSE DURING A CHEMICAL ATTACK

The first soldier or element to detect a chemical attack or hazard gives the appropriate alarm. All unmasked soldiers put on their protective masks and other MOPP gear. All personnel should move inside their vehicles; in most cases, they should place their hatches in the closed position to protect against gross contamination. Crews of vehicles that are equipped with NBC overpressurization turn the system on. The commander directs use of the M256 chemical agent detector kits to determine the type of agent and forwards an NBC-1 chemical report. The company team continues the mission when the appropriate defensive measures are completed.

> **NOTE:** Tactical and safety factors (such as observation of the terrain, enemy disposition, and the amount of gross contamination that may be spread inside the vehicle) may outweigh the need to keep the vehicle's hatches closed. In addition, unit SOP may require vehicle commanders to keep hatches in the open or open-protected position.

DEFENSE AFTER A CHEMICAL ATTACK

As specified by unit SOPs, the commander forwards follow-up NBC-1 chemical reports and directs these actions:

- Treat casualties.
- Perform immediate decontamination as required.
- Mark the contaminated area.

BIOLOGICAL AND CHEMICAL CASUALTIES

Potential adversaries may have access to a wide variety of biological and chemical toxins on the modern battlefield. These agents can be dispensed alone or with other carriers or agents. Casualties resulting from live biological agents or chemical toxins require medical treatment as quickly as possible.

The first step in the treatment process is usually appropriate self-aid and buddy-aid measures. These vary depending on the agent. Soldiers should first mask to prevent inhaling or ingesting additional agents; then they should remove agents from exposed skin, either by washing with soap and water or by using the M291 kit. Soldiers use buddy-aid procedures to observe each other for early symptoms of toxic exposure and to request medical assistance.

The company team commander should select separate casualty collection points for contaminated and noncontaminated casualties to prevent cross-contamination. All contaminated casualties should be decontaminated as thoroughly as the situation allows before being evacuated. The company team will include in its casualty evacuation request the number of contaminated patients; this will allow the evacuation team to send the proper number of vehicles for pickup.

Chemical agents fall into four major categories: nerve, blister, blood, and choking. Their primary routes of attack on the body are through the respiratory system and the skin. These agents are especially dangerous because they can kill or incapacitate quickly. The first, and most important, step in dealing with them effectively is to recognize symptoms so proper treatment can be administered. Table G-2 lists protection and detection measures, symptoms, and treatment and decontamination procedures for chemical agents.

Table G-2. Chemical agents.

AGENT TYPE	NERVE	BLISTER	BLOOD	CHOKING
Protection	Protective mask and suit	Protective mask and suit	Protective mask	Protective mask
Detection	M8A1, M256A1, CAM, M8/M9 paper	M256A1, M8/M9 paper, CAM	M256A1	Odor only (resembles new-mown hay or green corn)
Symptoms	Difficult breathing, drooling, nausea, vomiting, convulsions, blurred vision	Burning eyes, stinging skin, irritated nose (no symptoms with mustard or nitrogen mustard)	Convulsions and coma	Coughing, choking, nausea, headache, tightness in chest
Effects	Incapacitates	Blisters skin and damages respiratory tract	Incapacitates	Floods and damages lungs
First aid	Mark 1 NAAK	Same as for second- and third-degree burns	NONE	Avoid movement and keep warm

Decontamination	Use M291 kit and flush eyes with water	Use M291 kit and flush eyes with water	NONE	NONE

MARKING CONTAMINATION

Contamination must be marked so unsuspecting personnel will not be exposed to it. When company team monitoring assets detect or suspect an NBC hazard, they mark all likely entry points into the area and report contamination to higher headquarters and to adjacent and/or affected units. The only exception to this policy is if marking the area would help the enemy. If this exception is made by the commander, the hazard must still be reported to protect friendly units. Refer to FM 3-3 for information on marking of contaminated areas.

Units discovering a marked contaminated area do not have to conduct elaborate, time-consuming surveys. They simply check the extent of contamination and use the information to adjust their plans, if necessary. If the size of the hazard has changed, they relocate the signs. If the hazard is gone, they remove the signs. Changes are reported to higher headquarters.

UNMASKING PROCEDURES

Soldiers should unmask as soon as possible except when a live biological or toxin attack is expected. Use the procedures outlined in the following paragraphs to determine if unmasking is safe.

Unmasking with M256/M256A1 detector kit

If an M256/M256A1 detector kit is available, use it to supplement unmasking procedures. The kit does not detect all agents; therefore, proper unmasking procedures, which take approximately 15 minutes, must still be used. If all tests with the kit (including a check for liquid contamination using M8 detector paper) have been performed and the results are negative, use the following procedures:

- The senior person should select one or two soldiers to start the unmasking procedures. If possible, they move to a shady place; bright, direct sunlight can cause pupils in the eyes to constrict, giving a false symptom.
- Selected soldiers unmask for 5 minutes, then clear and reseal masks.
- Observe the soldiers for 10 minutes. If no symptoms appear, request permission from higher headquarters to signal "ALL CLEAR."
- Watch all soldiers for possible delayed symptoms. Always have first-aid treatment immediately available in case it is needed.

Unmasking without M256/M256A1 detector kit

If an M256/M256A1 kit is not available, the unmasking procedures take approximately 35 minutes. When a reasonable amount of time has passed after the attack, find a shady area; use M8 paper to check the area for possible liquid contamination. Conduct unmasking using these procedures:

- The senior person selects one or two soldiers. They take a deep breath and break their mask seals, keeping their eyes wide open.
- After 15 seconds, the soldiers clear and reseal their masks. Observe them for 10 minutes.
- If no symptoms appear, the same soldiers break seals, take two or three breaths, and clear and reseal masks. Observe them for 10 minutes.
- If no symptoms appear, the same soldiers unmask for 5 minutes, then remask.
- If no symptoms appear in 10 minutes, request permission from higher headquarters to signal "ALL CLEAR." Continue to observe all soldiers in case delayed symptoms develop.

ALL-CLEAR SIGNAL

The all-clear signal is passed by word of mouth through the chain of command. It is initiated by higher headquarters after testing for contamination proves negative. The commander designates the specific all-clear signal and includes it in the unit SOP or the OPORD. If required, standard sound signals may be used, such as a continuous, sustained blast on a siren, vehicle horn, or similar device. When "ALL CLEAR" is announced on the radio, the receiving unit must authenticate the transmission before complying.

WARNING AND REPORTING SYSTEMS

The NBCWRS is a rapid means of sending reports of an NBC attack. These reports inform other affected units of clean areas and possible contamination. They are also used to provide this information up and down the chain of command and to adjacent units. Each report has a specific purpose and uses standard codes to shorten and simplify the reporting process.

SECTION 3 - MOVEMENT IN AN NBC ENVIRONMENT

As with other combat elements, one of the basic tactical requirements for the company team is to be able to move through and operate in a contaminated area. To do so safely, the team should follow the procedures outlined in this section.

CROSSING A CHEMICALLY/BIOLOGICALLY CONTAMINATED AREA

Once a contaminated area has been identified, all company team elements must make preparations for crossing. While part of each element (such as a section or squad) provides security, other soldiers and vehicles in the element, positioned in a covered and concealed location, take the necessary steps. For example, vehicle crews remove all externally stored equipment, ensure mounted M8A1 alarms are functioning, affix M9 detector paper to vehicles, assume MOPP 4, and/or prepare the vehicle overpressurization system (as available and if METT-TC factors

permit). Dismounted elements assume MOPP 4 and assist the crews of the vehicles on which they ride. Once the necessary preparations are completed, vehicles move into overwatch positions; the rest of the company team's vehicles then move to covered and concealed positions and follow the same procedures.

When all elements have been prepared, the company team uses standard tactical movement techniques (such as bounding overwatch) to cross the contaminated area. During this movement, vehicle crews continuously monitor the M8A1 and the M9 paper. Drivers and vehicle commanders must take precautions to avoid low ground, overhanging branches, and brushy areas as much as possible. While the unit is in the contaminated area, all personnel observe each other for signs of chemical poisoning.

Once the company team has successfully crossed the contaminated area, it halts temporarily. During the halt, detection teams monitor for the presence of chemical agents. As needed, vehicle crews and individual soldiers execute immediate decontamination. With higher headquarters' approval, they initiate unmasking procedures or request support for operational or thorough decontamination. Once these procedures are complete, the team continues its mission.

CROSSING A RADIOLOGICALLY CONTAMINATED AREA

The procedures involved in crossing a radiologically contaminated area are similar to those for a chemically or biologically contaminated area, with the following additional considerations:

- **Vehicle preparation.** Crews may store external equipment in the vehicle or cover it with a tarp. This prevents contaminated dust particles from accumulating on the equipment. Place wet sandbags or other materials on the vehicle floor to increase the amount of radiation shielding. When available, turn on the turret overpressure system to protect the crew compartment from contaminated dust.
- **Movement.** Vehicles should limit their speed to minimize dust. In addition, they must maintain the correct dust interval.
- **Monitoring.** Ensure that dosimeters (IM-93 and DT-236) are zeroed and/or operational (as applicable). Conduct continuous monitoring, ensuring that the unit does not exceed the commander's OEG.
- **Decontamination.** During decontamination, each soldier should cover his nose and mouth with a handkerchief or cloth to avoid breathing contaminated dust particles.

SECTION 4 - DECONTAMINATION

TYPES OF CONTAMINATION

Nonpersistent agents

Nonpersistent contamination generally does not require decontamination; however, the duration and effectiveness of the chemical or biological agent employed will depend on a series of factors, including the following:

- Type of contamination.
- Temperature.
- Wind speed.
- Amount of sunlight.
- Humidity and precipitation.
- Density and droplet size of the contaminant.
- Composition of the contaminated surface and/or type of soil/terrain.

Persistent agents

During continuous operations in areas of persistent chemical or biological contamination, decontamination is essential in preventing casualties and severe combat degradation. The company team will gain maximum benefit from the available time and decontamination resources by observing these considerations:

- The company team should begin decontamination as soon as possible and as far forward as possible.
- Decontamination should be conducted only to the extent that is necessary to ensure the team’s safety and operational readiness.
- Decontamination priorities should be strictly observed to ensure unit safety and mission accomplishment.

LEVELS OF DECONTAMINATION OPERATIONS

The principles listed for decontamination involving persistent agents are consistent with doctrine that places the burden of decontamination at the task force level. Nonetheless, the company team must develop a thorough SOP, covering decontamination methods and priorities, that will allow it to use all available assets efficiently and as required.

The remainder of this section provides a detailed discussion of the levels of decontamination activities in which the company team may be involved. Refer to FM 3-5 for a more detailed explanation of NBC decontamination procedures.

Immediate decontamination

Immediate decontamination is a basic soldier survival skill carried out by soldiers as soon as possible after they discover they are contaminated. Its basic purposes are to minimize casualties, save lives, and limit the further spread of contamination. Any contact between chemical or toxic agents and bare skin should be treated as an emergency. Some agents can kill if they remain on the skin for longer than a minute. The best technique for removing or neutralizing these agents is to use the M291 skin decontamination kit. Leaders must ensure that their soldiers are trained to execute this technique automatically, without waiting for orders.

Personal wipedown should begin within 15 minutes of contamination. The wipedown removes or neutralizes contamination on the hood, mask, gloves, and personal weapon. For chemical and biological contamination, soldiers use mitts from the M295 individual equipment decontamination kit (IEDK). For radiological contamination, they wipe off the contamination with a cloth or simply brush or shake it away.

Operator's spraydown of equipment should begin immediately after completion of personal wipedown. The spraydown removes or neutralizes contamination on the surfaces operators must touch frequently to perform their mission. For chemical and biological contamination, operators can use on-board decontamination apparatuses, like the M11/M13, or the M295 IEDK to decontaminate surfaces to which DS2 cannot be applied. (**NOTE:** DS2 must be washed off surfaces no more than 30 minutes after application. If necessary, use 5-gallon water cans or other water sources to assist in removing DS2.) For radiological contamination, they brush or scrape away the contamination with whatever is at hand or flush it with water and wipe it away.

Operational decontamination

Operational decontamination allows a force to continue fighting and sustain momentum after being contaminated. It limits the hazard of transferring contamination by removing most of the gross contamination on equipment and nearly all the contamination on individual soldiers. This speeds the weathering process and allows clean areas (people, equipment, and terrain) to stay clean. Following operational decontamination, soldiers who have removed sources of vapor contamination from their clothing and equipment can use hazard-free areas to unmask temporarily and eat, drink, and rest.

The two types of operational decontamination, unsupported and supported, are covered in the following discussion. Refer to FM 3-5 for a complete discussion of operational decontamination. Table G-3 provides an operational decon checklist.

Unsupported (assistance from the task force only)

The company team uses its own resources, with personnel assistance from the task force, to conduct this type of operational decontamination. The procedure involves two decontamination techniques: vehicle washdown and MOPP gear exchange.

Vehicle washdown is conducted as far forward as possible with the assistance of the power-driven decontamination equipment (PDDE) crew provided by the task force; the crew moves using a five-ton truck (normally from the support platoon, located near the task force TOC). The PDDE crew provides specialized lightweight decontamination equipment for the washdown. (**NOTE:** Before performing vehicle washdown, company team elements should conduct operator's spraydown to increase the effectiveness of decontamination.)

Vehicles should be washed with hot, soapy water for two to three minutes. Because speed is important and detection is difficult, crews should not check for contamination after the washdown. The equipment used to conduct the washdown should be able to provide 60 to 120 psi, the amount of pressure needed to remove gross contamination from vehicles. Unheated soapy water or plain water may be used if necessary but will be less effective. Crews can also apply the decontaminant with mops and stiff brooms, using 30-gallon trash cans as containers for the decontamination solution and water supply if no other equipment is available.

The MOPP gear exchange, conducted at the same time as the washdown, is best performed using the buddy system. The task force PDDE crew or the company supply team normally brings all the equipment required for the exchange. Vehicle drivers exchange their MOPP gear once vehicles have been washed down. (**NOTE:** For a listing of equipment requirements for MOPP gear exchange, refer to FM 3-5.)

Supported by the decon platoon

The company team conducts supported operational decontamination with assistance from a chemical decontamination platoon supervised by the task force NBC NCO. The platoon includes three decontamination squads, equipped with an M12A1 power-driven decontamination apparatus or M17 lightweight decon systems, and a support squad with the capability of hauling 2,400 gallons of water.

The platoon can establish and operate two separate operational decon sites for vehicle washdown and MOPP gear exchange; as an alternative, it can operate a single, dual-lane site. (**NOTE:** Uncontaminated vehicles and personnel should not undergo either technique.)

Table G-3. Operational decontamination checklist.

STEP	ACTIONS TAKEN
Coordination	Company team commander/XO/1SG conducts coordination with the task force chemical section on where to meet. Decontamination should be done between one and six hours after contamination.

Site selection	The company team NBC NCO chooses the decon site in coordination with the company team commander and the task force NBC NCO. Factors in site selection include the following: ● The site should be off the main route but with easy access to the route. ● The site should be large enough to accommodate the unit being decontaminated, with at least 100 square meters per squad-size element. ● The site should afford adequate overhead concealment and facilitate effective security. ● There must be an adequate water source; plan for 100 gallons per vehicle. ● The site must afford good drainage.
Rendezvous	Ensure that the task force PDDE crew knows the location, time, and number/types of vehicles to be decontaminated. The unit supply sergeant delivers decontaminants and replacement MOPP gear.
Site setup	The NBC NCO ensures that PDDE is positioned properly and is ready to dispense hot, soapy water. He ensures that the company team conducts MOPP gear exchange at the same time as vehicle washdown.
Site control and security	The NBC NCO ensures that vehicle drivers know when to move into position at the washdown location. The company team commander establishes site security.
Processing	The commander, XO, and/or 1SG ensure that the decon NCOIC processes vehicles at a rate of three minutes per vehicle. They ensure that soldiers complete MOPP gear exchange as needed.
Cleanup	The decon NCOIC ensures that the MOPP gear exchange area is cleaned up.
Marking and reporting	The decon NCOIC directs his team to properly mark the decontamination site and forwards an NBC-5 report to higher headquarters.

Thorough decontamination

Thorough decontamination operations restore the combat power of maneuver units by removing nearly all contamination from soldiers, vehicles, and individual equipment. Executed promptly and correctly, these detailed procedures reduce the danger of contamination exposure to negligible risk levels. Just as important, they allow soldiers to operate equipment safely for extended periods at reduced MOPP levels. Refer to FM 3-5 for a detailed discussion of thorough decontamination.

Thorough decontamination is conducted to support operations throughout the battlefield or as part of a major reconstitution effort in brigade, division, or corps support areas. Below brigade level, units generally lack the quantities of decontamination resources (such as water, decontaminants, and time) required for coordination and execution of such an extensive process. In a very few cases, a contaminated unit may be able to conduct thorough decontamination with organic assets; an example is an FSB, which normally has four to six M17 decontamination systems. Most units, however, must depend on support from a chemical platoon.

When detailed equipment decontamination (DED) operations are required, the chemical unit usually selects a site, sets it up, and performs detailed procedures with assistance from the contaminated unit. Refer to Table G-4 for a list of personnel and equipment requirements for a DED site equipped with M12A1 apparatuses. Contaminated units conduct detailed troop decontamination (DTD) under the supervision of unit NBC personnel. Table G-5 lists the personnel and equipment required for a DTD site.

After completing thorough decontamination, the unit continues the mission or moves into an adjacent assembly area for reconstitution. Support elements from the brigade, division, or corps support area replenish combat stocks, refit equipment, and replace personnel and equipment. The newly reconstituted unit leaves the assembly area fully operational and fit to return to battle. A small risk from residual contamination remains, so periodic contamination checks must be made following this operation.

> **NOTE:** Thorough decontamination does the most complete job of getting rid of contamination and related hazards, but as noted, it requires large quantities of valuable resources that may not be immediately available. In addition, under a variety of tactical or operational conditions, it will be impossible to execute such a major effort. The next best solution is to decontaminate only to the extent necessary to sustain the force and allow it to continue the mission. This entails using a combination of immediate and operational decontamination procedures.

Table G-4. Personnel and equipment requirements for detailed equipment decontamination site.

STATION	DECON PLATOON	SUPPORTED UNIT	EQUIPMENT

Station 1 - Washdown	• Squad leader • 2 PDDE operators • 4 sprayers	4 scrubbers	• 2 M12A1 apparatuses • 2 3,000-gallon tanks • 2 65-gpm pumps • 6 long-handled brushes • 8 TAP aprons • Liquid detergent
Station 2 - DS2 application	• Squad leader • 3 appliers	9 appliers	• 18 long-handled brushes • 9 mops with extra mop heads • 3 30-gallon containers • 9 M13 DAPs • Sufficient DS2
Station 3 - Wait/ interior decontamination	1 NCO	2 interior decon assistants	• 2 AN/VDR-2s or AN/PDR-27s • 3 TAP aprons • 6 30-gallon containers • 10 books M8 paper • 30 sponges • 8 M256A1 kits • 50 trash bags • Clipboard and pen • Stopwatch
Station 4 - Rinse	• Squad leader • PDDE operator • 2 pump operators	2 sprayers	• 1 M12A1 apparatus • 1 3,000-gallon tank • 3 65-gpm pumps • 2 TPUs • 2 TAP aprons

Station 5 - Check	2 CAM operators (NCOs)		• 2 CAMs • 10 M256A1 kits • 20 books M8 paper • 2 AN/VDR-2s or AN/PDR-27s • 2 M8A1 alarms.
Command and control	• Platoon leader • PSG		• 1 HMMWV/CUCV with radio • 3 NBC marking kits
TOTAL PERSONNEL	**20**	**17**	

Table G-5. Personnel and equipment requirements for detailed troop decontamination site.

STATION	PERSONNEL	EQUIPMENT
Station 1 - Individual gear decontamination	• 2 attendants • 1 monitor (CAM operator)	• 3 30-gallon containers • 2 long-handle brushes • 2 ponchos or plastic sheets • 1 CAM • 8 books M8 paper • 4 M256A1 kits • 100 trash bags
Station 2 - Overboot and hood decontamination	1 attendant	• 2 cutting tools • 60 M258A1 or M295 kits (or 1 per person) • 2 ponchos or plastic tarps • 100 trash bags
Station 3 - Overgarment removal	1 attendant	• 10 M258A1 or M295 kits • 2 30-gallon containers • 100 trash bags

Station 4 - Overboot and glove removal	1 attendant	• 2 30-gallon containers • 100 trash bags • Engineer tape • Cutting tool
Station 5 - Monitoring	• 1 attendant (CAM operator) • 1 aidman or combat lifesaver	• 1 CAM • 5 books M8 detector paper • 24 M258A1 or M295 kits
Station 6 - Mask removal	2 attendants	1 M8A1 chemical alarm
Station 7 - Mask decontamination	• 2 mask decontamination attendants • 1 monitor	• 4 3-gallon containers • 1 CAM • 2 sponges • 1 case paper towels • 1 immersion heater with container • Mask sanitizing solution
Station 8 - Reissue point	• Unit supply sergeant • Unit NBC NCO	Mask PLL

SECTION 5 - SMOKE OPERATIONS

One of the key features of the modern battlefield is the extensive use of smoke. Effective smoke is a combat multiplier. It can be used for identification, signaling, obscuration, deception, or screening. At the same time, employment of smoke must be carefully planned and coordinated to prevent interference with friendly units.

As the company team prepares for an operation, the commander should plan to take advantage of smoke from all available sources. Mission accomplishment, however, should never depend on smoke for success; the commander must develop alternative plans in case smoke delivery systems are not available.

PLANNING CONSIDERATIONS FOR SMOKE EMPLOYMENT

Planning for the use of smoke on the battlefield, either by friendly or enemy forces, is an essential part of the overall tactical plan. As noted, smoke is a combat multiplier, but its employment must be carefully planned so it does not hinder the maneuver of other friendly units. Planning considerations include the following:

- Commanders must develop alternate plans in case artillery, mortars, smoke generators, or smoke pots are not available on the battlefield.
- Smoke screens for breach forces should be placed either directly on the enemy or between the enemy and the obstacle. Wind direction will dictate the source and type of smoke (such as artillery rounds, generated smoke, or smoke pots) used for the screen. Use artillery when the wind direction is from the enemy to the unit; use generated smoke when the wind is blowing toward the enemy. Careful consideration is necessary in determining which element (support force, breach force, or assault force) will use available smoke pots.
- Lifting or shifting of the smoke screen may be necessary because of the dangers posed by WP rounds. Refer to the discussion of tactical considerations in smoke employment later in this section.
- The effectiveness of smoke is highly dependent on weather conditions. Refer to the discussion of tactical considerations.
- The company team commander will sometimes control maneuver of smoke units that are conducting task force-directed smoke missions.
- The enemy's thermal imaging capability is a critical factor in the use of IR smoke, which can be approved by higher headquarters only.

