ATP 3-20.15

TANK PLATOON

JULY 2025

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This publication supersedes ATP 3-20.15, dated 3 July 2019.

HEADQUARTERS, DEPARTMENT OF THE ARMY

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*ATP 3-20.15

Army Techniques Publication
No. 3-20.15

Headquarters
Department of the Army
Washington, DC, 10 July 2025

TANK PLATOON

Contents

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Figures

Tables

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Preface

ATP 3-20.15 describes tactics, techniques and procedures for the employment of tank platoons. It also provides the framework and tactical employment principles for the M1 Abrams tank platoons.

ATP 3-20.15 also provides doctrinal guidance for commanders, staff, and leaders who are responsible for planning, preparing, executing, and assessing operations of tank platoons. This Army techniques publication serves as the authoritative reference for personnel developing doctrine, material and force structure, institutional and unit training, and tank platoon standard operating procedures.

To comprehend the doctrine contained in this publication, readers must understand the tactics in FM 3-90 and FM 3-96. To comprehend how the tank platoon organizes and is doctrinally employed, the reader must understand ATP 3-90.1 and ATP 3-90.5.

The doctrinal principles and procedures contained in this Army techniques publication are intended to be used as a guide and not to be considered prescriptive. ATP 3-20.15 outlines the framework in which tank platoons operate, either by themselves or together as part of a larger force.

Commanders, staffs, and subordinates ensure that their decisions and actions comply with applicable United States, international, and, in some cases, host-nation laws and regulations. Commanders at all levels ensure that their Service members operate in accordance with the law of armed conflict and the rules of engagement. (See FM 6-27 for legal compliance.)

ATP 3-20.15 uses joint terms where applicable. Selected joint and Army terms and definitions appear in the glossary and the text. Terms for which ATP 3-20.15 is the proponent publication (the authority) are italicized in the text and are marked with an asterisk (*) in the glossary. When first defined in the text, a term for which ATP 3-20.15 is the proponent publication is boldfaced and italicized, and the definition is boldfaced. For other definitions shown in the text, the term is italicized, and the number of the proponent publication follows the definition.

This publication applies to the Active Army, the United States Army National Guard/Army National Guard of the United States, and the United States Army Reserve.

The proponent for ATP 3-20.15 is the United States Army Maneuver Center of Excellence. The preparing agency is the Department of Tactics, Training, and Doctrine United States Army Maneuver Center of Excellence. Send comments and recommendations on DA Form 2028 (*Recommended Changes to Publications and Blank Forms*) to Commander, United States Army Maneuver Center of Excellence and Fort Benning ATZK-TDD (ATP 3-20.15) 1 Karker Street, Fort Benning, GA 31905-5410, by email to usarmy.benning.mcoe.mbx.doctrine@army.mil, or submit an electronic DA Form 2028.

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Introduction

ATP 3-20.15 describes the tactics, techniques and procedures for tank platoons of brigade combat teams. It replaces ATP 3-20.15, published in July 2019. ATP 3-20.15 provides doctrinal guidance; describes relationships in the platoon; defines organizational roles and functions, capabilities, limitations; and lays out the responsibilities for platoons during large-scale combat operations. This manual also outlines the Armor Force Fundamentals, organized by three categories: 1) The Daily Dozen (fieldcraft and what units do every day during operations); 2) Critical Tactical Tasks (common to all units); and 3) Tank Platoon Fundamentals (specific to the tank platoons). These three categories are described in chapter 1, section II.

The tank platoon mission is the same as that of the Armor Branch: To close with and destroy enemy forces using fire, maneuver, and shock effect, or to repel his assault by fire and counterattack.

The tank platoon is a unified team; all tank crews work together to accomplish the mission and achieve the commander's intent. A single tank can be vulnerable in the face of diverse battlefield hazards, such as enemy forces or unfavorable terrain and situations. These vulnerabilities are significantly reduced when tanks are employed as platoons. The tank platoon requires bold, aggressive, resourceful, and adaptive leaders—leaders of character, competence, and commitment—who are willing to accept prudent risks to accomplish the mission. This publication addresses significant changes in Army doctrinal terminology, constructs, and proven tactics, techniques, and procedures. The following paragraphs provide a summary by chapter:

Chapter 1—Organization:

- Addresses the role and organizational characteristics of the tank platoon to conduct offensive and defensive operations.
- Defines the tank platoon mission in multidomain operations and large-scale combat operations.
- Discusses the capabilities and limitations of the tank platoon.
- Introduces Armor Force Fundamentals.
- Provides organizational information on Armor and Infantry companies and Cavalry troops.