USES OF SMOKE

The following paragraphs examine general uses of smoke on the battlefield.

Marking

Smoke is used to mark targets, supply and evacuation points, and friendly positions during CAS operations. As a means of prearranged battlefield communications, it can be employed to initiate such operations as displacement.

Obscuring

Obscuring smoke is delivered directly on or immediately in front of the enemy's positions, normally by projected means (such as artillery and mortars). The primary use of obscuring smoke is to blind the enemy or degrade his vision both within and beyond his positions. It can also defeat enemy target acquisition and guidance systems at their source.

Smoke can be fired on enemy positions to degrade the vision of gunners and known or suspected OPs, preventing them from seeing or tracking targets and thereby reducing their effectiveness. Employed against an attacking force, nonthermal smoke can cause confusion and disorientation by degrading the enemy's command and control capabilities; at the same time, friendly units retain the ability to engage the enemy using thermal sights. IR smoke, employed against an enemy with thermal imaging capability, can cause similar confusion and disorientation while defeating threat sensors/seekers. (**NOTE:** At the same time, however, friendly commanders considering use of IR smoke must weigh the cost to their own forces in terms of lost thermal sight capability.) Smoke is also useful at night to degrade enemy night vision devices.

Another important use of obscuring smoke is to cause enemy vehicles to become silhouetted as they emerge from the smoke. If smoke employment is planned and

executed correctly, this will occur as the enemy reaches the trigger line (see Figure G-1).

Figure G-1. Using smoke to confuse the enemy and silhouette his vehicles.

Protecting

Friendly forces use protecting smoke on the battlefield to defeat enemy guidance systems. For example, when enemy gunners have already fired ATGMs or have used laser designators, the commander can immediately employ protecting smoke to screen vehicle movement and defeat enemy guidance links.

Another important use of protecting smoke is to attenuate the effects of some types of enemy weapons, including directed-energy weapons and nuclear weapons. It does this by absorbing, reflecting, or refracting the energy generated by the weapon. In an active nuclear environment or when employment of nuclear weapons is likely, commanders can plan the use of protecting smoke to attenuate the thermal energy of nuclear detonation. When other resources are not available to defeat the enemy's smart weapons, IR smoke can increase survivability of friendly forces. (**NOTE:** IR smoke reduces the friendly force's ability to maneuver freely on the battlefield; commanders must take this into consideration during planning.)

Deception

Deception smoke is used as part of the overall deception plan to mislead the enemy regarding friendly intentions. For example, it can be employed on several avenues of approach at once to deceive the enemy as to the direction of the main attack. In the defense, smoke may be fired at a remote location for the sole purpose of attracting attention and confusing the enemy. (**NOTE:** Deception smoke must complement other aspects of the deception plan; it should not be used alone to sell the "story.")

Screening

Smoke is used in the friendly area of operations or in areas between friendly and enemy forces to degrade enemy ground and aerial observation and to defeat or degrade enemy acquisition systems. Screening smoke helps to conceal the company team as it displaces from a BP or as it conducts tactical movement approaching enemy positions. Smoke can also be employed to conceal the team as it conducts a bypass, breach, or assault mission. Figures G-2 through G-4 illustrate uses of screening smoke.

Figure G-2. Using screening smoke to conceal displacement.

Figure G-3. Using screening smoke to conceal a bypass.

Figure G-4. Using screening smoke to conceal a breaching operation.

SOURCES OF SMOKE

There are a number of sources of smoke on the battlefield, including the residual effects of burning vehicles, equipment, storage facilities, and other structures. Depending on availability, the company team commander can employ the following smoke delivery systems during tactical operations.

Mortars Mortar support, provided by the task force mortar platoon, is the most rapid and responsive means of indirect fire smoke delivery. The company team commander coordinates the planning and execution of mortar smoke missions with the team FIST. Most mortars (but not all) use WP rounds, which can degrade the effectiveness of thermal sights.

Field artillery Cannons are used to place smoke on distant targets. Artillery assets can deliver either WP smoke or HC smoke; HC has less effect on thermal sights than does WP. Artillery smoke has a longer duration than mortar smoke; however, it may not be available unless it is planned and coordinated well in advance.

Smoke pots These produce a large volume of white or grayish-white smoke that lasts for extended periods. The smoke has minimal effect on thermal sights. This is the only system that floats on water and that can be delivered by hand or vehicle. The company team may employ smoke pots to screen displacement or breaching operations.

Hand-held smoke grenades These can produce white or colored smoke. White smoke grenades are most often used to screen individual vehicles. Colored smoke grenades are primarily used to signal displacement and other critical events or to identify (mark) friendly unit positions and breach and evacuation locations. Smoke from hand-held grenades has minimal effect on thermal sights.

Vehicle smoke grenade launchers Grenade launchers, which can produce a limited amount of smoke, are used as a self-defense measure to screen or conceal the vehicle from enemy antitank gunners. They can also be used to screen individual vehicle displacement. Smoke from vehicle-launched grenades can degrade thermal sights.

Vehicle engine exhaust smoke system The VEESS injects diesel fuel into the engine exhaust to produce smoke. It serves primarily as a self-defense measure for individual vehicles, but a vehicle crew can also employ it to screen other friendly vehicles if wind conditions and the direction of vehicle movement allow. This system consumes fuel at the rate of one gallon per minute of operation. **It can be used only with diesel fuel because other fuels, such as JP-8, create a fire hazard.**

Tactical smoke generators These wheel- or track-mounted systems are available through chemical units; their use is prescribed at battalion or brigade level. The generators can produce large-area smoke screens covering several square kilometers. This type of smoke normally does not affect thermal sights; however, the new M56 (wheel-mounted) and M58 (track-mounted) systems can produce IR smoke, which can defeat both friendly and enemy thermal imaging capabilities.

TACTICAL CONSIDERATIONS IN SMOKE OPERATIONS

Weather

The effectiveness of smoke in tactical situations (including the time required to build the cloud and cloud duration) depends in large measure on the weather. Wind direction, wind speed, humidity, and cloud cover are important considerations. If the wind is strong or blowing in the wrong direction, it may be impossible to establish an effective smoke screen. Smoke clouds build up faster and last longer the higher the humidity and the greater the cloud cover. The best time to use smoke is when the ground is cooler than the air. The commander should evaluate the weather before using smoke, conducting a test of the conditions whenever possible.

Type of smoke

Certain types of smoke will degrade visual, infrared, and thermal sights. Enemy capabilities and the desired effect of the smoke (such as screening or obscuration) will dictate what type is requested. (**NOTE:** Even types of smoke that do not affect thermal sights may prevent the vehicle's laser range finder from computing an accurate ballistic solution. Under such conditions, crewmen must rely on such techniques as range estimation and battlesighting.)

Navigation

Navigational aids such as POSNAV, GPS (including PLGR), and thermal sights assist individual vehicles during movement through smoke, while IVIS, appliqué, and other digital systems help the commander to maintain situational awareness and control of the company team.

Maneuver

The following paragraphs discuss the impact of smoke on company team maneuver, with procedures, techniques, and considerations for offensive and defensive operations.

Offense

A defending enemy may employ smoke to confuse and disorient the attacker. Whenever the company team is traveling through smoke, whether it is of friendly or enemy origin, the vehicle commander must remember that his vehicle will be silhouetted as it emerges from the smoke. The critical consideration is for all vehicles to emerge at the same time. The navigational tools discussed previously enable the commander to maintain command and control during movement and to posture the team to mass fires against previously unidentified enemy vehicles as it exits the smoke.

During an assault, friendly smoke should be shifted in advance of the arrival of the assault element. The use of multispectral smoke for obscuration must be carefully planned. The duration of the effects of the smoke should be controlled based on the capability of enemy and friendly units to acquire and engage targets through the smoke and on the ability of friendly units to maintain situational awareness during movement.

Defense

An attacking enemy may employ smoke on the company team's positions or in the team's engagement area. As noted, this may not only "blind" thermal sights but also prevent laser range finders from determining accurate ranges to targets. One solution is to occupy alternate BPs that conform with the commander's intent but that are not obscured by smoke. If multispectral smoke does not disable thermal sights, the vehicle commander can use sector sketches with grid lines, range bands, and TRPs to estimate the target range in the absence of a laser-computed range.

COUNTERMEASURES AGAINST ENEMY SMOKE

The company team commander must be prepared to react instantly and effectively when the enemy employs smoke on the battlefield. Countermeasures include the following:

- **See through the smoke.** Thermal sights can see through most types of smoke with little or no degradation. If this is the case, the company team can fight as planned. If smoke degrades sights to the point that execution is affected, however, the commander must move the team closer to the engagement area or obstacle or adjust the engagement area closer to his positions.
- **Use countersmoke to blind enemy defenders.** This tactic is used when the enemy produces a smoke screen in front of the attacking company team. When the team exits the screen, its vehicles will be silhouetted by the smoke and can be effectively engaged by enemy gunners. To prevent this, the commander can place smoke between the enemy's screen and the objective using mortar or field artillery fires. This smoke will blind the enemy and cover the team's movement to the objective.
- **Use enemy smoke to cover friendly movement.** When the enemy places smoke directly on the company team's defensive position or when he establishes a screen in front of his advancing units, the team can use the concealment provided by the enemy smoke to move to alternate or supplementary positions covering the enemy's route of advance.

APPENDIX H

Integration of Heavy and Light Forces

Employing tank and mechanized infantry company teams with light units can be a combat multiplier. This type of organization can take advantage of the light unit's ability to operate in restricted terrain (such as urban areas, forests, and mountains) to increase the survivability of the overall force. At the same time, the integrated force has the advantage of the mobility and firepower inherent in tank and mechanized infantry units. All forces should be mutually supporting based on the commander's concept of employment; this ensures effective integration of tank, mechanized, and light assets.

This appendix provides information the company team commander must consider in conducting operations with light forces. It focuses on the two scenarios that are most likely to affect the company team: attachment of the team to a light brigade or battalion and attachment of a light platoon to the team. For more detailed information on a heavy platoon attached to a light infantry battalion, refer to FM 7-20 and FM 17-15. For a more detailed discussion of heavy forces attached to a light infantry company, refer to FM 7-10.

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SECTION 1 - ORGANIZATION OF LIGHT FORCES

CAPABILITIES AND LIMITATIONS

Light forces have the capabilities to perform the following actions:

- Seize, occupy, and hold terrain.
- Move on foot or by aircraft, truck, or amphibious vehicle.
- Move in all types of terrain.
- Conduct operations with tank and mechanized infantry forces.
- Conduct covert breaches.
- Conduct air assault operations.
- Take part in counterinsurgency operations within a larger unit.
- Rapidly accept and integrate augmenting forces.

Light forces have the following limitations:

- They must depend on nonorganic transportation for rapid movement over long distances.
- Without protective clothing, they are vulnerable to the effects of prolonged NBC exposure.
- They require external support when they must operate for an extended period.
- Unless dug in with overhead cover, they are extremely vulnerable to indirect fires.
- Unless dug in, they are vulnerable in open terrain to long-range direct fires.

ORGANIZATION OF LIGHT FORCE BRIGADES

The heavy company team may support any of three primary types of light brigades: light infantry, airborne, and air assault. These organizations vary in capabilities and limitations and in their impact on the heavy force. For example, differences in the organization of the brigade headquarters and in antiarmor capability may affect the heavy company team mission. The company team commander must understand the organization of the brigade that the team will support.

Light infantry brigade

Light infantry brigades have the most austere of the three headquarters organizations in terms of communications capabilities and the number of staff officers. There is no assistant S3, assistant S3-Air, or LO. There are few vehicles in the main CP. Organizational maintenance is centralized at the brigade maintenance section. All Class I rations are prepared by the brigade mess team. Like the light infantry division, the brigade must depend on corps-level transportation assets. A key characteristic of the light infantry brigade is its limited antiarmor capability. There are 12 TOWs and 54 Dragons or Javelins per brigade. In addition, the light infantry division has only one attack helicopter battalion.

Airborne brigade

Once entry operations are complete, the airborne brigade essentially functions as a light infantry brigade. It has more CS and CSS assets than does the light infantry brigade and has 60 TOWs and 54 Dragons or Javelins. The airborne division has only one attack helicopter battalion.

Air assault brigade

Staff and CSS functions in the air assault brigade are similar to those in tank and mechanized brigades. The air assault brigade uses helicopters to extend its command and control and CSS capabilities. Antiarmor capability is the same as for the airborne brigade. The air assault division has a combat aviation brigade, consisting of two attack helicopter battalions, that adds to its antiarmor capability.

ORGANIZATION OF LIGHT FORCE BATTALIONS

Light infantry battalion

The light infantry battalion is the most austere light battalion and the one whose organization is most different from that of a heavy battalion. There are only three rifle companies and a headquarters company in the battalion. It has four TOWs and 18 Dragons or Javelins. Organic fire support is provided by an 81-mm mortar platoon assigned to the headquarters company.

Differences between this battalion and the air assault and airborne battalions are greatest in the organization of support and logistics elements. It has no trucks larger than its 27 cargo HMMWVs. The battalion has no mess team; Class I is prepared at brigade level. There is only one mechanic in the entire battalion; repairs are conducted at the brigade level. The battalion has only 18 long-range radios.

Air assault and airborne battalions

Once inserted, the air assault and airborne battalions perform much like the light infantry battalion, with walking a primary means of transportation. Each battalion has 10 two-and-a-half-ton trucks and 36 cargo HMMWVs and can conduct nontactical movement by truck. Each has a mess section and a 16-man maintenance platoon. Air assault and airborne battalions have 30 long-range radios, and both have 20 TOWs and 18 Dragons or Javelins. Their organic fire support is provided by an 81-mm mortar platoon assigned to the headquarters company.

ORGANIZATION OF LIGHT FORCE COMPANIES AND PLATOONS

Light infantry company and platoon

The light infantry company has three platoons and a headquarters section, a total of 130 soldiers. The company headquarters contains both the antiarmor section, consisting of six Dragons or Javelins, and the mortar section, which has two 60-mm mortars. The rifle platoons, with 34 soldiers each, are organized into three squads and a headquarters section, which controls the platoon’s machine guns. Each rifle squad consists of two fire teams.

Airborne and air assault companies

Airborne and air assault companies are capable of more independent action than their light infantry counterpart. Each of the three rifle platoons has its own weapons squad, as well as three rifle squads. The weapons squads have both machine gun crews and antiarmor missile crews. The company headquarters retains control of the 60-mm mortar section.

SECTION 2 - PLANNING CONSIDERATIONS

Employment of heavy and light forces requires thorough integration of the operating systems of both types of units. This section focuses on considerations for each of the seven operating systems.

COMMAND AND CONTROL

The directing headquarters designates command relationships between light infantry and the tank or mechanized infantry force. The command relationship between a light unit and a heavy unit can be either attached or OPCON. A light unit attached to a heavy unit can normally be adequately supported. Attachment of a heavy unit to a light unit, however, requires considerable CS and CSS support from the heavy unit's parent organization or from higher-level support assets.

Light units normally have considerably less long-range communications capability than their heavy force counterparts. A gaining heavy unit must therefore thoroughly analyze the communications requirements of an attached light unit.

Units conducting light/heavy or heavy/light operations normally exchange LOs, who assist in joint operational planning, coordinate the development of orders and overlays, and serve as advisors to the counterpart units. In addition, leaders from the attached unit may be required to perform special functions in the light/heavy or heavy/light configuration.

Additional command and control considerations include the following:

- LOs and/or unit leaders may be required to conduct linkup and coordination, either in theater or prior to deployment.
- When a single tank or mechanized infantry company team is attached or OPCON to a light infantry brigade or battalion, personnel from the team's parent organization should be designated as LOs, serving as planners and advisors for the supported unit's commander. A strong LO team requires proper manning, equipment, and expertise; it must be capable of conducting 24-hour operations. It must have the equipment to communicate effectively with the supported unit as well as vehicles to move around the battlefield. Whenever possible, the team should include two officers and two NCOs (along with drivers as needed). The logistics LO should be the senior soldier from the CSS slice, with expertise in Class I, III, and V resupply and medical and maintenance support. (**NOTE:** If an LO team is not available, the company team CP should collocate with the brigade or battalion TOC.)
- When a single tank or mechanized infantry platoon is OPCON or a light infantry platoon is attached, the platoon leader serves as the principal advisor to the supported headquarters commander. For a tank or mechanized infantry platoon, the platoon leader normally works with a light infantry battalion commander; a light infantry platoon leader normally assists a company team commander.

INTELLIGENCE

Detailed intelligence is critical in integrating light infantry with tank and mechanized infantry forces. Light forces orient on concentrations of enemy units, including counterattack forces and artillery and air defense assets; they also focus on the enemy's infantry avenues of approach and LZs/PZs.

MANEUVER

Either the light force or the tank/mechanized infantry force can fix the enemy, allowing the other force to maneuver. Whether it conducts the fixing operation or maneuver, the light force requires the advantage of close terrain. These maneuver considerations apply in light/heavy or heavy/light employment:

- The light force is best suited to close and restricted terrain, where it can impede the enemy's mobility and nullify his ability to use long-range weapons and observation assets.
- The differences between the operational tempo of light infantry and that of tanks and mechanized infantry is always a key consideration, as are rehearsal schedules. An early rehearsal may be required, both to allow light and heavy forces to take part jointly and to effectively resolve the operational differences.
- To help prevent detection, the movement of light infantry must be planned to coincide with limited visibility conditions such as darkness, severe weather, smoke, or fog.
- Direct and indirect fires should be mutually supporting during integrated operations. The company team can use its long-range direct fires to provide suppression, allowing infantry units to maneuver. Conversely, light infantry forces can provide overwatch or support by fire to the company team, allowing tanks and BFVs to maneuver in restricted terrain.
- Mechanized units can assist infiltration by augmenting security at the LD. They can use their thermal capability to scan the area for enemy forces and can provide direct fire support as necessary.

FIRE SUPPORT

Fire support assets available to both light and heavy forces must be integrated into the fire plan. Light infantry units have different indirect fire assets than do the heavy forces and have more limited communications assets associated with their indirect fire systems. Tank or mechanized infantry forces must recognize that dismounted infantry operations rely on stealth, which may not allow for preparatory and other preliminary fires. In addition, light forces are extremely vulnerable to indirect fires; as a result, light infantry positions should be designated as CFZs.

AIR DEFENSE

Air defense assets may be deployed to fight and provide protection within the scope and design of any organization. Because infantry forces frequently maneuver in restricted terrain, Avenger and BSFV coverage may not be feasible. In such operations, man-portable Stingers should be allocated to support the infantry.

MOBILITY AND SURVIVABILITY

A common obstacle plan must be developed for light/heavy or heavy/light operations. Light forces may be used to reduce obstacles and clear choke points for the tank and mechanized infantry forces. In breaching operations, light forces must ensure the breach is large enough for the widest vehicle in the operation.

Survivability remains the priority for light forces. They must be prepared to take advantage of the engineer assets available to the heavy forces.

In an NBC environment, light forces lack decontamination equipment and therefore are more limited than the tank or mechanized infantry force. The mobility of light forces is affected because soldiers must carry protective clothing in addition to their standard loads. When other transportation assets are not available, tank and mechanized infantry units should assist in carrying NBC equipment for light forces. Additionally, heavy battalions have expedient means to haul decontamination equipment and water, reducing the load for light infantry units. In planning for NBC operations, commanders must take METT-TC factors into account; they must plan linkup points to ensure their light forces can obtain critical NBC-related items as they need them.

COMBAT SERVICE SUPPORT

Light units are not organized, equipped, or trained to meet the support requirements of a heavy unit. They must rely on considerable assistance from the heavy unit's organic elements and or from corps-level support assets to support an attached heavy unit. Heavy units, however, should be able to provide support to a light infantry attachment. For a more detailed discussion of CSS considerations, refer to Section 6 of this appendix.

SECTION 3 - OPERATIONS AND TASKS

Table H-1 lists the operations normally performed by a light brigade or battalion, along with the heavy company team's supporting tasks or operations for each operation.

Table H-1. Light brigade/battalion operations and supporting heavy company team operations and tasks.

LIGHT BRIGADE/ LIGHT BATTALION OPERATIONS	HEAVY COMPANY TEAM OPERATIONS/TASKS
Movement to contact	Support by fire; attack by fire; assault; breach; follow and support; reserve; route clearance; convoy escort; checkpoint/roadblock operations.

Attack	Support by fire; attack by fire; assault; breach.
Exploitation	Serve as security force (screen); lead the exploitation (assault or attack by fire).
Pursuit	Serve as enveloping force, reserve (attack by fire or assault), or security force (screen); lead direct pressure force (support by fire, attack by fire, or assault).
Security (screen, guard, cover)	Screen; guard; defend; delay; attack by fire; assault.
Defend	Screen; guard; defend; delay; attack by fire (counterattack); assault (counterattack).
Retrograde (delay, withdrawal, retirement)	Defend; delay; screen; guard; attack by fire (counterattack); withdraw.
Breakout from encirclement	Serve as rupture force (assault or attack by fire) or rear guard (delay).

Table H-2 lists the operations and tasks normally performed by the tank or mechanized infantry company team, along with the light platoon's supporting tasks for each operation or task.

Table H-2. Heavy company team operations and tasks and supporting light platoon tasks.

HEAVY COMPANY TEAM OPERATIONS AND TASKS	LIGHT PLATOON TASKS
Attack by fire	Secure an ABF position (reconnoiter an area or attack); provide local security or act as the blocking force (defend).
Support by fire	Secure an SBF position (reconnoiter an area or attack); provide local security; conduct overwatch/support by fire.
Bypass	Serve as the fixing force (defend); perform linkup with follow-on forces.
Assault	Attack; assault; breach; overwatch/support by fire; knock out a bunker; clear a trench line; clear a building.
Clearance in restricted terrain	Attack; assault; overwatch/support by fire; knock out a bunker; clear a trench line; clear a building; breach.
Defend	Defend; defend MOUT/building; construct an obstacle.
Screen/guard	Perform surveillance or screen.

Breach	Breach; overwatch/support by fire; assault.
Hasty water/gap crossing	Cross water obstacles; assault; overwatch/support by fire.
Delay	Delay; break contact.
Withdrawal	Break contact; serve as advance party (assembly area procedures).

SECTION 4 - TASK ORGANIZATION CONSIDERATIONS

TASK ORGANIZATION BELOW PLATOON LEVEL

In some circumstances, tank or mechanized infantry sections may be task organized to light infantry companies, normally as OPCON elements. The infantry company is the lowest level to which a heavy section should be task organized. (**NOTE:** Individual vehicles should never be task organized.)

ADDITIONAL ATTACHMENTS TO THE COMPANY TEAM

In addition to the organic and attached elements normally associated with a company team (as discussed in Chapter 1 of this manual), the company team may receive additional CS and CSS elements when it is OPCON or attached to a light force. Table H-3 summarizes these potential augmentation assets.

Table H-3. Heavy company team augmentation assets.

AUGMENTATION ASSET	PROVIDED BY:
Support section (with 2 or 3 cargo HEMMTs, 2 fuel HEMMTs, mess team)	Parent heavy battalion

DS maintenance contact team (shop office section with limited ASL; automotive team; armament section with limited DX; communications/electrical section; 5,000-gallon POL tankers)	Parent heavy FSB
Mechanized engineer platoon	Parent heavy division engineer brigade
Air defense section	Parent heavy division ADA battalion

The heavy company team should be attached to a light brigade when the team's parent unit is not adjacent to the brigade's zone or sector and is not close enough to provide adequate logistical support for the heavy team. Attachment requires the light brigade to support the heavy company. To do this, the light brigade and its parent division must receive CSS attachments from the corps. These should include assets to provide Class III and Class V resupply, transportation, and heavy maintenance. It may be possible to provide assets from the company team's parent division to the light division, routing them through the corps.

OPERATIONAL ORGANIZATION

There are no special organizational considerations when a light platoon is attached to a heavy company team. The platoon operates as a single maneuver element under the control of the company team commander.

When the company team operates in support of light forces, it may deploy in one of several different configurations based on mission and situational requirements. These options, which may be limited by the task organization of the company team, include the following:

- As a single element under control of the company team commander. The company team may provide support either under brigade control or under control of a designated battalion.
- Split into two company(-) organizations (if four platoons are available), with the company team commander controlling one element and the XO controlling the other. Another command and control arrangement would have the company team commander controlling the company at a central location from the team CP while the two company(-) maneuver elements operate under

control of the senior platoon leader in each. The XO may be tasked to control one of these elements as required.

- Partially task organized, with one or two platoons attached to outside battalions. The company team headquarters and remaining platoon(s) are retained under the parent brigade's control or are task organized to a battalion.
- With individual platoons attached directly to outside battalions. The company team commander is located at the battalion with the most critical mission.

SECTION 5 - ADDITIONAL OPERATIONAL CONSIDERATIONS

The following considerations apply in the employment of the heavy company team during light/heavy or heavy/light operations.

DISMOUNTED INFANTRY MOVEMENT RATES

Commanders of heavy forces often overestimate (or simply fail to recognize) the speed with which dismounted elements can move. Numerous factors can affect the rate of march for light forces: tactical considerations, weather, terrain, march discipline, acclimatization, availability of water and/or rations, morale, individual soldiers' self-confidence, and individual loads. Table H-4 summarizes dismounted rates of march for normal terrain.

Table H-4. Dismounted rates of march (normal terrain).

	ROADS	CROSS-COUNTRY
Day	4.0 kmph	2.4 kmph
Night	3.2 kmph	1.6 kmph

The normal distance covered by a dismounted force in a 24-hour period is from 20 to 32 kilometers, marching from five to eight hours at a rate of 4 kmph. A march in excess of 32 kilometers in 24 hours is considered a forced march. Forced marches increase the number of hours marched, not the rate of march, and can be expected to impair the unit's fighting efficiency. Absolute maximum distances for dismounted marches are 56 kilometers in 24 hours, 96 kilometers in 48 hours, or 128 kilometers in 72 hours.

TANK-MOUNTED INFANTRY

An additional maneuver consideration for a light/heavy or heavy/light operation is the decision of whether to move infantrymen on tanks. This mode of transportation can be difficult, but it is not impossible. It does, in fact, afford some significant advantages. The mounted infantry can provide additional security for the company team. When the team conducts a halt or must execute a breach or other tactical tasks, infantry assets are readily available to provide support and security. The commander must weigh the potential dangers of carrying dangers of carrying tank-mounted infantrymen against the advantages of mobility and security they can provide. For specific procedures and safety considerations involved in mounting infantry on tanks, refer to FM 17-15.

COMMUNICATIONS

Communication between vehicle crews and soldiers on the ground is difficult, even under the best of circumstances. On M1-series tanks, the crew can route wire from the AM-1780 through the loader's hatch or vision block to a field phone attached to the outside of the tank. Infantry squads can communicate with the BFV crew using the external wire connection located on the rear of the vehicle. In addressing the communications issues inherent in light/heavy or heavy/light operations, the commander may also consider altering radio net configurations and/or prearranging visual signals.

SAFETY CONSIDERATIONS

At least initially, most infantrymen will not be familiar with the hazards that may arise during operations with tanks, BFVs, and other armored vehicles. The most obvious of these include the dangers associated with main gun fire and the inability of armored vehicle crews to see people and objects near their vehicles.

Leaders of heavy and light units alike must ensure that their troops understand the following points of operational safety:

- Tank sabot rounds and BFV antipersonnel rounds discard stabilizing petals when fired, creating a downrange hazard for infantry. The aluminum petals of the tank rounds are discarded in an area extending 70 meters to the left and right of the gun-target line out to a range of 1 kilometer. The danger zone for BFV rounds extends 30 degrees to the left and right of the gun-target line out to 200 meters from the vehicle. Infantrymen should not be in or near the direct line of fire for the tank main gun or BFV cannon unless they are under adequate overhead cover.
- Tank main guns create noise in excess of 140 decibels. Repeated exposure to this level of noise can cause severe hearing loss, even deafness. In addition, dangerous noise levels may extend more than 600 meters from the tank. Single-layer hearing protection, such as ear plugs, will allow infantrymen to work within 25 meters of the side or rear of the tank without significant hazard.
- Crewmen on tanks and BFVs have very limited ability to see anyone on the ground to the side or rear of the vehicle. As a result, vehicle crews and dismounted infantrymen share responsibility for avoiding the hazards this may create. Infantrymen must maintain a safe distance from armored vehicles at all times. In addition, when they work close to an armored vehicle, dismounted soldiers must ensure that the vehicle commander knows their location at all times.

NOTE: A related hazard is that M1-series tanks are deceptively quiet and may be difficult for infantrymen to hear as they approach. As noted, vehicle crews and dismounted infantrymen share the responsibility for eliminating potential dangers in this situation.

- M1-series tanks have an extremely hot exhaust plume that exits from the rear of the tank and angles downward. This exhaust is hot enough to burn skin and clothing.
- The TOW missile system has a dangerous area extending 75 meters to the rear of the vehicle in a 90-degree "cone." The area is divided into a 50-meter danger zone and a 25-meter caution zone.

SECTION 6 - CSS OPERATIONS

CSS planning and execution are critical elements for integration of light and heavy forces. Light brigades are not organized, equipped, or trained to meet the support requirements of a heavy company team. CSS may be further complicated if the heavy team is operating across a large geographical area to meet the demands of a decentralized mission. On the other hand, a heavy organization will normally be able to meet the logistical needs of an attached light unit; this includes the attachment of a light platoon to the company team. The following discussion covers CSS considerations that may affect light/heavy and heavy/light operations.

PLANNING AND INTEGRATION

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Light/heavy operations may require the heavy team to integrate into the light brigade organization early in the deployment phase. In turn, this may require CSS assets to move into the theater of operations very early as well, usually at the same time as the command and control elements. Specific support requirements, including the needed quantities of supplies, will depend on the mission; they must be planned and coordinated as early as possible. In addition, because the light brigade does not possess the required logistical redundancy to sustain the heavy company team, it is imperative that mission requirements calling for division- or corps-level CSS assets be identified early in the planning process.

SUPPLY REQUIREMENTS

Operations with a light brigade create many unique supply considerations for the heavy company team. The sheer bulk and volume of supplies required by the heavy team merit special attention during the planning and preparation phases. The following paragraphs examine some of these supply-related considerations.

Class I

Class I food requirements are determined based on the heavy team’s personnel strength reports. This process may be complicated by unique mission requirements imposed on the team, such as rapid changes in task organization or dispersion of subordinate team elements over a wide area.

Class II Many Class II items required by tank and BFV crews, such as specialized tools and Nomex clothing, may be difficult to obtain in a light organization. Although such items can be ordered through normal supply channels, the heavy company team may face significant delays in receiving them. To overcome this problem, the heavy team should identify any potential shortages and arrange to obtain the needed supplies before leaving its parent organization.

Class III The fuel and other POL products required by the heavy company team are extremely bulky; they present the greatest CSS challenges in planning and preparing for light/heavy operations. Transportation support must be planned carefully. For example, planners must consider the placement of fuel HEMMTs during all phases of the operation. They must also focus on general-use POL products, such as lubricants, that are not ordinarily used by the light brigade. As noted previously, the heavy team should stock its basic load of these items, as well as make necessary resupply arrangements, before attachment to the light brigade.

Class IV The heavy company team does not have any unique requirements for barrier or fortification materials. The main consideration is that any Class IV materials that the team commander wants may have to be loaded and carried prior to attachment.

Class V Along with POL products, ammunition for the heavy company team presents the greatest transportation challenge in light/heavy operations. Planning for Class V resupply should parallel that for Class III; key considerations include anticipated mission requirements and the availability of HEMMTs. Ammunition may be prestocked based on expected consumption rates.

Class VI Light/heavy operations create no unique requirements for personal demand items and sundries.

Class VII Class VII consists of major end items; this includes entire vehicles, such as a "float" tank or BFV the company team requires as a replacement for one its organic vehicles. The handling of these items requires thorough planning to determine transportation requirements and positioning in the scheme of the operation.

Class VIII The heavy company team involved in light/heavy operations has no unique requirements for medical supplies.

Class IX Repair parts for combat vehicles are essential to the sustainment of the heavy company team. Requirements for items on the team’s PLL and ASL must be carefully considered before light/heavy operations begin. The team may find it advantageous to prestock selected items to meet its anticipated needs.

OPERATIONAL CONSIDERATIONS

The variety of organizational options for the heavy company team, such as deployment as a single unit or attachment of separate platoons, requires that the team’s CSS organization be both flexible and adaptable. Most CSS assets supporting the heavy team will operate from the BSA. The company team trains, under control of the 1SG, will generally operate as a single entity in support of detached platoons and other team assets. The exception is when the heavy team is operating as two equal company(-) elements. If the team has sufficient assets, it can split its CSS effort into two separate support elements, each working directly with a company(-) element.

APPENDIX I

Military Operations in Urban Terrain

The company team may take part in large-scale urban combat operations as part of a larger force. The team may also have to conduct MOUT when maneuvering separately; situations might include enemy contact in a very small village (10 or fewer buildings) or in a lateral strip area (along a road or highway).

This appendix examines the basic characteristics of MOUT as well as special planning considerations and techniques of offensive and defensive operations. For more detailed information, refer to FM 90-10 and FM 90-10-1.

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Section 1	**MOUT Planning Considerations**
	MOUT Considerations Vehicles and Equipment Command and Control Maneuver Fire Support Combat Service Support
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	Hasty and Deliberate Attacks in MOUT Phases of Offensive MOUT Task Organization Offensive Techniques in MOUT
Section 3	**Defensive MOUT**
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SECTION 1 - MOUT PLANNING CONSIDERATIONS

MOUT CHARACTERISTICS

Built-up areas consist mainly of man-made features such as buildings, streets, and subterranean systems. These features of urban terrain create a variety of tactical problems and possibilities. To ensure the company team can operate effectively in the MOUT environment, the team observation and direct fire plans must address the ground-level fight (in streets and on the ground floor of buildings), the aboveground fight (in multistoried buildings), and the subterranean fight. The following considerations apply:

- Buildings offer cover and concealment and severely restrict movement of military elements, especially armored vehicles. They also severely restrict fields of fire. Every street corner and successive block becomes an intervisibility line, requiring careful overwatch. Thick-walled buildings provide ready-made fortified positions. Thin-walled buildings may afford observation and fields of fire.
- Another important aspect of the MOUT environment is that built-up areas complicate, confuse, and degrade command and control.
- Streets are usually avenues of approach. Forces moving along a street, however, are often canalized by buildings and have little space for off-road maneuver. Obstacles on urban streets thus are usually more effective than those on roads in open terrain since they are more difficult to bypass.
- Subterranean systems found in some built-up areas can be easily overlooked, but they may prove critical to the outcome of urban operations. Figure I-1 illustrates examples of underground systems, which include subways, sewers, cellars, and utility systems.

Figure I-1. Underground systems.

VEHICLES AND EQUIPMENT

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As described in the following paragraphs, numerous factors related to vehicles and equipment affect the company team's MOUT planning and execution.

M1-series tanks

The following factors may affect MOUT:

- HEAT rounds are normally the primary main gun ammunition in the MOUT environment. They are the most effective round against masonry and will penetrate all but the thickest reinforced concrete. A HEAT round will open a hole large enough for a man to fit through in masonry or concrete walls, but it will not destroy the reinforcing bars in reinforced concrete. HEAT is also effective against all earthen and sandbag-reinforced strongpoints. A 120-mm HEAT round arms about 36 feet from the end of the gun tube.
- MPAT rounds will also penetrate concrete and masonry, but they are not as effective as HEAT against heavier structures.
- Sabot ammunition has limited utility against most nonvehicular targets, and its discarding petals endanger accompanying infantry elements. Sabot petals create a hazard area extending 70 meters on either side of the gun-target line out to a range of 1 kilometer.
- The tank's main gun can depress only to -10 degrees and can elevate only to +20 degrees. This creates considerable dead space for the M1 crew at the close ranges that are typical in the MOUT environment.
- When buttoned up, the tank crew has limited visibility to the sides and rear and no visibility to the top. Figures I-2 and I-3 illustrate the dead space associated with tank operations in an urban environment.
- The external M2 HB machine gun can elevate to +36 degrees; however, the TC must be unbuttoned to fire the M2 on the M1A2.
- The tank can be outfitted with an external phone hookup for communications with accompanying infantry.

BFVs

The following factors may affect MOUT:

- The primary roles of the BFV in the MOUT environment are to provide suppressive fires and to breach exterior walls. The vehicle's armor-piercing rounds can be extremely useful in urban operations. They can penetrate concrete up to 16 inches thick, can easily penetrate brick structures, and are highly effective against earthen and sandbag-reinforced bunkers.
- The BFV can elevate its 25-mm gun to +60 degrees and depress it to -10 degrees.
- The crew has limited visibility to the sides and rear and no vision to the top when buttoned up.
- The BFV can be outfitted with an external phone hookup for communications with accompanying infantry.
- The 25-mm gun can be used effectively against enemy-occupied buildings and fortifications, firing AP, HE, and even TP-T rounds. Refer to FM 90-10-1 for detailed information on the effects of these rounds on typical urban construction materials.
- The M240C coax machine gun can effectively deliver suppressive fires against enemy personnel and against enemy positions that are behind light cover.

- TOW missiles can be effectively employed to destroy heavily fortified positions.
- The discarding petals of 25-mm sabot rounds create a downrange hazard for dismounted troops who are within 30 degrees on either side of the gun-target line out to a range of 200 meters.

Figure I-2. Tank weapon dead space at street level.

Figure I-3. Tank cannon and coax machine gun dead space above street level.

COMMAND AND CONTROL

The following command and control considerations will affect the company team's MOUT planning and execution:

- **Communications problems.** The low-level task organization that may take place during MOUT will require elements to establish additional communications links, which can be disrupted by buildings and other urban terrain features.
- **Fire control.** Extensive direct fire planning and restrictive fire control measures are an absolute requirement in MOUT.
- **Proximity and visibility.** Friendly elements often must operate in confined and restrictive areas during MOUT, and they may not be able to see other nearby friendly forces. These factors significantly increase the danger of fratricide.
- **Personnel factors.** MOUT imposes significant, and often extreme, physical and psychological demands on soldiers and leaders.
- **ROE and noncombatants.** The ROE may restrict the use of certain weapon systems. As an integral part of MOUT, noncombatants create special operational problems. To deal with these concerns, units operating in urban terrain must know how to effectively employ linguists and counterintelligence and civil affairs teams.
- **The slow pace of MOUT.** This will usually prevent the company team from taking full advantage of the speed and mobility of its fighting vehicles.

MANEUVER

The following factors related to maneuver will affect the company team's MOUT planning and execution:

- **The need for detailed centralized planning and decentralized execution.** MOUT are usually executed as a deliberate attack, demanding extensive intelligence activities and rehearsals.
- **Formation of combined arms teams at the lowest levels.** Whereas task organization normally is done no lower than platoon level, MOUT may require task organization of squads and sections. The company team may face a number of unusual organizational options, such as a tank section working with an infantry platoon.
- **Vulnerability of friendly forces.** Tanks and BFVs can provide firepower to effectively support accompanying infantry squads, but they are, in turn, vulnerable to attack from enemy infantry. The attacking force in urban operations must also guard against local counterattacks.
- **Requirements for cooperation.** MOUT can be successful only when close cooperation is established between infantry squads and fighting vehicles at the lowest level.

- **The role of infantry.** Infantry squads are employed extensively during MOUT. They can fight both enemy vehicles and enemy dismounted elements.

FIRE SUPPORT

The MOUT environment will affect how and when indirect fires will be employed. The following factors may have an impact on planning and execution:

- Careful use of VT ammunition is required to prevent premature arming.
- Indirect fire may cause unwanted rubble.
- The close proximity of enemy and friendly troops requires careful coordination.
- WP ammunition may create unwanted fires or smoke.
- Fuze delay should be used to ensure rounds penetrate fortifications as required.
- Illumination can be effective; however, it must be carefully planned to ensure friendly positions remain in the shadows while enemy positions are highlighted. Tall buildings may mask the effects of illumination rounds.
- VT and ICM rounds are effective for clearing enemy positions, observers, and antennas on rooftops.
- Scatterable mines can be used to impede enemy movement in the MOUT environment. It may be especially useful during the isolation phase to prevent the enemy from repositioning or reinforcing his forces. The effectiveness of scatterable mines is reduced when the mines are delivered on a hard surface.
- Artillery may be used in direct fire mode against point targets.
- Mortars are the most responsive indirect fires available to the company team in the MOUT environment. They are well suited for combat in built-up areas because of their high rate of fire, steep angle of fall, and short minimum range.
- The MOUT environment creates difficulties for the company team in target acquisition and in clearance and adjustment of fires.
- When taking part in urban operations, the company team must always keep in the mind that the MOUT environment creates unique requirements for centrally controlled fires and more restrictive fire control measures.
- Depending on the range to targets and the height of buildings in the urban area, up to 50 percent of all artillery rounds may impact on the roofs and sides of the buildings rather than on targets on the ground. Mortar fires are significantly more effective in hitting targets at street level between buildings.

COMBAT SERVICE SUPPORT

Guidelines for providing effective CSS to units fighting in built-up areas include the following:

- Provide supplies to units in the required quantities and as close as possible to the location where those supplies are needed.
- Protect supplies and CSS elements from the effects of enemy fire by preventing and/or avoiding detection and by using effective cover and concealment.
- Disperse and decentralize CSS elements to develop the most effective support structure based on requirements for communications, command and control, security, and proximity to the MSR for resupply.
- Position support units as far forward as the tactical situation permits.
- Plan the locations of casualty collection points and evacuation sites.
- Plan for the use of carrying parties and litter bearers.
- Plan for and use host-country support and civil resources when authorized and practical.
- Develop plans for requesting and obtaining special equipment such as ladders and toggle ropes with grappling hooks.

SECTION 2 - OFFENSIVE MOUT

Offensive operations in a built-up area are planned and executed based on the factors of METT-TC and established doctrine. This section focuses on the unique problems and challenges that offensive MOUT pose for the company team.

HASTY AND DELIBERATE ATTACKS IN MOUT

At the task force level, the MOUT offense takes the form of either a hasty or deliberate attack. Both types of attack require the friendly force to conduct as much planning, reconnaissance, and coordination as time and the situation permit.

Hasty attack

Task forces and company teams conduct hasty attacks as a result of meeting engagements, when unexpected contact occurs and bypass has not been authorized, or when the enemy is in a vulnerable position and can be quickly defeated through immediate offensive action. The following special considerations apply for hasty attacks in the MOUT environment:

- In built-up areas, incomplete intelligence and concealment may require the maneuver unit to move through, rather than around, the unit fixing the enemy in place (the base of fire element). Control and coordination become important factors in reducing congestion at the edges of the built-up area.
- Once its objective is secured, a MOUT hasty attack force may have to react to contingency requirements, either by executing on-order or be-prepared missions or by responding to FRAGOs.

Deliberate attack

A deliberate attack is a fully integrated operation that employs all available assets against the enemy's defense. It is employed when enemy positions are well prepared, when the built-up area is large or severely congested, or when surprise has been lost. Deliberate attacks are characterized by precise planning based on detailed information and reconnaissance and thorough preparations and rehearsals. Given the nature of urban terrain, the techniques employed in the deliberate attack of a built-up area are similar to those used in assaulting a strongpoint. The attack avoids the enemy's main strength, instead focusing combat power on the weakest point in the defense. A deliberate attack in a built-up area is usually conducted in four phases: reconnoiter the objective, isolate the objective, secure a foothold, and clear the built-up area. The following discussion examines these phases in detail.

PHASES OF OFFENSIVE MOUT

Reconnoiter the objective

The reconnaissance phase of MOUT must provide the company team and other friendly elements with adequate intelligence to stage a deliberate attack. This can pose a variety of problems and challenges since the intelligence not only must be extremely detailed but also must generally be collected from outside the urban area to ensure the survivability of the scouts. Detailed maps of the area of operations must be distributed to the lowest level.

Isolate the objective

Isolating the objective involves seizing terrain that dominates the area so the enemy cannot supply or reinforce his defensive forces. This step may be taken at the same time as securing a foothold. If isolating the objective is the first step, the subsequent steps should be carried out quickly so the defender has no time to react.

Secure a foothold

Securing a foothold involves seizing an intermediate objective that provides attacking forces with cover from enemy fire as well as a place at which they can enter the built-up area. For the company team, a foothold is normally one to two city blocks. As the team attacks to secure the foothold, it should be supported by direct and indirect suppressive fires and by obscuring or screening smoke.

Clear the built-up area

In determining the extent to which the built-up area must be cleared, the commander of the attacking force must consider the factors of METT-TC. He may decide to clear only those parts of the area necessary to the success of his mission if any of the following factors apply:

- An objective must be seized quickly.
- Enemy resistance is light or fragmented.
- Buildings in the area are of light construction with large open areas between them. In this situation, the commander would clear only those buildings along the approach to his objective or those necessary to ensure the unit's security.

On the other hand, the attacking unit may have a mission to systematically clear an area of all enemy forces. Through detailed analysis, the commander may anticipate that the unit will be opposed

by a strong, organized resistance or will be operating in areas where buildings are close together. In such a situation, one or two company teams may attack on a narrow front against the enemy's weakest sector. The teams move slowly through the area, clearing systematically from room to room and building to building. Other maneuver elements support the clearing teams and are prepared to assume their mission as necessary.

TASK ORGANIZATION

The task organization of a company team conducting an attack during MOUT will vary according to the specific nature of the built-up area and the objective. In general, the team will employ an assault force, a support force, and a reserve; in some cases, a security force is also used. Normally, there is no separate breach force; however, breaching elements may be part of the assault or support force, depending on the type and location of anticipated obstacles.

Support force Normally, most mounted elements of the MOUT unit are task organized in the support force. This allows the task force or company team commander to employ the firepower of the fighting vehicles without compromising their survivability, a distinct danger when heavy forces move into an urban area. The support force isolates the area of operations and the actual entry point into the urban area, allowing assault forces to secure a foothold.

Assault force The assault force is the element that gains a foothold in the urban area and conducts the clearance of actual objectives in the area. This force is normally a dismounted element task organized with engineers, with specific augmentation by armored vehicles.

Reserve force The reserve force normally includes both mounted and dismounted forces. It should be prepared to conduct any of the following tasks:

- Attack from another direction.
- Exploit friendly success or enemy weakness.
- Secure the rear or flank of friendly forces.
- Clear bypassed enemy positions.
- Maintain contact with adjacent units.
- Conduct support by fire or attack by fire as necessary.

OFFENSIVE TECHNIQUES IN MOUT

During the attack of a built-up area, tanks and BFVs may support by fire while lead elements are seizing a foothold. They then provide overwatch or serve as a base of fire for the infantry until the area has been secured.

Role of tanks and BFVs

The commander must employ tanks and BFVs to take advantage of their long-range lethality. He can usually do this by positioning the armored vehicles outside the built-up area, where they remain for the duration of the attack to cover high-speed avenues of approach. This is especially true during the isolation phase. (**NOTE:** Before providing support for the attack, tanks and BFVs must be able to maneuver into overwatch or base of fire positions; this will normally require support from organic infantry weapons to suppress enemy strongpoints and ATGM assets.)

Mutual support

In house-to-house and street fighting, tanks and BFVs move down the streets protected by the infantry, which clears the area of enemy ATGM weapons. The armored vehicles in turn support the infantry by firing their main guns and machine guns from a safe standoff range to destroy enemy positions. (**NOTE:** Refer to Figures 3-24 and 3-25 for an illustration of the mutual overwatch techniques that are required during combined operations in restricted areas.)

Figure I-4 illustrates a task force attack in a MOUT environment.

Figure I-4. Example task force attack in a MOUT environment.

SECTION 3 - DEFENSIVE MOUT

Like offensive MOUT, defensive operations in a built-up area require thorough planning and precise execution based on METT-TC and established doctrine. This section examines MOUT considerations that affect the company team in the defense.

ENEMY FORCES OUTSIDE THE URBAN AREA

While positioned in an urban area, the company team may be tasked to defend against an enemy approaching from outside the area. In general, procedures and considerations are the same as those for defensive operations in open terrain. For example, the commander designates BPs that take advantage of all available weapon systems. Objectives are similar as well; these may include preventing the enemy from isolating the defensive position, conducting reconnaissance of the defensive position, and/or gaining a foothold in the urban area. This type of MOUT may transition into an in-depth defense of the urban area, as described in the following paragraph, if the attacker continues to commit forces to the battle and the defending force fails to divert or destroy them.

ENEMY FORCES WITHIN THE URBAN AREA

The company team may be called upon to conduct any of several types of defensive operations (including defend in sector, defend a strongpoint, and defend a BP) when it faces enemy forces within the urban area. Procedures and considerations for these defensive operations are generally similar to those used in more conventional open terrain situations. The commander should designate engagement areas that take advantage of integrated obstacles and urban terrain features and that can be covered by direct and indirect fires. Figure I-5 illustrates defensive MOUT.

DEFENSIVE TECHNIQUES IN MOUT

Role of tanks and BFVs

In the defense, tanks and BFVs provide the MOUT commander with a mobile force that can respond quickly to enemy threats. They should be located on likely enemy avenues of approach in positions that allow them to take advantage of their long-range fires. Effective positioning allows the commander to employ the armored vehicles in a number of ways, such as the following:

- On the edge of the city in mutually supporting positions.
- On key terrain on the flanks of towns and villages.
- In positions from which they can cover barricades and obstacles by fire.
- As part of the reserve.

Tanks and BFVs are normally employed as a platoon. The commander also has the alternative of employing sections or individual armored vehicles with infantry platoons and squads; this allows tanks and BFVs to take advantage of the close security provided by the infantry.

Figure I-5. Example company team defense in a MOUT environment.

Fighting positions

Fighting positions for tanks and BFVs are an essential component of a complete and effective defensive plan in built-up areas. Vehicle positions must be selected and developed to afford the best possible cover, concealment, observation, and fields of fire; at the same time, they must not restrict the vehicles' ability to move when necessary. The following considerations apply:

- If fields of fire are restricted to the street area, hull-down positions should be used to provide cover and to enable tanks and BFVs to fire directly down the streets. From these positions, the armored vehicles are protected while retaining their ability to rapidly move to alternate positions. Buildings collapsing from enemy fires are a minimal hazard to the armored vehicles and their crews.
- Before moving into position to engage the enemy, a tank or BFV can occupy a hide position for cover and concealment. Hide positions for armored vehicles may be located inside buildings or underground garages, adjacent to buildings (using the buildings to mask enemy observation), or in culverts. Refer to Figure I-6 for an example of a tank using a hide position in a MOUT environment.
- Since the crew will not be able to see the advancing enemy from the hide position, an observer from the vehicle or a nearby infantry unit must be concealed in an adjacent building to alert the crew (see Figure I-6). When the observer acquires a target, he signals the armored vehicle to move to the firing position and, at the proper time, to fire.
- After firing, the tank or BFV moves to an alternate position to avoid compromising its location.

Figure I-6. Example vehicle hide position in a MOUT environment.

Employment of infantry squads

Infantry squads are usually employed abreast so that they all can fire toward the expected direction of attack. In the company team, however, the limited number of available infantrymen may require squad positions to be interspersed with vehicle positions. In built-up areas, squads may be separated by rooms within a building, or they may be positioned in different buildings. Infantry positions must be mutually supporting and allow for overlapping sectors of fire, even when they are in separate buildings or are divided by walls.

Employment of the reserve force

The commander’s defensive scheme of maneuver in MOUT must always include the employment of a reserve force. This force should be prepared to counterattack to regain key positions, to block enemy penetrations, to protect the flanks of the friendly force, or to provide a base of fire for disengaging elements. For combat in built-up areas, the reserve force has these characteristics:

- It normally consists of infantry elements.
- It must be as mobile as possible.
- It may be supported by tanks and/or BFVs.
- In company team MOUT, the reserve force may be a platoon or squad.

APPENDIX J

Stability Operations

Stability operations apply military power to influence the political environment, to facilitate diplomacy, or to interrupt or prevent specific illegal activities. These operations cover a broad spectrum. At one end are development and assistance activities aimed at enhancing a government's willingness and ability to care for its people. At the other are coercive military actions; these involve the application of limited, carefully prescribed force, or the threat of force, to achieve specific objectives. Army elements may be tasked to conduct stability operations to accomplish one or more of the following purposes:

- Deter or thwart aggression.
- Reassure allies and friendly governments, agencies, or groups.
- Provide encouragement and/or support for a weak or faltering government.
- Stabilize an area with a restless or openly hostile population.
- Maintain or restore order.
- Lend force, or the appearance of force, to national or international agreements and policies.

For more detailed information on stability operations, refer to the following publications:

- Joint Publications 3-07.2 and 3-07.3.
- FM 100-20.
- FM 100-23.
- FM 100-19.
- FM 7-98.
- FM 100-5.

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SECTION 1 - PLANNING CONSIDERATIONS

The following paragraphs examine several important considerations that will influence planning and preparation for stability operations. For a more detailed discussion of these subjects, refer to FM 100-23.

DECENTRALIZED OPERATIONS

Although stability operations are normally centrally planned, execution often takes the form of small-scale, decentralized actions conducted over extended distances. Responsibility for making decisions on the ground will fall to junior leaders. Effective command guidance and a thorough understanding of ROE (refer to the following paragraph) are critical at each operational level.

RULES OF ENGAGEMENT

The ROE are directives that explain the circumstances and limitations under which US forces initiate and/or continue combat engagement with hostile forces. These rules reflect the requirements of the laws of war, operational concerns, and political considerations when the operational environment shifts from peace to conflict and back to peace.

ROE must be briefed and trained to the lowest operational level. They should be established for, disseminated to, and thoroughly understood by every soldier in the unit. Another important consideration in development and employment of ROE is that commanders must assume that the belligerents they encounter will also understand the ROE; these unfriendly elements will attempt to use the ROE to their own advantage (and to the disadvantage of the friendly force). Refer to FM 100-23 for a more detailed discussion of ROE.

RULES OF INTERACTION

These directives, known as ROI, embody the human dimension of stability operations; they lay the foundation for successful relationships with the myriad of factions and individuals that play critical roles in these operations. ROI encompass an array of interpersonal communication skills, such as persuasion and negotiation.

These are tools the individual soldier will need to deal with the nontraditional threats that are prevalent in stability operations, including political friction, unfamiliar cultures, and conflicting ideologies. In turn, ROI enhance the soldier’s survivability in such situations.

ROI are based on the applicable ROE for a particular operation; they must be tailored to the specific regions, cultures, and/or populations affected by the operation. Like ROE, ROI can be effective only if they are thoroughly rehearsed and understood by every soldier in the unit.

FORCE PROTECTION

Commanders must implement appropriate security measures to protect the force. Establishment of checkpoints, effective base camp security procedures, and aggressive patrolling are examples of force protection measures.

TASK ORGANIZATION

Because of the unique requirements of stability operations, the company team may be task organized to operate with a variety of units. This includes some elements with which the team does not normally work, such as linguists, counterintelligence teams, and civil affairs teams.

CSS CONSIDERATIONS

The operational environment the company team faces during stability operations may be very austere, creating special CSS considerations. These factors include, but are not limited to, the following:

- Reliance on local procurement of certain items.
- Shortages of various critical items, including repair parts, Class IV supply materials, and lubricants.
- Special Class V supply requirements, such as pepper spray.
- Reliance on bottled water.

MEDIA CONSIDERATIONS

The presence of the media is a reality that confronts every soldier involved in stability operations. All leaders and soldiers must know how to deal effectively with broadcast and print reporters and photographers. This should include an understanding of which subjects they are authorized to discuss and which ones they must refer to the PAO.

OPERATIONS WITH OUTSIDE AGENCIES

US Army units may conduct certain stability operations in coordination with a variety of outside organizations. These include other US armed services or government agencies as well as international organizations (including private volunteer organizations, nongovernmental organizations, and UN military forces or agencies).

SECTION 2 - STABILITY ACTIVITIES

FM 100-5 categorizes stability operations into several activities. The boundaries between these activities are not always well defined nor are they meant to be exhaustive. This section provides an introductory discussion of stability activities; for more detailed information, refer to FM 100-5 and FM 7-98.

NONCOMBATANT EVACUATION OPERATIONS

NEOs are primarily conducted to evacuate US citizens whose lives are in danger, although they may also include natives of the host nation and third-country aliens friendly to the United States. These operations involve swift insertion and temporary occupation of an objective, followed by a planned withdrawal. Leaders use only the amount of force required for self-defense and protection of evacuees.

SUPPPORT TO DOMESTIC CIVIL AUTHORITY

Domestic support operations, covered in FM 100-19, are conducted by military forces in support of federal and state officials under provisions of, and limited by, the Posse Comitatus Act and other laws and regulations. Actions defined by the US Congress as threats to national security warranting military support include drug trafficking, illegal immigration, and customs violations.

PEACE OPERATIONS

Peace operations encompass three general areas: diplomatic (peacemaking and peace-building), traditional peacekeeping, and threatened or actual forceful military actions (peace enforcement). The company team may participate in peacekeeping or peace enforcement operations.

Peacekeeping operations

A peacekeeping force facilitates truce negotiations and political settlement of disputes. In doing so, it must assure each side in the dispute that other parties are not taking advantage of settlement terms to their own benefit. Peacekeeping differs from internal security in that the force does not act in support of a government. Rather, the peacekeeping force must remain entirely neutral; if it loses a reputation for impartiality, its usefulness within the peacekeeping mission is destroyed.

Peace enforcement

Several unique characteristics distinguish peace enforcement activities from wartime operations and from other stability operations. The purpose of peace enforcement is to maintain or restore peace under conditions broadly defined at the international level. It may entail combat, armed intervention, or physical threat of armed intervention. Under the provisions of an international agreement, the task force and its subordinate company teams may be called upon to use coercive military power to compel compliance with international sanctions or resolutions.

SHOW OF FORCE

Forces deployed abroad lend credibility to a nation’s promises and commitments. In support of this principle, show of force operations are meant to reassure a friendly nation or ally through a display of credible military force directed at potential adversaries. These operations may also be conducted to influence foreign governments or political-military organizations to respect US interests.

SUPPORT TO INSURGENCY AND COUNTERINSURGENCY OPERATIONS

This type of support includes assistance provided by US forces to help a friendly nation or group that is attempting to combat insurgent elements or to stage an insurgency itself. This type of stability activity is normally conducted by special forces.

COMBATING TERRORISM

In all types of stability operations, antiterrorism and counterterrorism activities are a continuous requirement in protecting installations, units, and individuals from the threat of terrorism. Antiterrorism focuses on defensive measures. Counterterrorism encompasses a full range of offensive measures to prevent, deter, and respond to terrorism. For more information on these activities, refer to JCS Publication 3-07.2

SUPPORT TO COUNTERDRUG OPERATIONS

US military forces may be tasked for a variety of counterdrug activities, which are always conducted in conjunction with another government agency. These activities include destroying illicit drugs and disrupting or interdicting drug manufacturing, growing, processing, and smuggling operations. Counterdrug support may take the form of advisory personnel, mobile training teams, offshore training activities, and assistance in logistics, communications, and intelligence.

ARMS CONTROL AND NATION ASSISTANCE

Armored and mechanized company teams may work with another nation’s military to conduct arms control or nation assistance activities. These types of support usually entail short-term, high-impact operations.

SECTION 3 - COMPANY TEAM TASKS

ESTABLISH AND OCCUPY A LODGMENT AREA

A lodgment area is a highly prepared position used as a base of operations in stability operations. Like an assembly area or defensive strongpoint, the lodgment provides a staging area for the occupying unit, affords a degree of force protection, and requires 360-degree security.

At the same time, several important characteristics distinguish the lodgment area from less permanent positions. Most notable is the level of preparation and logistical support required for long-term occupation. The lodgment must have shelters and facilities that can support the occupying force and its attachments for an extended period. The area must be positioned and developed so the unit can effectively conduct its primary missions (such as peace enforcement or counterterrorism) throughout its area of responsibility.

In establishing the lodgment, the company team may use existing facilities or request construction of new facilities. A key advantage in using existing structures is immediate availability; this also reduces or eliminates the need for construction support from engineers and members of the team. There are disadvantages as well. Existing facilities may be inadequate to meet the team's operational needs, and they may pose security problems because of their proximity to other structures.

The company team may establish and occupy a lodgment area as part of a task force or, with significant support from the controlling task force, as a separate element. Figure J-1 illustrates a company team lodgment area established using existing facilities.

Planning the lodgemant area

Before he begins preparation, construction, and occupation of the lodgment area, the commander must plan its general layout. He should evaluate these factors:

- Location of the lodgment area.
- Effects of weather.
- Traffic patterns.
- OP sites and/or patrol routes.
- Entry and exit procedures.
- Vehicle emplacement and orientation.
- Bunkers and fighting positions.
- Fire planning.
- Size and composition of the reserve.
- Location of possible LZs and PZs.
- CSS considerations, including locations of the following:

  - Mess areas, showers, and latrines (including drainage).

- Storage bunkers for Class III, Class IV, and Class V supplies.

- Maintenance and refueling areas.

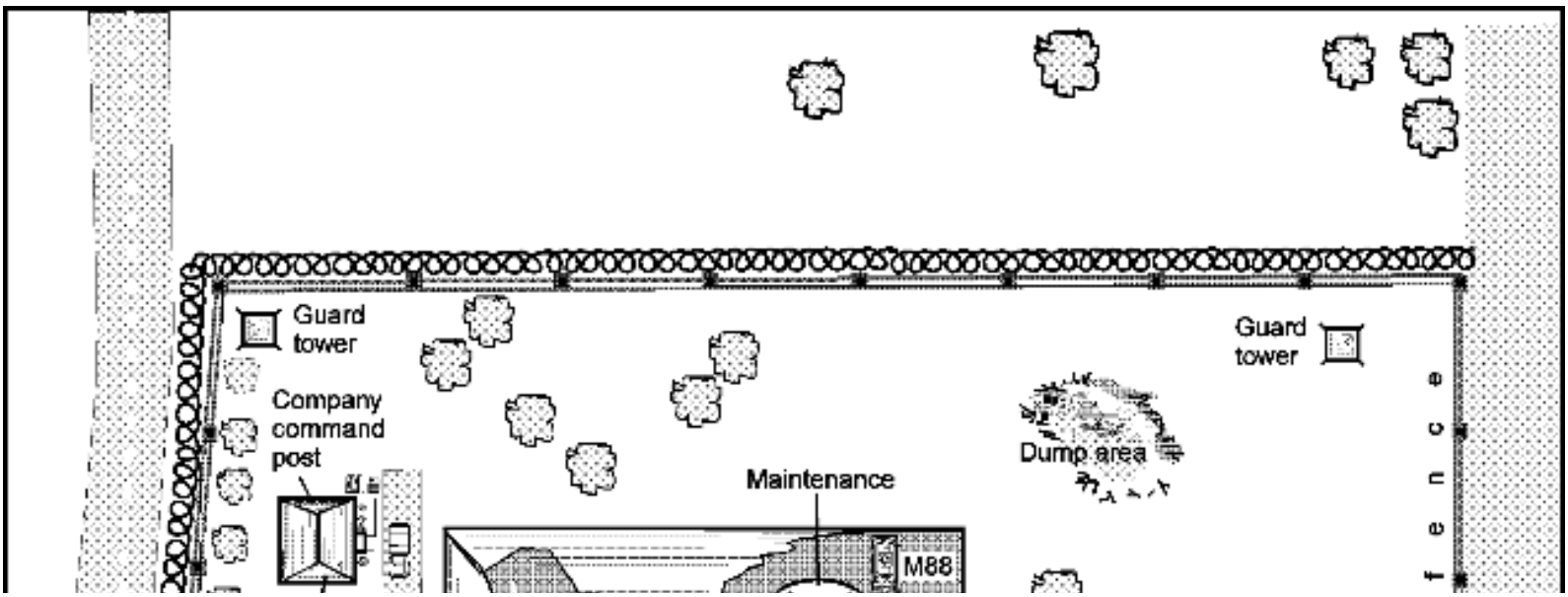
- Aid station.

- CP site security.
- Size, composition, and function of advance/reconnaissance parties.
- Nature and condition of existing facilities (quarters; water, sewer, and power utilities; reinforced "hardstand" areas for maintenance).
- Proximity to structures and/or roadways (including security factors).

Priorities of work

The commander must designate priorities of work as the company team establishes the lodgment area. He should consider the following tasks:

- Establishment of security of the immediate area and the perimeter.
- Establishment of initial roadblocks to limit access to the area.
- Mine clearance.
- Construction of revetments to protect vehicles, generators, communications equipment, and other facilities.
- Construction of barriers or berms around the lodgment area to limit observation of the compound and provide protection for occupants.
- Construction of shelters for lodgment personnel.
- Construction of defensive positions.
- Construction of sanitation and personal hygiene facilities.
- Construction of hardened CP facilities.
- Continuing activities to improve the site (such as adding hard-wire electrical power or perimeter illumination).



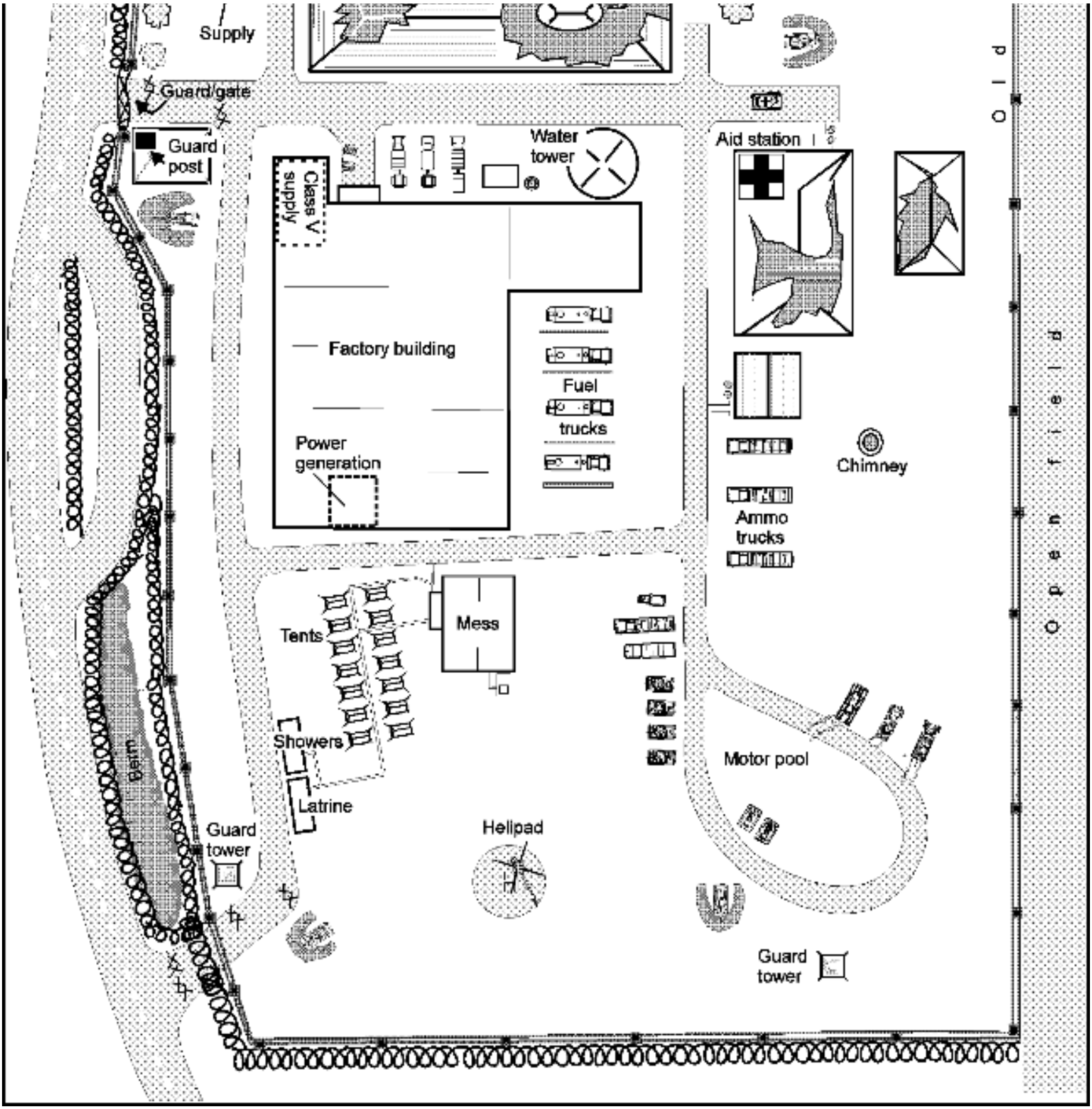


Figure J-1. Example company team lodgment area using existing facilities.

CONDUCT NEGOTIATIONS

The company team may face a number of situations in which leaders will need to conduct negotiations. There are two general types of negotiations: situational and preplanned. Situational negotiations are conducted in response to a requirement for on-the-spot discussion and resolution of a specific issue or problem. An example would be members of an advance guard negotiating the passage of a convoy through a checkpoint. Preplanned negotiations are conducted in such situations as a company team commander conducting a work coordination meeting between commanders of former warring factions, known as FWFs, to determine mine clearance responsibilities.

Situational negotiations

At the company team level, situational negotiations are far more common than the preplanned type. In fact, employment in stability operations will require the commander, his subordinate leaders, and other soldiers to conduct some form of negotiations almost daily. This in turn requires them to have a thorough understanding of the ROE and ROI.

Members of the company team apply this working knowledge to the process of discussing and, whenever possible, resolving issues and problems that arise between opposing parties, which may include the team itself. A critical aspect of this knowledge is the negotiator's ability to recognize that he has exhausted his options under the ROE/ROI and must turn the discussion over to a higher authority. Negotiations continue at progressive levels of authority until the issue is resolved.

In preparing themselves and their soldiers for the negotiation process, the commander and subordinate leaders must conduct rehearsals covering the ROE and ROI. One effective technique is to war-game application of ROE/ROI in a given stability situation, such as manning a checkpoint. This forces leaders and subordinates alike to analyze the ROE/ROI and apply them in an operational environment.

Preplanned negotiations

Preplanned negotiations require negotiators to thoroughly understand both the dispute or issue at hand and the factors influencing it, such as the ROE and ROI, before talks begin. The negotiator's ultimate goal is to reach an agreement that is acceptable to both sides and that reduces antagonism (and/or the chance of renewed hostilities) between the parties involved. The following paragraphs list guidelines and procedures for each phase of the negotiation process.

Identify the purpose of negotiations

Before contacting leaders of the belligerent parties to initiate the negotiation process, the commander must familiarize himself with both the situation and the area in which his unit will be operating. This includes identifying and evaluating avenues of approach that connect the opposing forces. Results of the negotiation process, which may be lengthy and complicated, must be based on national or international agreements or accords. Negotiation topics include the following:

- When the sides will withdraw.
- Positions to which they will withdraw (these should be located to preclude observation and direct fire by the opposing parties).
- What forces or elements will move during each phase of the operation.
- Pre-positioning of peace forces that can intervene in case of renewed hostilities.
- Control of heavy weapons.
- Mine clearance.
- Formal protest procedures for the belligerent parties.

Establish the proper context

The next step in the process is to earn the trust and confidence of each opposing party. This includes establishing an atmosphere (and a physical setting) that participants will judge to be both fair and safe. These considerations apply:

- Always conduct joint negotiations on matters that affect both parties.
- When serving as a mediator, remain neutral at all times.
- Learn as much as possible about the belligerents, the details of the dispute or issue being negotiated, and other factors such as the geography of the area and specific limitations or restrictions (for example, the ROE and ROI).
- Gain and keep the trust of the opposing parties by being firm, fair, and polite.
- Use tact, remain patient, and be objective.
- Never deviate from applicable local and national laws and international agreements.

Prepare for the negotiations

Thorough, exacting preparation is another important factor in ensuring the success of the negotiation process. Company team personnel should use the following guidelines:

- Negotiate sequentially, from subordinate level to senior level.
- Select and prepare a meeting place that is acceptable to all parties.
- Arrange for interpreters and adequate communications facilities as necessary.
- Ensure that all opposing parties, as well as the negotiating team, use a common map (edition and scale).
- Coordinate all necessary movement.
- Establish local security.

- Keep higher headquarters informed throughout preparation and during the negotiations.
- Make arrangements to record the negotiations (use audio or video recording equipment, if available).

Conduct the negotiations

Negotiators must always strive to maintain control of the session. They must be firm, yet evenhanded, in leading the discussion. At the same time, they must be flexible, with a willingness to accept recommendations from the opposing parties and from their own assistants and advisors. The following procedures and guidelines apply:

- Exchange greetings.
- Introduce all participants by name, including negotiators and any advisors.
- Consider the use of small talk at the beginning of the session to put the participants at ease.
- Allow each side to state its case without interruption and without making premature judgments.
- Make a record of issues presented by both sides.
- If one side makes a statement that is incorrect, be prepared to produce evidence or proof to establish the facts.
- If the negotiating team or peacekeeping force has a preferred solution, present it and encourage both sides to accept it.
- Close the meeting by explaining to both sides what has been agreed upon and what actions they are expected to take. If necessary, be prepared to present this information in writing for their signatures.
- Do not negotiate or make deals in the presence of the media.
- Maintain the highest standards of conduct at all times.

MONITOR COMPLIANCE WITH AN AGREEMENT

Compliance monitoring involves observing FWFs and working with them to ensure they meet the conditions of one or more applicable agreements. Examples of the process include overseeing the separation of opposing combat elements, the withdrawal of heavy weapons from a sector, or the clearance of a minefield. Planning for compliance monitoring should cover, but is not limited to, the following considerations:

- Liaison teams, with suitable communications and transportation assets, are assigned to the headquarters of the opposing sides. Liaison personnel maintain communications with the leaders of their assigned element; they also talk directly to each other and to their mutual commander (the company team or task force commander).
- The commander positions himself at the point where it is most likely that violations could occur.
- He positions platoons and squads where they can observe the opposing parties, instructing them to assess compliance and report any violations.
- As directed, the commander keeps higher headquarters informed of all developments, including his assessment of compliance and/or noncompliance.

ESTABLISH OBSERVATION POSTS

Construction and manning of OPs is a high-frequency task for company teams and subordinate elements when they must establish area security during stability operations. Each OP is established for a specified time and purpose. During most stability operations, OPs are both overt (conspicuously visible, unlike their tactical counterparts) and deliberately constructed. They are similar in construction to bunkers (refer to FM 5-103) and are supported by fighting positions, barriers, and patrols. (**NOTE:** If necessary, the company team can also employ hasty OPs, which are similar to individual fighting positions.) Based on METT-TC factors, deliberate OPs may include specialized facilities such as the following:

- Observation tower.
- Ammunition and fuel storage area.
- Power sources.
- Supporting helipad.
- Kitchen, sleep area, shower, and/or toilet.

Each OP must be integrated into supporting direct and indirect fire plans and into the overall observation plan. Figure J-2 illustrates an example OP.

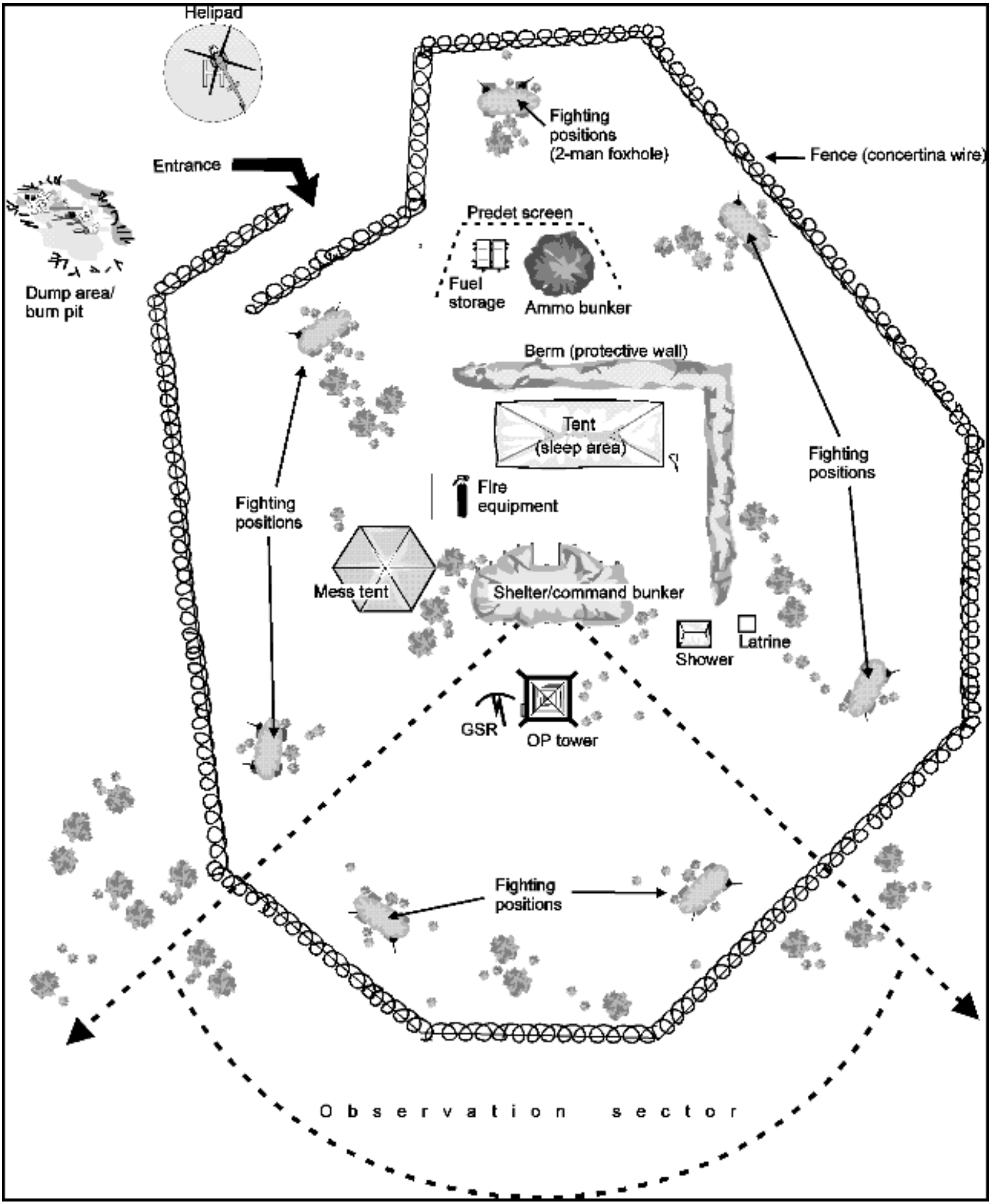

Helipad
Entrance
Fighting positions (2-man foxhole)
Fence (concertina wire)
Predet screen
Fuel storage
Ammo bunker
Dump area/ burn pit
Berm (protective wall)
Tent (sleep area)
Fighting positions
Fire equipment
Fighting positions
Mess tent
Shelter/command bunker
Shower
Latrine
GSR
OP tower
Fighting positions
Observation sector

Figure J-2. Example deliberate observation post.

ESTABLISH CHECKPOINTS

Establishment of checkpoints is a high-frequency task for company teams and subordinate elements involved in stability operations. Checkpoints can be either deliberate or hasty.

Purposes

The team or a subordinate element may be directed to establish a checkpoint to achieve one or more of the following purposes:

- Deter illegal movement.
- Create an instant roadblock.
- Control movement into the area of operations or onto a specific route.
- Demonstrate the presence of peace forces.
- Prevent smuggling of contraband.
- Enforce the terms of peace agreements.
- Serve as an OP and/or patrol base.

Checkpoint procedures

Checkpoint layout, construction, and manning should reflect METT-TC factors, including the amount of time available for emplacing it. The layout of a deliberate checkpoint is depicted in Figure J-3. The following procedures and considerations may apply:

- Position the checkpoint where it is visible and where traffic cannot turn back, get off the road, or bypass the checkpoint without being observed.
- Position a combat vehicle off the road, but within sight, to deter resistance to soldiers manning the checkpoint. The vehicle should be in a hull-down position and protected by local security. It must be able to engage vehicles attempting to break through or bypass the checkpoint.
- Place obstacles in the road to slow or canalize traffic into the search area.
- Establish a reserve.
- Establish a bypass lane for approved convoy traffic.
- Establish wire communications within the checkpoint area to connect the checkpoint bunker, the combat vehicle, the search area, security forces, the rest area, and any other elements involved in the operation.
- Designate the search area. If possible, it should be belowground to provide protection against such incidents as the explosion of a booby-trapped vehicle. Establish a parking area adjacent to the search area.
- If applicable, checkpoint personnel should include linguists.
- Properly construct and equip the checkpoint. Consider inclusion of the following items:

- Barrels filled with sand, concrete, or water (emplaced to slow and canalize vehicles).

- Concertina wire (emplaced to control movement around the checkpoint).

- Secure facilities for radio and wire communications with the controlling headquarters.

- First-aid kit.

- Sandbags for defensive positions.

- Wood or other materials for the checkpoint bunker.

- Binoculars, night vision devices, and/or flashlights.

- Long-handled mirrors (these are used in inspections of vehicle undercarriages).

- Elements manning a deliberate CP may require access to specialized equipment, such as the following:

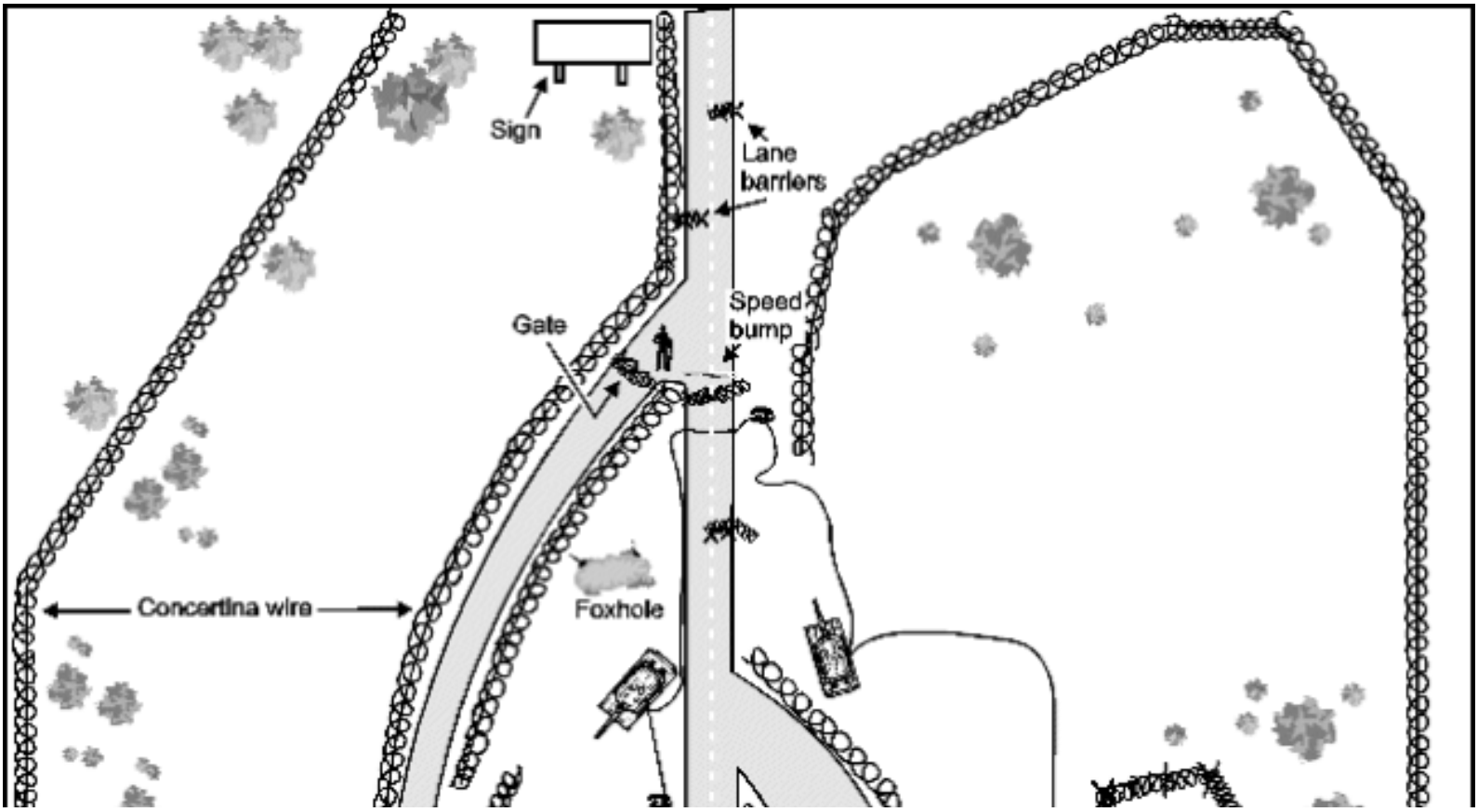
  - Floodlights.

  - Duty log.

  - Flag and unit sign.

  - Barrier pole that can be raised and lowered.

  - Generators with electric wire.



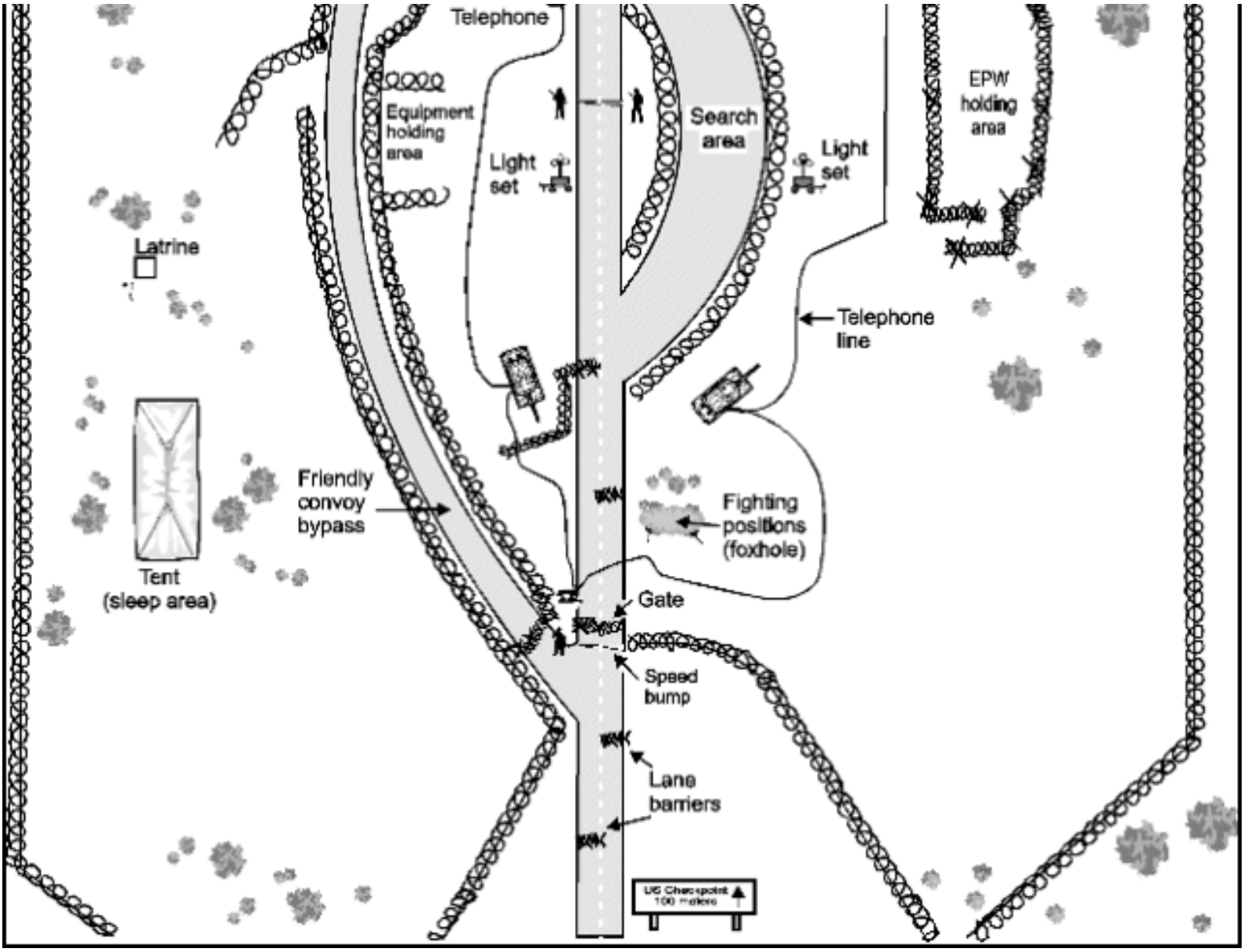


Figure J-3. Example deliberate checkpoint layout.

CONDUCT PATROL OPERATIONS

Patrolling is also a high-frequency task during stability operations. Planning and execution of an area security patrol are similar to procedures for other tactical patrols except that patrol leaders must consider political implications and ROE. (**NOTE:** Refer to FM 7-10 for a detailed discussion of patrol operations.)

Figure J-4 illustrates the use of patrols, in conjunction with checkpoints and OPs, in enforcing a zone of separation between belligerent forces.

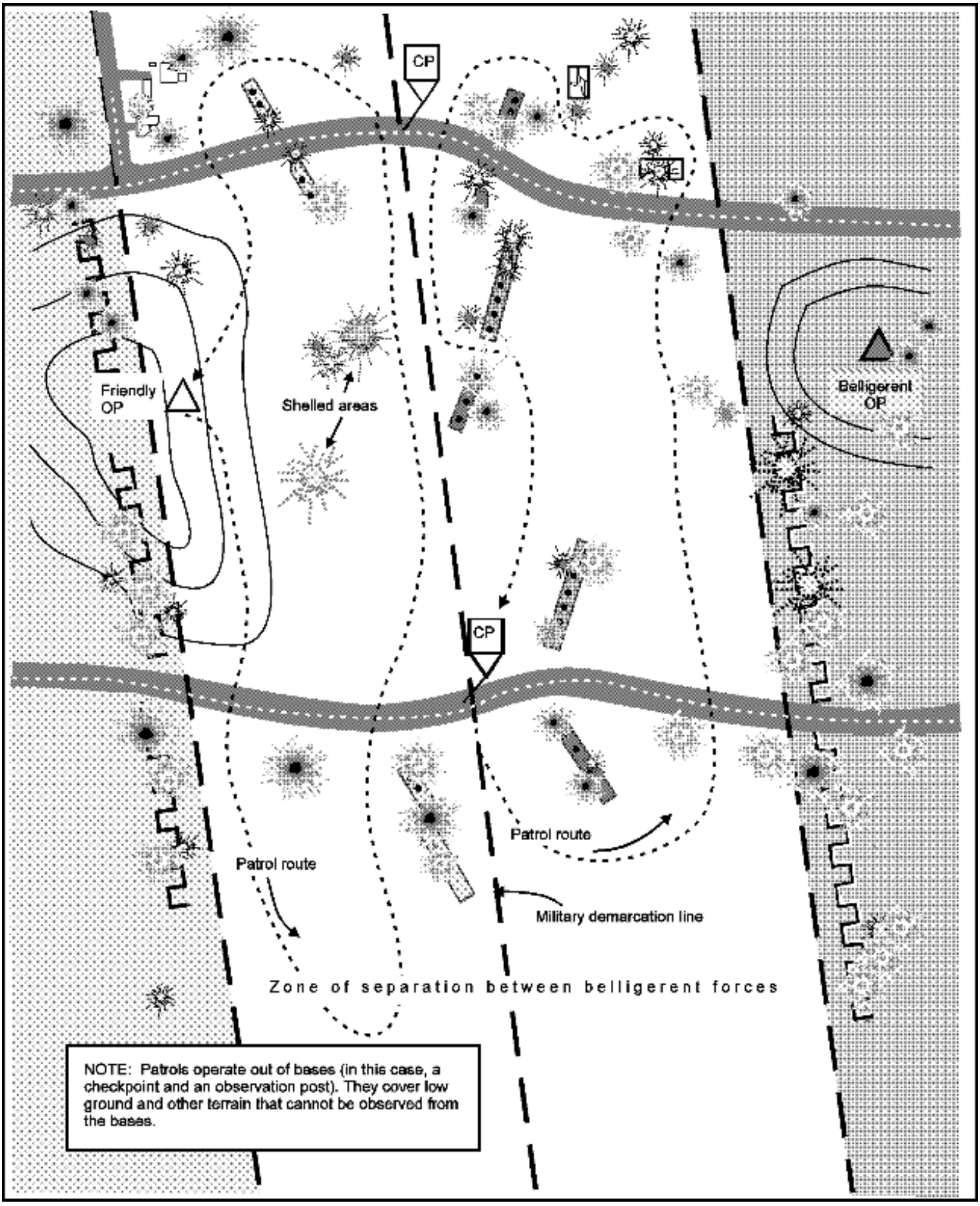

CP
Friendly OP
Shelled areas
Belligerent OP
CP
Patrol route
Patrol route
Military demarcation line
Zone of separation between belligerent forces
NOTE: Patrols operate out of bases (in this case, a checkpoint and an observation post). They cover low ground and other terrain that cannot be observed from the bases.

Figure J-4. Example employment of checkpoints, OPs, and patrols to enforce a zone of separation.

CONDUCT CONVOY ESCORT

This mission requires the company team to provide a convoy with security and close-in protection from direct fire while on the move. The task force may choose this course of action if enemy contact is imminent or when it anticipates a serious threat to the security of the convoy. Depending on METT-TC factors, the company team is capable of providing effective protection for a large convoy. (**NOTE:** Smaller-scale convoy escort operations may be conducted by lighter security forces such as military police units.)

Battle command

The task organization inherent in convoy escort missions makes battle command especially critical. The company team commander may serve either as the convoy security commander or as overall convoy commander. In the latter role, he is responsible for the employment not only of his own organic combat elements but also of CS and CSS attachments and drivers of the escorted vehicles. He must incorporate all of these elements into the various contingency plans developed for the operation. He must also maintain his link with the controlling TOC.

Effective SOPs and drills must supplement OPORD information for the convoy, and rehearsals should be conducted if time permits. Additionally, extensive PCCs and PCIs must be conducted, to include inspection of the escorted vehicles. The commander must also ensure that all required coordination is conducted with units and elements in areas through which the convoy will pass.

Before the mission begins, the convoy commander should issue a complete OPORD to all vehicle commanders in the convoy. This is vital because the convoy may itself be task organized from a variety of units and because some vehicles may not have tactical radios. The order should follow the standard five-paragraph OPORD format; it may place special emphasis on these subjects:

- Inspection of convoy vehicles.
- Route of march (including a strip map for each vehicle commander).
- Order of march.
- Actions at halts (scheduled and unscheduled).
- Actions in case of vehicle breakdown.
- Actions for a break in column.
- Actions in built-up areas.
- Actions on contact, covering such situations as snipers, enemy contact (including near or far ambush), indirect fire, and minefields.
- Riot drill.

- Refugee control drill.
- Evacuation drill.
- Actions at the delivery site.
- Chain of command.
- Guidelines and procedures for negotiating with local authorities.
- Communications and signal information.

Tactical disposition

In any escort operation, the basic mission of the convoy commander (and, as applicable, the convoy security commander) is to establish and maintain security in all directions and throughout the length of the convoy. He must be prepared to adjust the disposition of the security force to fit the security requirements of each particular situation. Several factors affect this disposition, including METT-TC, convoy size, organization of the convoy, and types of vehicles involved. In some instances, the commander may position security elements, such as platoons, to the front, rear, and/or flanks of the convoy. As an alternative, he may disperse the combat vehicles throughout the convoy body.

Task organization

When sufficient escort assets are available, the convoy commander will usually organize convoy security into three distinct elements: advance guard,
close-in protective group, and rear guard. He may also designate a reserve to handle contingency situations. Figure J-5 shows a company team escort force task organized with an engineer platoon, an aerial scout section, a task force wheeled scout section, a BSFV air defense vehicle, a task force mortar section, and the team's normal maintenance and medical attachments. (**NOTE:** The convoy escort will normally be provided with linguists as required.)

The following paragraphs examine the role of the advance guard, of security assets accompanying the convoy main body, and of the reserve.

Advance guard

The advance guard reconnoiters and proofs the convoy route. It searches for signs of enemy activity, such as ambushes and obstacles. Within its capabilities, it attempts to clear the route. The distance and time separation between the advance guard and the main body should be sufficient to provide the convoy commander with adequate early warning before the arrival of the vehicle column; however, the separation should be short enough that the route cannot be interdicted between the passage of the advance guard and the arrival of the main body.

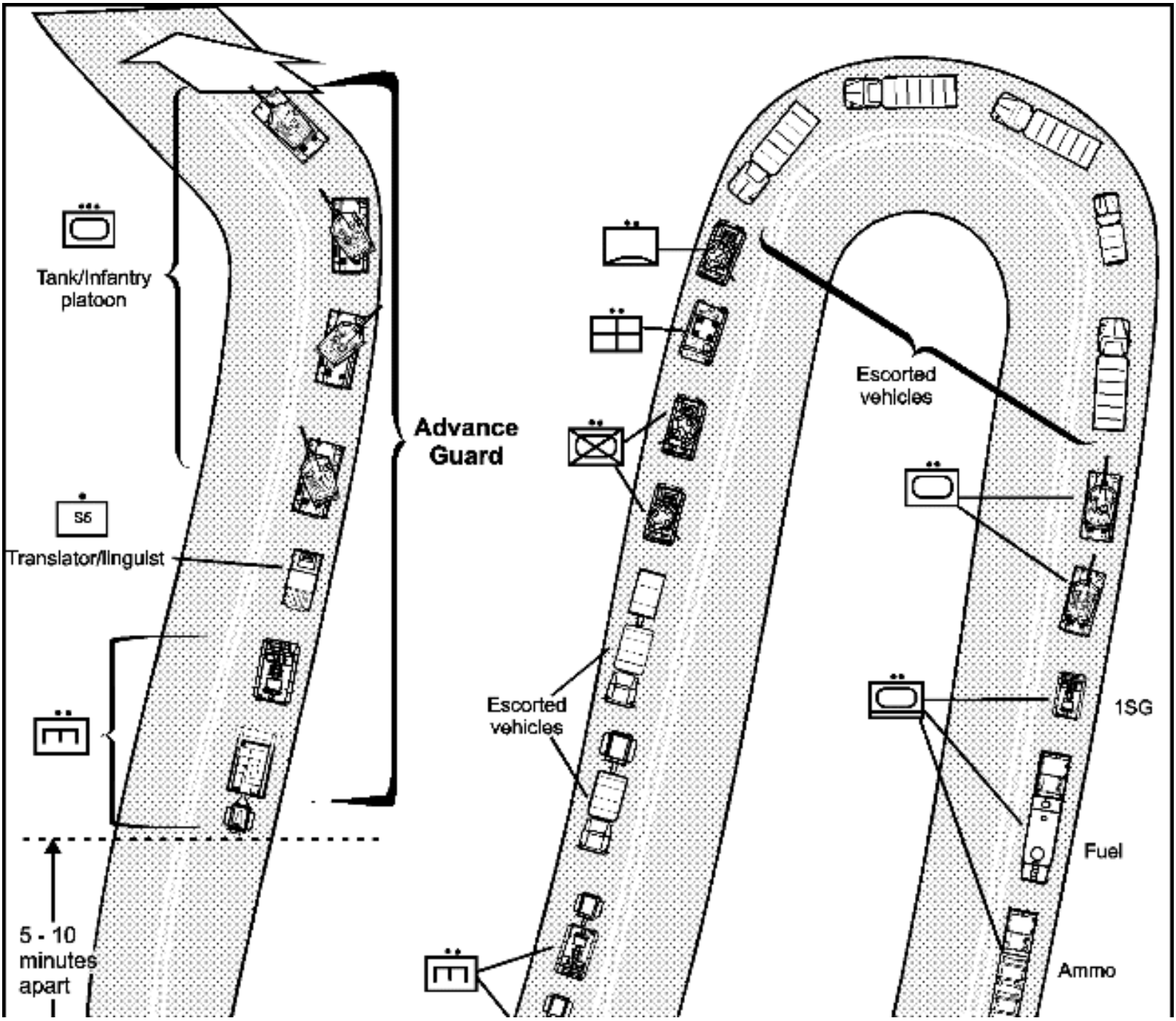
The advance guard should be task organized with reconnaissance elements (wheeled scouts and aerial scouts, if available), combat elements (a tank or mechanized infantry platoon), and mobility assets (an engineer squad and a tank with plow or roller). As necessary, it should also include linguists.

Main body

The commander may choose to intersperse security elements with the vehicles of the convoy main body. These may include combat elements (including the rear guard), the convoy commander, additional linguists, mobility assets, and medical and maintenance support assets. Depending on METT-TC, the convoy commander may also consider the employment of flank security. The length of the convoy may dictate that he position the accompanying mortars with the main body.

Reserve

In a company team escort mission, the reserve may consist of a tank or mechanized infantry platoon and the attached mortar section, if available. The reserve force will either move with the convoy or be located at a staging area close enough to provide immediate interdiction against enemy forces. The supporting headquarters will normally designate an additional reserve, consisting of an additional company team or combat aviation assets, to support the convoy operation.



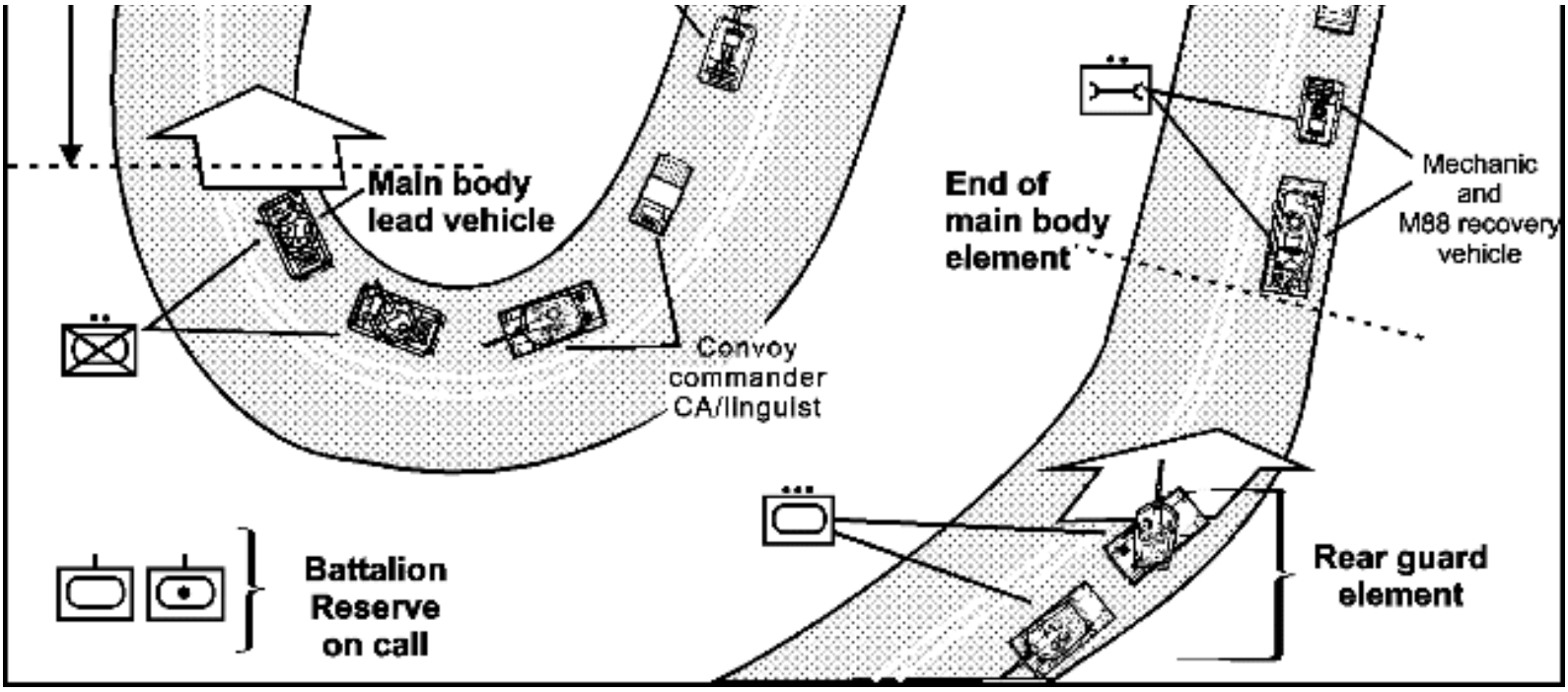


Figure J-5. Example company team convoy escort mission.

Actions on contact

As the convoy moves to its new location, the enemy may attempt to harass or destroy it. This contact will usually occur in the form of an ambush, often executed in coordination with the use of a hasty obstacle. In such a situation, the safety of the convoy rests on the speed and effectiveness with which escort elements can execute appropriate actions on contact.

Based on the factors of METT-TC, portions of the convoy security force, such as a tank platoon or tank section, may be designated as a reaction force. This element performs its normal escort duties, such as conducting tactical movement or occupying an assembly area, as required until enemy contact occurs; it then is given a reaction mission by the convoy commander.

Actions at an ambush

An ambush is one of the most effective ways to interdict a convoy. Conversely, reaction to an ambush must be immediate, overwhelming, and decisive. Actions on contact in response to an ambush must be planned for and rehearsed so they can be executed as a drill by all escort and convoy elements; particular attention should be given to fratricide prevention.

In almost all situations, the security force will take several specific, instantaneous actions in reacting to an ambush. These steps include the following:

- As soon as they acquire an enemy force, the escort vehicles action toward the enemy. They seek covered positions between the convoy and the enemy and suppress the enemy with the highest possible volume of fire permitted by the ROE. Contact reports are sent to higher headquarters as quickly as possible.
- The convoy commander retains control of the convoy vehicles and continues to move them along the route at the highest

possible speed.

- Convoy vehicles, if they are armed, may return fire only if the security force has not positioned itself between the convoy and the enemy force.
- Subordinate leaders or the convoy commander may request that any damaged or disabled vehicles be abandoned and pushed off the route.
- The escort leader uses SPOTREPs to keep the convoy security commander informed. If necessary, the escort leader or the security commander can then request support from the reserve; he can also call for and adjust indirect fires.
- Once the convoy is clear of the kill zone, the escort element executes one of the following COAs based on the composition of the escort and reaction forces, the commander's intent, and the strength of the enemy force:

  - Continue to suppress the enemy as the reserve moves to provide support.

  - Assault the enemy.

  - Break contact and move out of the kill zone.

Actions at an obstacle

Obstacles pose a major threat to convoy security. Obstacles can be used to harass the convoy by delaying it; if the terrain is favorable, the obstacle may stop the convoy altogether. In addition, obstacles can canalize or stop the convoy to set up an enemy ambush. The purpose of route reconnaissance ahead of a convoy is to identify obstacles and either breach them or find bypasses. In some cases, however, the enemy or its obstacles may avoid detection by the reconnaissance element. If this happens, the convoy must take actions to reduce or bypass the obstacle.

When an obstacle is identified, the convoy escort faces two problems: reducing or bypassing the obstacle and maintaining protection for the convoy. Security becomes critical, and actions at the obstacle must be accomplished very quickly. The convoy commander must assume that the obstacle is overwatched and covered by enemy fires.

To reduce the time the convoy is halted and thus to reduce its vulnerability, these actions should occur when the convoy escort encounters point-type obstacles:

- The lead element identifies the obstacle and directs the convoy to make a short halt and establish security. The escort overwatches the obstacle and requests that the breach force move forward.
- The escort maintains 360-degree security and provides overwatch as the breach force reconnoiters the obstacle in search of a bypass.
- Once all reconnaissance is complete, the convoy commander determines which of the following COAs he will take:

- Bypass the obstacle.
- Breach the obstacle with the assets on hand.
- Breach the obstacle with reinforcing assets.

NOTE: Among the obstacles the convoy may encounter is an impromptu checkpoint established by civilians or noncombat elements. If the checkpoint cannot be bypassed or breached, the commander must be prepared to negotiate passage for the convoy.

- The commander relays a SPOTREP higher and, if necessary, requests support from combat reaction forces, engineer assets (if they are not part of the convoy), and aerial reconnaissance elements.
- Artillery units or the supporting mortar section are alerted to be prepared to provide fire support.

Actions during a halt

During a short halt, the convoy escort remains at REDCON-1 status regardless of what actions other convoy vehicles are taking. If the halt is for any reason other than an obstacle, the following actions should be taken:

- The convoy commander signals the short halt and transmits the order via tactical radio. Based on METT-TC factors, he directs all vehicles in the convoy to execute the designated formation or drill for the halt.
- Ideally, the convoy will assume a herringbone or coil formation. If the sides of the road are untrafficable or are mined, however, noncombat vehicles may simply pull over and establish 360-degree security as best they can. This will allow movement of the escort vehicles as necessary through the convoy main body.
- If possible, escort vehicles are positioned up to 100 meters beyond other convoy vehicles, which are just clear of the route. Escort vehicles remain at REDCON-1 but establish local security based on the factors of METT-TC.
- When the order is given to move out, convoy vehicles reestablish the movement formation, leaving space for escort vehicles. Once the convoy is in column, local security elements (if used) return to their vehicles, and the escort vehicles rejoin the column.
- When all elements are in column, the convoy resumes movement.

OPEN AND SECURE ROUTES

This task is a mobility operation normally conducted by the engineers. The company team may be tasked to assist them using its mine plows and rollers and to provide overwatch support. The route may be cleared to achieve one of several tactical purposes:

- For use by the task force for its initial entry into an area of operations.
- To clear a route ahead of a planned convoy to ensure that belligerent elements have not emplaced new obstacles since the last time the route was cleared.
- To secure the route to make it safe for use as an MSR.

The planning considerations associated with opening and securing a route are similar to those for a convoy escort operation. The company team commander must analyze the route and develop contingency plans covering such possibilities as likely ambush locations and sites that are likely to be mined. The size and composition of a team charged with opening and securing a route is based on METT-TC. For additional information on combine arms route clearance operations, refer to FM 20-32.

CONDUCT RESERVE OPERATIONS

Reserve operations in the stability environment are similar to those in other tactical operations in that they allow the commander to plan for a variety of contingencies based on the higher unit’s mission. As noted throughout this section, the reserve may play a critical role in almost any stability activity or mission, including lodgment area establishment, convoy escort, and area security.

The reserve force must be prepared at all times to execute its operations within the time limits specified by the controlling headquarters. For example, a platoon-size reserve may be directed to complete an operation within 5 minutes, while a company-size force may be allotted 10 minutes.

The controlling headquarters may also tailor the size and composition of the reserve according to the mission it is assigned. If the reserve is supporting a convoy mission, it may consist of a company team; in a mission to support established checkpoints, the reserve force may be the dismounted elements from a platoon or company team, supported by aviation assets.

APPENDIX K

Support Operations

US military forces conduct support operations to assist designated groups by providing essential supplies and services in the face of adverse conditions, usually those created by man-made or natural disasters. Mission success in support operations, which are normally characterized by the lack of an active opponent, is measured in terms of the ability to relieve suffering and to help civil authorities respond to crises. The ultimate goals of these operations are to meet the immediate needs of the supported groups and to transfer responsibility quickly and efficiently to appropriate civilian authorities.

Domestic support operations are always conducted in support of local, state, and federal civil authorities. Overseas support operations are almost always conducted in support of and in concert with other agencies; these may be American or international organizations of either government or private affiliation.

Support operations may be independent actions. Conversely, they may complement offensive, defensive, or stability operations; refer to the discussions of company team operations in Chapter 3 (offense), Chapter 4 (defense), and Appendix J (stability operations). For a more detailed examination of support operations, refer to FM 100-5.

CONTENTS

Section 1	**Types of Support Operations**
Section 2	**Phases of Support Operations**
	Response Phase Recovery Phase Restoration Phase

SECTION 1 - TYPES OF SUPPORT OPERATIONS

Support operations generally cover two broad categories: humanitarian assistance and environmental assistance. Humanitarian assistance operations are people-oriented, focusing on the well-being of supported populations; they provide critical supplies to designated groups at the request of local, state, federal, or international agencies. Environmental assistance focuses on the condition of all types of natural and man-made properties, with the goal of helping to protect and/or restore these properties as requested. Typically, environmental operations are conducted in response to such events as forest and grassland fires, hazardous material releases, floods, and earthquakes. (**NOTE:** Many support operations combine both humanitarian and environmental support.)

SECTION 2 - PHASES OF SUPPORT OPERATIONS

Although each operation is unique, support operations are generally conducted in three broad phases: response, recovery, and restoration. Army elements can expect to be most heavily committed during the response phase. They will be progressively less involved during the recovery phase, with only very limited activity, if any, during the restoration phase.

RESPONSE PHASE

In the response phase, commanders focus on the life-sustaining functions that are required by those in the disaster area. The following functions dominate these response operations:

- Search and rescue.
- Emergency flood control.
- Hazard identification.
- Food distribution.
- Water production, purification, and distribution.
- Temporary shelter construction and administration.
- Transportation support.
- Fire fighting.
- Medical support.
- Power generation.
- Communications support.

RECOVERY PHASE

Recovery phase operations begin the process of returning the community infrastructure and related services to a status that meets the immediate needs of the population. Typical recovery operations include the following:

- Continuation of response operations as needed.
- Damage assessment.
- Power distribution.
- Water and sanitation services.
- Debris removal.

RESTORATION PHASE

Restoration is a long-term process that returns the community to predisaster normality. Restoration activities do not generally involve large numbers of military forces. When they are involved, Army elements generally work with affected communities in the transfer of responsibility to other agencies as military support forces redeploy.

APPENDIX L

Directed-Energy Weapons

While conventional weapons rely on either the kinetic or chemical energy of a sizable projectile to cause casualties and target damage, directed-energy weapons produce these effects by depositing energy on the target. This appendix provides the company team commander and subordinate leaders with an overview of directed-energy weapons and how to defend against them.

CONTENTS

Section 1	**Characteristics of Directed-Energy Weapons**
	Lasers Microwave Radiation Emitters Particle Beam Weapons
Section 2	**Defense Against Directed-Energy Weapons**
	Lasers Microwave Radiation Emitters
Section 3	**Attack Reporting**
Section 4	**Laser Mission-Oriented Protective Posture**

SECTION 1 - CHARACTERISTICS OF DIRECTED-ENERGY WEAPONS

Directed-energy weapons destroy targets by bombarding them with either subatomic particles or electromagnetic waves at or near the speed of sound. These weapons include lasers, particle beam generators, and microwave radiation emitters. Currently, directed-energy weapons are only capable of damaging soft targets, including personnel, or the soft components of hard targets, such as optical components or communications equipment.

LASERS

As the role of laser devices continues to grow on the modern battlefield, it becomes increasing clear that any laser-emitting device, such as a target designator or a range finder, has the potential to be used as a weapon. The most probable targets for such systems will be optical and electro-optical systems, such as sights and vision viewers, and the personnel operating those sights and viewers.

Any laser beam entering a direct-view optical system (a tank or BFV sight, for example) has its power increased by the magnification of the system. Soldiers using the sight could suffer burns to their eyes; injuries may range from temporary flash blinding and mild burns to total, permanent blindness. The severity of such injuries, the permanence of the damage, and the time required to heal depend on a variety of factors:

- Weather conditions.
- Intensity of the laser.
- Frequency of the laser.
- Range to the laser source.
- Magnification of the optical device.
- Duration of exposure to the laser.

A laser beam entering a nonsee-through electro-optical device, such as a thermal imagery device, can cause damage either through the effects of intense heat on the device's sensor screens or by the sudden surge of electricity produced by the laser's energy.

MICROWAVE RADIATION EMITTERS

High-intensity microwaves can severely damage or destroy electronic components such as microchips; they do this by overloading the components with electrical current. Soldiers may suffer the following symptoms from long-term exposure to high-intensity microwaves:

- Pain.
- Erratic heartbeat.
- Fatigue, weakness, or dizziness.
- Nose bleeds.
- Headaches.
- Disorientation.

PARTICLE BEAM WEAPONS

Particle beam weapons use a directed flow of atomic or subatomic particles to cause target damage. These highly energetic particles, when concentrated into a beam, can melt or fracture target material and generate X rays around the point of impact.

SECTION 2 - DEFENSE AGAINST DIRECTED-ENERGY WEAPONS

Without accurate information on the nature and capabilities of directed-energy weapons, soldiers are likely to develop a number of misconceptions. For example, it may appear that these weapons wreak devastating effects on personnel and equipment and that defense against them is nearly impossible. Leaders must counter these false assumptions by directly confronting their soldiers' fears. They should take these steps:

- Provide soldiers with a basic understanding of how directed-energy weapons work.
- Cover the specific defensive procedures outlined in this section.
- Reinforce the knowledge that directed-energy injuries, while potentially serious and worthy of concern, are both rare and preventable.

LASERS

The best defense against lasers incorporates the following techniques:

- Use laser-safe goggles and optic filters.
- Use night vision viewers or thermal viewers when scanning areas in which lasers are likely to be employed.
- Use smoke rounds to temporarily defeat laser devices.
- Use sound tactics to prevent being pinpointed for attack by lasers.

MICROWAVE RADIATION EMITTERS

Effective defense against microwave radiation emitters entails using the following techniques:

- Disconnect all electronic equipment when not in use.
- Shield smaller electronic items by placing them in empty ammunition cans.
- Employ terrain masking, which provides some protection against microwave radiation.
- Limit the time personnel are exposed to microwave emissions.

NOTE: The defensive measures outlined in this section for lasers and microwave radiation are also effective in protecting personnel and equipment from the effects of particle beam weapons.

SECTION 3 - ATTACK REPORTING

All attacks from directed-energy weapons should be reported. Reporting procedures are similar to those for NBC attacks. Tables L-1 and L-2 summarize reports for laser attacks on the battlefield; these reports use the established formats for the NBC-1 report (observer's initial attack) and the NBC-3 report (immediate warning of expected contamination/laser usage). (**NOTE:** The report formats also reflect the addition of a laser reporting column to GTA 3-6-3.)

Table L-1. Format for laser attack report (based on NBC-1, observer's initial report).

LINE	DESCRIPTION
B	Position of observer
C	Direction of attack from observer
D	Date-time group for detonation/attack
F	Location of area attacked
G	Means of delivery (state what weapon system, if known, delivered the laser)
ZC	Area or point from which laser was delivered (if known)

Table L-2. Format for laser attack report (based on NBC-3, immediate warning of expected contamination/laser usage).

LINE	DESCRIPTION
A	Strike serial number
D	Date-time group for start of attack
F	Location of probable area of attack

SECTION 4 - LASER MISSION-ORIENTED PROTECTIVE POSTURE

The laser MOPP (L-MOPP) levels outlined in Table L-3 are based on enemy activity and the known use of lasers in the company team's area of operations.

Table L-3. Laser mission-oriented protective posture levels.

L-MOPP LEVEL	LASER USE	PROTECTIVE ACTIVITY

L-0 (zero)	No known laser technology. **OR** No known use in area of operations. **OR** Use of laser technology highly unlikely.	Laser-protective eyewear properly prepared and in close proximity.
L-1	Threat possesses laser technology. **OR** Laser-capable delivery systems spotted in area of operations. **OR** Use of laser technology possible.	Laser-protective eyewear ready for use and carried on person.
L-2	Use of threat/friendly lasers reported in area of operations. **OR** NBC/laser reporting system in effect. **OR** Use of laser technology probable or highly likely.	Laser-protective eyewear worn at all times.

APPENDIX M

Operations Security

OPSEC entails all measures taken by the company team to deny the enemy information about its actions and intentions. It covers a variety of procedures and precautions. This appendix focuses on general security measures; measures taken to ensure information security, signal security, and physical security; and employment of OPs.

CONTENTS

Section 1	**General Security Measures**
Section 2	**Information Security**
Section 3	**Signal Security**
Section 4	**Physical Security**
Section 5	**Observation Posts**
	Selection of the OP Site Mounted OPs Dismounted OPs

SECTION 1 - GENERAL SECURITY MEASURES

Maneuver units use general security measures to protect against surprise, observation, and infiltration. The following considerations and procedures will assist the company team in executing general security measures:

- **Enforce noise and light discipline.** Follow these procedures:

  - If feasible, turn off the circuit breaker for the brake lights.

  - Dim or cover all sources of light in the turret. Use a passive night observation device to check vehicles for light leaks before operations begin.

  - Move personnel and/or vehicles only when necessary.

  - Use headsets or the CVC helmet to monitor the radio; do not use the radio's external speakers.

  - Do not slam hatches.

- Use short-count procedures to start engines simultaneously.

- Use terrain to mask resupply and maintenance areas.

- Use hand-and-arm signals and digital communications whenever possible.

- Do not allow smoking outdoors at night.

- Use camouflage to best advantage. Follow these procedures:

  - Place vegetation on vehicles to break up their "profile."

  - Drape camouflage nets over gun tubes and turrets.

  - Park vehicles in natural concealment, such as shadows.

  - Cover all headlights and optics whenever possible.

  - Consider the effects of dust and exhaust smoke when moving.

  - Minimize track, tire, and foot trails that could be detected from the air or from enemy positions.

  - Drive vehicles in previously made tracks when possible.

  - In heavily used areas such as CPs and trains, ensure vehicles travel on existing tracks or roadways.

- **Maintain effective concealment.** Follow these procedures:

  - Disperse vehicles and personnel under foliage or inside structures whenever possible.

  - Conceal vehicles and personnel behind objects that block the thermal "line of sight" of enemy devices.

  - Protect vehicles in hide positions against aerial observation by minimizing or eliminating their thermal signatures.

- **Use challenge and password.** Employ this procedure as specified in the OPORD or unit SOP.

SECTION 2 - INFORMATION SECURITY

Information security is the protection of all materials, both classified and unclassified, that may be of intelligence value to the enemy. The following procedures will assist the company team in maintaining information security:

- Ensure that soldiers do not send critical information through the mail. This includes unit identification, location, and capabilities; the commander’s name; and information on combat losses or morale.
- Keep unauthorized personnel out of the company team’s area of operations.
- Before leaving an area, police it to make sure items of intelligence value are not left behind.

SECTION 3 - SIGNAL SECURITY

The discussions of communications and COMSEC in Chapter 2 of this manual outline considerations and procedures for establishing and maintaining effective signal security.

SECTION 4 - PHYSICAL SECURITY

Physical security is the protection of materiel and equipment. The following considerations and procedures will help the company team to maintain effective physical security:

- When stationary, employ antiintrusion devices, such as the platoon early warning system (PEWS), trip flares, and concertina wire.
- Maintain the prescribed REDCON status, and execute designated stand-to procedures at specified times.
- Do not allow foreign nationals and unauthorized observers in or near the unit's area or positions during operations. In accordance with the applicable ROE, ROI, and company team commander's intent, establish procedures for handling civilian intruders.
- Employ OPs to maintain surveillance on avenues of approach into the team's area of operations.
- Employ mounted and/or dismounted patrols as necessary.
- Establish reporting and inspection SOPs for personnel and sensitive items.

SECTION 5 - OBSERVATION POSTS

OPs are an especially important element of the company team's effort to establish and maintain OPSEC. They provide protection when long-range observation from current positions is not possible; this can occur when the team is in a hide position or when close terrain offers concealed avenues of approach to its position. The team can employ any number of OPs, either mounted or dismounted, as the situation dictates.

SELECTION OF THE OP SITE

Before deploying OPs, the company team commander analyzes the terrain in his sector. He also coordinates with the team's subordinate leaders and with adjacent units to develop effective procedures for observing the assigned area of responsibility and eliminating gaps in observation between adjacent units.

Next, based on requirements for early warning and security, the commander decides which type of OP (mounted and/or dismounted) to employ and selects the best available location. A key consideration is the amount of reaction time the company team will require based on its current REDCON status. After selecting the type(s) of OPs and their locations, the commander should brief the company team OP plan to his subordinate leaders and coordinate the plan with commanders of adjacent units as necessary.

To be most effective, OPs should have the following characteristics:

- **Clear fields of observation covering the assigned area or sector.** OPs must be positioned to allow the company team to observe locations (such as the forward slope of a hill or dismounted avenues of approach) that it cannot see from current positions.
- **Overlapping coverage and mutual support.** Ideally, the fields of observation of adjacent OPs and/or units will overlap to ensure full coverage of the sector.
- **Effective cover and concealment.** Positions with natural cover and concealment help to reduce the vulnerability of OPs to enemy observation and attack.
- **Covered and concealed routes to and from the position.** Soldiers must be able to enter and leave their OPs without being seen and engaged by the enemy.
- **A location that will not attract enemy attention.** The commander should avoid sites that would logically be the target of enemy observation or that could serve as artillery TRPs.
- **A location that does not skyline observers.** In selecting OP sites, the commander should avoid hilltops. The OPs should be positioned farther down the slope of the hill.
- **A location that is within range of supporting small arms fire.** This enables the company team to cover OP personnel and vehicles if withdrawal becomes necessary.

MOUNTED OPs

Mounted OPs are used when the company team, or subordinate elements, have access to hull-down or turret-down positions that afford unobstructed surveillance of mounted avenues of approach in the unit's sector. This type of OP allows the commander to take advantage of his vehicles' capabilities: magnified thermal and daylight optics, sophisticated communications, lethal weapon systems, and survivability.

A common mounted OP technique, executed at the platoon level, has one vehicle positioned forward to observe an engagement area or obstacle while the remainder of the platoon occupies hide positions. Even when the mounted OP has clear fields of observation, it is advisable to dismount one or two members of the crew to provide close-in local security for the vehicle. The dismounted crewmen occupy positions far enough away that sounds from the vehicle do not prevent them from hearing an approaching enemy. Local security can also be enhanced by employment of infantry, which can conduct patrols and occupy dismounted OPs in accordance with the commander's OPSEC plan.

DISMOUNTED OPs

Whenever the company team must halt and occupy vehicle positions from which the terrain impedes observation or early warning of enemy activities, it should employ dismounted OPs to provide local security along dismounted avenues of approach. Dismounted OPs also augment or replace mounted OPs based on requirements in the commander's OPSEC plan. Platoons will normally emplace dismounted OPs as directed by the commander. Refer to FM 7-7J and FM 17-15 for a discussion of dismounted OPs.

APPENDIX N

Sniper Employment

Snipers play an important role in mechanized infantry units. They provide the commander with long-range small arms fires that are both accurate and discriminatory. These fires are best used against key targets that cannot be destroyed by other available weapon systems for a variety of reasons: range, size, location, visibility, security and stealth requirements, collateral damage restrictions, intensity of conflict, or applicable ROE.

Snipers also perform several important secondary roles. Unit and individual employment techniques enable them to gather detailed information about the enemy. Commanders know that snipers also affect enemy activities, morale, and decisions. Knowing snipers are present creates confusion and continuous personal fear among the enemy's soldiers. Effectively employed, snipers hinder the enemy's movement, disrupt his operations and preparations, and compel him to divert forces to deal with the threat.

See FM 23-10 for detailed discussion of sniper operations.

CONTENTS

Section 1	**Sniper Teams**
	Control and Employment Movement Commander's Role
Section 2	**Offensive Employment**
	General Considerations Movement to Contact Attack
Section 3	**Defensive Employment**
	Defensive Tasks Employment Considerations
Section 4	**Retrograde Employment**
Section 5	**MOUT Employment**

SECTION 1 - SNIPER TEAMS

Snipers are employed in two-man teams; each team consists of one sniper and one observer, normally cross-trained. The sniper uses the sniper weapon system, while the observer carries an M16-series rifle. Each has a side arm. A key operational concept is that sniper teams should avoid sustained battles. During long periods of observation, team members help each other with range estimation, round adjustment, and security.

CONTROL AND EMPLOYMENT

Sniper teams should be centrally controlled by the commander or mechanized infantry platoon leader. Once they are deployed, however, snipers must be able to operate independently if necessary. This requires them to have a thorough understanding of the commander's intent, his concept of the operation, and the purpose for their assigned tasks. It also allows them to exercise initiative within the framework of the commander's intent and to support the commander's concept and achievement of the unit's mission.

Sniper teams are effective only in areas that offer clear fields of observation and fire. To ensure these requirement are fulfilled, teams must be able to choose their own positions once they are on the ground. The number of sniper teams employed in a particular operation depends on availability, the expected duration of the mission, and enemy strength.

MOVEMENT

Sniper teams should move with a security element (squad or platoon) when possible. This allows the teams to reach their areas of operation faster and safer than if they operated alone. The security element also protects the teams during the operation. When moving with a security element, snipers follow these guidelines:

- The leader of the security element leads the sniper team.
- Snipers must appear to be an integral part of the security element. To do this, they use the following techniques:

  - Each sniper carries his weapon system in line with and close to his body to hide the weapon's outline and barrel length. Sniper-unique equipment (optics, ghillie suit) is also concealed from view.

  - Snipers' uniforms must be the same as those of the security element members.

  - Proper intervals and positions in the element formation are maintained.

COMMANDER'S ROLE

History has proven that commanders must be educated on the proper use of snipers. Commanders who understand the abilities and limitations of their snipers can employ them effectively in the fight. In developing their estimate of the situation, commanders should carefully consider all METT-TC factors as they relate to sniper employment. The following discussion covers these considerations.

Mission

The sniper's primary mission is to support combat operations by delivering precise rifle fires from concealed positions. The mission assigned to a sniper team for a particular operation consists of the tasks the commander wants the sniper team to accomplish and the reason (purpose) for these tasks. The commander must decide how he wants his sniper team to affect the battlefield. Then he must assign missions to achieve this effect. The commander should prioritize targets so snipers can avoid involvement in sustained engagements. Regardless of how missions and targets are designated, however, the sniper team must be free to change targets to support the commander's intent. The following methods may apply:

- The commander may describe the effect or result he expects and allow the sniper team to select key targets.
- The commander may assign specific types of targets. For example, if he wants to disrupt the defensive preparations of the enemy, he may task snipers to accomplish one or more of the following tasks:

  - Kill operators of bulldozers and other engineer equipment.

  - Disable enemy vehicles carrying supplies.

  - Engage enemy soldiers as they dig defensive positions.
- The commander may also assign specific targets. These can include enemy leaders, command and control operators, ATGM gunners, armored vehicle commanders, or weapons crews. In cases where large crowds pose a threat to US forces, snipers can single out selected individuals. In populated areas where casualties should be kept low, the snipers can be assigned to kill enemy snipers.

Enemy

The commander must consider the characteristics, capabilities, strengths, weaknesses, and disposition of the enemy. Is the enemy force heavy or light, rested or tired, disciplined or not? Is it motorized infantry or towed artillery? Is it well supplied or short of supplies? Is it patrolling aggressively, or is it lax in security? Is it positioned in assembly areas or dug in?

The answers to such questions help the commander determine the enemy's susceptibility and reaction to effective sniper operations. Naturally, a well-rested, well-led, well-supplied, and aggressive enemy with armored protection poses a greater threat to snipers than one whose forces are tired, poorly led, poorly supplied, lax in security, and unprotected. In addition, the commander needs to know if enemy snipers are present and if they are effective; they can pose a significant danger to his own snipers. The enemy's DEW capability should be

considered as well. Snipers use optical devices, so they are particularly vulnerable to the directed-energy threat.

Terrain

The commander must evaluate both the terrain in his snipers' area of operations and the terrain they must travel to reach it. He must consider the time and effort snipers will expend getting into position, as well as the effect of weather on the snipers (especially in terms of visibility). Snipers need good firing positions, with adequate fields of observation and fire. They prefer positions at least 300 meters from their target area. Operating at this distance allows them to avoid effective fire from enemy rifles and to take advantage of the effective range of the sniper rifle (800 to 1,000 meters).

Troops

The commander must decide how many sniper teams to use. This depends on their availability, on the duration of the operation, and on the expected opposition. Another key factor is the number and difficulty of tasks and/or targets assigned to the snipers. Commanders must always keep in mind the effects of the human dimension on sniper operations.

Time available

The commander must consider how long the snipers will have to achieve the results he expects. He must allocate time for snipers to plan, coordinate, prepare, rehearse, move, and establish positions. He must understand how the snipers' risk increases when they lack adequate time to plan or conduct such actions as moving to the area of operations.

Movement factors for snipers moving with a security element are the same as for any infantry force. When snipers are moving alone in the area of operations, however, they move slowly; their movement can be measured in feet and inches. The sniper team members themselves are best qualified to determine how much time is required for a particular movement.

The amount of time a sniper team can remain in a position without loss of effectiveness (due to eye fatigue, muscle strain, or cramps) depends mostly on the type of position the team is occupying. Generally, snipers can remain in an expedient position for six hours before they must be relieved. They can remain in belly positions or semipermanent hides up to 48 hours. Mission duration times average 24 hours. (**NOTE:** FM 23-10 provides guidance on sniper position considerations, construction, and preparation and occupation times.)

SECTION 2 - OFFENSIVE EMPLOYMENT

Offensive operations carry the fight to the enemy to destroy his capability and will to fight. By killing enemy targets that threaten the success of the attack, the sniper can play a major role in offensive operations.

GENERAL CONSIDERATIONS

During offensive operations, snipers can be employed to perform the following tasks:

- Conduct countersniper operations.
- Overwatch movement of friendly forces and suppress enemy targets that threaten the moving forces.
- Place precision fires on enemy crew-served weapons teams and into exposed apertures of bunkers.
- Place precision fires on key enemy personnel, including leaders, armored vehicle drivers or commanders, and FOs.
- Place precision fires on small, isolated, and/or bypassed forces.
- Place precision fires on targets that are threatening a counterattack or are fleeing.
- Provide supplemental fires to assist in screening a flank.
- Dominate key terrain, using precision fires to control access to the terrain.

MOVEMENT TO CONTACT

The commander has several options in employing snipers to support a movement to contact. Sniper teams can move with the lead element. They can also be deployed 24 to 48 hours before the unit's movement to perform these tasks:

- Select positions.
- Gather information about the enemy.
- Dominate key terrain, preventing enemy surprise attacks.

ATTACK

Although snipers can play only a limited role in a mounted attack, their firepower and mobility make them a valuable asset in a dismounted assault. The following employment considerations apply:

- Snipers can be placed with lead elements, moving to positions that allow them to overwatch the dismounted maneuver of the infantry squads and to provide long-range small arms fires.
- Snipers may also be placed with a mounted support element, with the assignment of suppressing, fixing, or isolating the enemy on the objective.
- If time permits, snipers may be deployed as soon as the element reaches the dismount point.
- Snipers may move with infantry squads approaching the objective. They can then occupy a close-in support by fire position from which they can help to suppress or destroy targets threatening the assault of the infantry squads.
- To increase security and surprise, snipers may move covertly into position in an objective area well before the main attack and mounted forces arrive.
- If their fires are masked, snipers must reposition as soon possible.
- During consolidation, snipers may displace forward to new positions. These positions, which are not necessarily on the objective, allow the snipers to provide precision fires against bypassed

enemy positions, enemy counterattack forces, or other enemy positions that could degrade the unit's ability to exploit the success of the attack.

SECTION 3 - DEFENSIVE EMPLOYMENT

Snipers can be effective in enhancing or augmenting any unit's defensive fire plan. They must be able to analyze the terrain that will be used in the defense and then recommend employment options to the commander.

DEFENSIVE TASKS

The sniper team can perform the following tasks in support of the unit's defensive operations:

- Cover obstacles, minefields, roadblocks, and demolition missions.
- Perform counterreconnaissance tasks to kill enemy reconnaissance elements.
- Engage enemy OPs, armored vehicle commanders (while they are exposed in their vehicles' turrets), and ATGM teams.
- Damage vehicle optics to degrade enemy movement capabilities.
- Suppress enemy crew-served weapons.
- Disrupt follow-on units with long-range small arms fires.

EMPLOYMENT CONSIDERATIONS

Sniper teams add considerable flexibility to the commander's defensive scheme of maneuver. They can be employed in the following ways:

- Snipers are generally positioned to observe or control one or more avenues of approach into the defensive position. Their stealth, mobility, and available weapon systems make them ideal for use against secondary avenues of approach. This enhances the unit's all-around security and allows the commander to concentrate his combat power against the most likely enemy avenue of approach.
- Snipers can establish alternate and supplementary positions to further enhance all-around security.
- Snipers can be positioned to overwatch key obstacles or terrain, such as river crossing sites, bridges, and minefields that canalize the enemy directly into engagement areas.
- Snipers can play an integral part in the counterreconnaissance effort. They can help to acquire or destroy targets, or both.
- Snipers should be tasked to support any unit that is defending a strongpoint. The characteristics of the sniper team enable it to perform independent harassment and observation tasks in support of the force in the strongpoint, either from within or outside of the strongpoint.

SECTION 4 - RETROGRADE EMPLOYMENT

In supporting a retrograde operation, sniper teams must understand the commander's concept, intent, and scheme of maneuver. They must also have a complete grasp of critical information for the operation, including withdrawal times, conditions, and/or priorities; routes; support positions; rally points; and locations of obstacles. The commander must thoroughly plan and coordinate engagement and disengagement criteria for the operation to ensure that snipers can achieve the desired effect without compromising their positions. (**NOTE:** Refer to Chapter 5 of this manual for a discussion of retrograde operations.)

The following considerations apply for sniper employment during retrograde operations:

- Snipers may be assigned any of the following specific tasks during retrograde operations:
  - Delay the enemy by inflicting casualties.
  - Observe avenues of approach.
  - Cover key obstacles with precision fire.
  - Direct artillery fires against large enemy formations.
- Snipers can assist the delaying force in forcing the enemy to deploy prematurely during retrograde operations. They do this by inflicting casualties with accurate, long-range small arms fire.
- Because delaying forces risk being bypassed or overtaken by attacking enemy forces during retrograde operations, commanders may have to provide transportation to move snipers to successive positions.
- When snipers find themselves behind the enemy's front, they must be prepared to infiltrate back to friendly positions. Infiltration plans must be fully coordinated to prevent fratricide as sniper teams attempt to reenter the friendly position.

SECTION 5 - MOUT EMPLOYMENT

The value of sniper teams to a unit operating in an urban area depends on several factors, including the type of operation, the level of conflict, and the applicable ROE. Where ROE allow destruction of enemy elements, snipers may have an extremely limited role because other weapon systems available to the mechanized force have greater destructive effect. When the ROE prohibit collateral damage, however, snipers may be the most valuable tool the commander has.

The following considerations apply for sniper employment during MOUT:

- Sniper effectiveness depends in part on the terrain; control is degraded by the characteristics of the urban area. To provide timely and effective support, snipers must have a clear picture of the scheme of maneuver and commander's intent.
- Snipers should be positioned in buildings of masonry construction. Positions should afford long-range fields of all-around observation and fire.
- Snipers should operate throughout the area of operations, moving with and supporting company teams as necessary.
- Specific sniper tasks in MOUT include the following:

  - Conduct countersniper operations.

  - Kill targets of opportunity. Sniper teams prioritize these targets based on their understanding of the commander's intent. For example, they may attack enemy snipers first, followed by (in order) leaders, vehicle commanders, radio operators, engineers, and machine gun crews.

  - Control key terrain by denying enemy access to certain areas or avenues of approach.

  - Provide supporting fires for barricades and other obstacles.

  - Maintain surveillance of flank and rear avenues of approach (screening operations).

  - Support local counterattacks with precision fires.

  NOTE: Snipers can also be valuable to commanders in stability and support operations, in which the ROE normally restrict collateral damage and civilian casualties. A common task for snipers in such situations is to selectively kill or wound key individuals who pose a threat to friendly forces. This selective engagement allows the unit to avoid causing unacceptable casualties or damage.

APPENDIX O

Environmental Protection

Protection of natural resources has become an ever-increasing concern. It is the responsibility of all unit leaders to decrease, and if possible eliminate, damage to the environment when conducting all types of operations.

CONTENTS

Section 1	**Environmental Risk Management Process**
	Step 1 - Identify Hazards Step 2 - Assess the Hazards Step 3 - Make Environmental Risk Decisions Step 4 - Brief the Cahin of Command Step 5 - Implement Controls Step 6 - Supervise
Section 2	**Environmental Risk Assessment Worksheet**

SECTION 1 - ENVIRONMENTAL RISK MANAGEMENT PROCESS

Environmental risk management parallels safety risk management and is based on the same philosophy and principles. (**NOTE:** Refer to the discussion of safety risk management in Appendix C of this manual.) The environmental risk assessment and management process consists of the six steps outlined in the following paragraphs.

STEP 1 - IDENTIFY HAZARDS

The company team's leaders must identify potential sources of environmental degradation during their analysis of METT-TC factors. These environmental hazards are conditions with the potential for polluting air, soil, or water and/or destroying cultural or historical structures, sites, or artifacts.

STEP 2 - ASSESS THE HAZARD

Leaders can use the environmental risk assessment worksheet in Figure O-1 to analyze the potential severity of environmental degradation for each training activity. The worksheet allows them to quantify the risk to the environment as extremely high, high, medium, or low. The risk impact value is an indicator of these levels of severity.

STEP 3 - MAKE ENVIRONMENTAL RISK DECISIONS

Based on the results of the risk assessment, the team's leaders make decisions and develop measures to reduce significant environmental risks. Risk decisions are made at a level of command that corresponds to the degree of risk.

STEP 4 - BRIEF THE CHAIN OF COMMAND

Leaders should brief all responsible individuals and agencies (to include the installation environmental office, if applicable) on the proposed operational and training plans and on pertinent high-risk environmental factors.

STEP 5 - IMPLEMENT CONTROLS

The company team commander and subordinate leaders implement environmental protection measures at all stages of operational planning, preparation, and execution. They integrate these measures into plans, orders, SOPs, training performance standards, and rehearsals.

STEP 6 - SUPERVISE

Company team leaders enforce environmental protection standards during supervision of all training activities.

SECTION 2 - ENVIRONMENTAL RISK ASSESSMENT WORKSHEET

To use the environmental risk assessment worksheet (Figure O-1) for a specific operation or training event, the company team commander and subordinate leaders first determine the impact level for each of the five types of unit activities listed in the top part of the worksheet (movement of heavy vehicles and equipment; movement of personnel and light vehicles and equipment; assembly area activities; field maintenance activities; and garrison maintenance activities). This risk impact is assigned a value from 0 (lowest risk) to 5 (highest risk) for each activity.

The second part of the worksheet allows leaders to assess the risk impact of these unit activities in seven critical areas of environmental concern. The leaders determine which of the five activities will affect each area and enter the corresponding risk impact value. For example, the commander determines that movement of heavy vehicles (which he has assigned a risk value of 5), "light" movement (a value of 2), and assembly area activities (a value of 4) will affect air pollution during the company team's upcoming training exercise. He enters those values in the appropriate columns, then adds them together for a total risk impact value of 11 for air pollution. He repeats this process for the

other environmental areas of concern.

The total of the risk impact values for the seven environmental areas is the overall risk impact value for the operation or exercise. As with other types of risk assessment, decisions concerning environmental risk must be made, and appropriate controls implemented, at the proper level of command. The decision-maker (whether it is the company team commander, a subordinate leader, or a higher commander) uses the risk impact values as a guide in ensuring that the environment in the operational area is protected and preserved.

Environmental Risk Assessment Worksheet

Environmental area:	Rating:					
Unit Operations	**Risk Impact**					
Movement of heavy vehicles/systems	5	4	3	2	1	0
Movement of personnel and light vehicles/systems	5	4	3	2	1	0
Assembly area activities	5	4	3	2	1	0
Field maintenance of equipment	5	4	3	2	1	0
Garrison maintenance of equipment	5	4	3	2	1	0

Overall Environmental Risk Assessment Form

	Movement of heavy vehicles/systems	Movement of personnel and light vehicles/systems	Assembly area activities	Field maintenance of equipment	Garrison maintenance of equipment	**Risk impact value**
Air pollution						
Archeological and historical sites						
Hazardous material/waste						
Noise pollution						
Threatened/endangered species						
Water pollution						
Wetland protection						
Overall risk impact value						

Risk Impact Value Categories

Category	Range (Points)	Environmental Damage Risk	Decision-maker
Low	0-58	Little or none	Appropriate level
Medium	59-117	Minor	Appropriate level
High	118-149	Significant	Division commander
Extremely High	150-175	Severe	MACOM commander

Figure O-1. Environmental risk assessment worksheet.

Glossary

A

AA	avenue of approach; assembly area
ABF	attack by fire (position)
ACA	airspace coordination area
ACE	armored combat earthmover
ADA	air defense artillery
ADAM	area denial antipersonnel mine
ADO	air defense officer
AFATDS	advanced field artillery tactical data system
AGC	advance guard company
AGMB	advance guard main body (enemy force)
A/L	administrative/logistics
ammo	ammunition
AOAP	Army Oil Analysis Program
AP	antipersonnel
APC	armored personnel carrier
APERS	antipersonnel
APFSDS-T	armor-piercing, fin-stabilized, discarding-sabot tracer (ammunition)
ARTEP	Army Training and Evaluation Program
ASL	authorized stockage list
AT	antitank
ATGM	antitank guided missile
AVLB	armored vehicle launched bridge
AVLM	armored vehicle launched MICLIC
AXP	ambulance exchange point

B

bde	brigade
BFV	Bradley (infantry) fighting vehicle
BHL	battle handover line
BHOL	battle handover line
BIDS	biological integrated detection system
BMNT	beginning of morning nautical twilight
BMO	battalion maintenance officer
bn	battalion
BP	battle position
BRIDGEREP	report of bridge, overpass, culvert, underpass, or tunnel
BSA	brigade support area
BSFV	Bradley Stinger (missile) fighting vehicle

C

CA	civil affairs
CAM	chemical agent monitor
CAS	close air support
CASEVAC	casualty evacuation
CCIR	commander’s critical information requirements
cdr	commander
CFL	coordinated fire line
CFZ	critical friendly zone
cGy/hr	centigray(s) per hour
CITV	commander's independent thermal viewer
CLU	command launch unit
CMT	company maintenance team
co tm; co/tm	company team
COA	course of action
COLT	combat observation lasing team
COMSEC	communications security
CONPLAN	contingency plan
coord inst	coordinating instructions (illustration text only)
CP	command post; checkpoint (illustration text only); contact point (illustration text only)
CROSSREP	report of ford, ferry, or other water crossing site
CRP	combat reconnaissance patrol (enemy unit)
CS	combat support
CSOP	combat security outpost (enemy position)
CSS	combat service support
CUCV	commercial utility cargo vehicle
CVC	combat vehicle crewman

D

DA	Department of the Army
DAP	decontamination apparatus
DBCS	digital battle command system
DD	Department of Defense
DED	detailed equipment decontamination
div	division
DLIC	detachment left in contact
DMD	digital message device
DS	direct support
DTD	detailed troop decontamination
DX	direct exchange

E

EA	engagement area
ECCM	electronic counter-countermeasures

ECM	electronic countermeasures
EENT	end of evening nautical twilight
en; EN	enemy
engr	engineer(s)
ENY	enemy
EPLRS	enhanced position locating and reporting system
EPW	enemy prisoner of war
ESTAT	equipment status report
EW	electronic warfare
	F
1LT	first lieutenant
1SG	first sergeant
FA	field artillery
FD	fire direction
FDC	fire direction center
FEBA	forward edge of the battle area
FED	forward entry device
FIST	fire support team
FIST-V	fire support team vehicle
FKSM	Fort Knox Supplemental Material
FLOT	forward line of own troops
FM	frequency modulation (radio); field manual
FO	forward observer
FPF	final protective fires
FPL	final protective line
FRAGO	fragmentary order
freq	frequency
FS	fire support
FSB	forward support battalion
FSE	fire support element; forward security element (enemy forces only)
FSO	fire support officer
FWF	former warring factions
FY	fiscal year
	G
GP	general purpose (tent designation)
gpm	gallons per minute
GPS	global positioning system
GS	general support
GSR	ground surveillance radar
GTA	graphic training aid
G/VLLD	ground/vehicle laser locator designator
	H

H	hour (used for timeline designation)
HB	heavy barrel
HC	hexachloroethane
HE	high explosive
HEAT	high explosive antitank (ammunition)
HEAT-T	high explosive antitank tracer (ammunition)
HEDP	high explosive dual purpose (ammunition)
HEI-T	high explosive incendiary tracer (ammunition)
HEMTT	heavy expanded mobility tactical truck
HEP-T	high explosive plastic tracer (ammunition)
HHC	headquarters and headquarters company
HMMWV	high-mobility multipurpose wheeled vehicle
HQ	headquarters
hr	hour(s)
	I J K
ICM	improved conventional munitions
ID	identification
IDA	improved dogbone assembly
IEDK	individual equipment decontamination kit
IFSAS	initial fire support automated system
IPB	intelligence preparation of the battlefield
IR	infrared
IREMBASS	improved remotely monitored battlefield sensor system
ISU	integrated sight unit
IVIS	intervehicular information system
IVL	intervisibility line
KIA	killed in action
kmph	kilometer(s) per hour
	L
LC	line of contact
LD	line of departure
L-MOPP	laser mission-oriented protective posture
LO	liaison officer
LOA	limit of advance
LOGPAC	logistics package
LP	listening post
LRF	laser range finder
LRP	logistic release point
LT	lieutenant
LZ	landing zone
	M
m	meter(s)
MACOM	major (US Army) command

MANPADS	man-portable air defense system
MBA	main battle area
MC	mobility corridor
MCOO	modified combined obstacle overlay
mech	mechanized
MEDEVAC	medical evacuation
MEL	maximum engagement line
METL	mission essential task list
METT-TC	mission, enemy, terrain (and weather), troops, time available, and civilian considerations (factors taken into account in situational awareness and in the mission analysis process)
MG	machine gun
MI	military intelligence
MICLIC	mine-clearing line charge
MIJI	meaconing, intrusion, jamming, and interference
MLC	military load class
mm	millimeter(s)
MOPMS	modular pack mine system
MOPP	mission-oriented protective posture
MOS	military occupational specialty
MOUT	military operations in urban terrain
MPAT	multipurpose antitank (ammunition)
MPCOA	most probable course of action
mph	mile(s) per hour
MRB	motorized rifle battalion
MRC	motorized rifle company
MRD	motorized rifle division
MRE	meals, ready to eat
MRP	motorized rifle platoon
MRS	muzzle reference sensor
MSL	minimum safe line
MSR	main supply route
MST	maintenance support team
MTOE	modified table(s) of organization and equipment
MTP	mission training plan

N

NA	not applicable
NAAK	nerve agent autoinjector kit
NAI	named area(s) of interest
NBC	nuclear, biological, chemical
NBCWRS	NBC warning and reporting system
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge

NCS	net control station
NFA	no-fire area
NLT	not later than
NMC	nonmission-capable
	O
obj	objective
OAKOC	Obstacles; avenues of approach; key terrain; observation and fields of fire; and cover and concealment (considerations in evaluating terrain as part of METT-T analysis)
OBSTINTEL	obstacle intelligence
OEG	operational exposure guidance
OIC	officer in charge
O/O	on order
OP	observation post
OPCON	operational control
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
	P
P	persistent chemical agent (abbreviation on overlays)
PA	public affairs
pam	pamphlet
PAO	public affairs office; public affairs officer
PC	personnel carrier
PCC	precombat check
PCI	precombat inspection
PDDE	power-driven decontamination equipment
PEWS	platoon early warning system
PIR	priority intelligence requirements
PL	phase line
PLD	probable line of deployment
PLGR	precision lightweight GPS receiver ("Plugger")
PLL	prescribed load list
PLOT-CR	purpose, location, observer/alternate observer, trigger communications, and rehearsal (critical target requirements),
plt	platoon
PMCS	preventive maintenance checks and services
POC	point of contact
POL	petroleum, oils, and lubricants
POSNAV	position navigation (system)
PP	passage point (abbreviation on overlays)
predet	predetermined
prep	preparatory

PSG	platoon sergeant
psi	pounds per square inch
PSYOP	psychological operations
PX	post exchange
PZ	pickup zone
	Q R
QRF	quick reaction force
R&S	reconnaissance and surveillance
RAAM	remote antiarmor mine
rad	radiation absorbed dose
RAG	regimental artillery group
RCU	remote control unit
recon	reconnaissance; reconnoiter
REDCON	readiness condition
regt	regiment
RES	radiation exposure status
RFL	restrictive fire line
ROE	rules of engagement
ROI	rules of interaction
ROM	refuel on the move
ROUTEREP	route (reconnaissance) report
RP	release point
RPV	remotely piloted vehicle
RSI	reconnaissance, surveillance, and intelligence
RTD	returned to duty
rte	route
RTO	radiotelephone operator
	S
2LT	second lieutenant
S1	adjutant (US Army)
S2	intelligence officer (US Army)
S3	operations and training officer (US Army)
S3-Air	air operations officer (US Army)
S4	supply officer (US Army)
S5	civil affairs officer (US Army)
SALT	type of SITREP summarizing the enemy situation using size, activity, location, and time
SBF	support by fire (position)
SEAD	suppression of enemy air defense
SEE	small earth excavator
SENSEREP	sensitive items report
SFC	sergeant first class
SGT	sergeant

SH	student handbook
SHORAD	short-range air defense
SINCGARS	single channel ground/airborne radio system
SITEMP	situational template
SOI	signal operation instructions
SOP	standing operating procedure
SOSR	suppression, obscuration, security, and reduction (actions executed during breaching operations)
SP	start point
SPEC	specialist
SPOTREP	spot report
SSG	staff sergeant
STANAG	standardization agreement (international)
SVML	Stinger vehicle-mounted launcher
	T
T&E	traverse and elevation (mechanism)
TAA	tactical avenue of approach; tactical assembly area (illustration text only)
TACFIRE	tactical fire direction system
TAI	target area(s) of interest
TAMMS	The Army Maintenance Management System
TAP	toxological agent protective (apron)
TB MED	technical bulletin, medical
TC	tank commander
TCF	tactical combat force
TF	task force
THAAD	theater high-altitude area defense
TOC	tactical operations center
TOE	table(s) of organization and equipment
TOW	tube-launched, optically tracked, wire-guided (missile)
TP-T	target practice-tracer (ammunition)
TPU	tank and pump unit
TRADOC	US Army Training and Doctrine Command
TRP	target reference point
TSOP	tactical standing operating procedures
TTP	tactics, techniques, and procedures
	U
UAV	unmanned aerial vehicle
UMCP	unit maintenance collection point
UMT	unit ministry team
US	United States (of America)
USAARMC	US Army Armor Center
USAARMS	US Army Armor School

V W X

VEESS	vehicle engine exhaust smoke system
VT	variable-timed
WIA	wounded in action
WP	white phosphorus
WP-T	white phosphorus tracer (ammunition)
WSRO	weapon system replacement operations
XO	executive officer

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