Chapter 2—Planning and Preparing for Operations:

- Discusses the planning considerations that a platoon leader executes in conjunction with the next higher echelon to ensure proper alignment of task and purpose.
- Describes the steps of troop leading procedures and how they are the framework for planning and preparing of a mission.
- Addresses rehearsals that are conducted to prepare the platoon for an upcoming operation or event.

Chapter 3—Offense:

- Addresses the primary purpose of the offense—to defeat, destroy, or neutralize the enemy force decisively, or to seize key terrain.
- Introduces a way to think about closing with and destroying the enemy.
- Discusses offensive operations to deceive or divert the enemy, deprive them of resources or decisive terrain, collect information, or fix the enemy in position.
- Addresses the following keys to offensive operations—identify the enemy's decisive point; choose a form of maneuver avoiding the enemy's strength while exploiting the enemy's weakness; and ensure an operation massing overwhelming combat power.
- Discusses basics of the offense, planning considerations, and direct- and indirect-fire planning, which apply to all offensive operations.
- Concludes with planning considerations in transitioning to other operations.

Chapter 4—Defense:

- Addresses the primary purpose of the defense—to defeat, destroy, or repel an enemy attack, and to gain the initiative for the offense.
- Discusses the basics, characteristics, and planning considerations and direct- and indirect-fire planning of defensive missions.
- Defines the three types of defensive operations—area defense, mobile defense, and retrograde operations.
- Discusses the three variations of an area defense: defense of a linear obstacle, perimeter defense, or a reverse-slope defense.
- Addresses common defensive control measures.
- Concludes with a discussion of planning considerations in transitioning to other operations.

Chapter 5—Tactical Enabling Task and Activities:

- Describes the different types of movements, nontactical, tactical, approach march, forced march, and tactical road march.
- Discusses route selection, navigational aids, and route types.
- Addresses reconnaissance and security operations that the tank platoon may perform.
- Describes assembly area operations and provides techniques for conducting linkup, relief in place, passage of lines, and breaching.

Chapter 6—–Sustainment:

- Addresses the sustainment challenges to ensure continuous operations during combat.
- Discusses sustainment of the tank platoon to ensure maneuver and conduct of combat operation.
- Addresses anticipation of future sustainment needs critical to operations and maintaining the momentum.
- Focuses platoon sustainment operations, includes unit responsibilities, company trains operations, and functions of sustainment.

Nine appendixes complement the body of this publication addressing procedures performed at platoon and section level. They are as follows:

- Appendix A describes direct-fire planning and control.

- Appendix B describes fire support planning.
- Appendix C describes chemical, biological, radiological, or nuclear operations.
- Appendix D describes Infantry and Armor integration.
- Appendix E describes urban operations.
- Appendix F lists nine battle drills.
- Appendix G describes platoon tactical tasks and graphic control measures.
- Appendix H lists the tactical mission tasks.
- Appendix I describes the tank platoon in Cavalry organizations.

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Chapter 1
Organization

This chapter provides information on the role and mission of the tank platoon, multidomain operations, domains, large-scale combat operations, platoon composition, the duties and responsibilities of key personnel, and company organization.

SECTION I – ROLE OF THE TANK PLATOON

1-1. The tank platoon is the basic maneuver element of an armor company. The role of the tank platoon is to conduct offensive, defensive, and tactical enabling operations to destroy the enemy in close combat. The tank platoon provides a combination of firepower, mobility, and armor protection that do not exist elsewhere in the U.S. Army. When employed properly, the tank platoon is a devastating force on the modern battlefield.

1-2. The tank platoon's ability to accomplish its mission is dependent upon cohesive, well-trained crews, with sound leadership, and rigorous maintenance programs. Crews must be disciplined, knowledgeable, and aggressive. Leaders must be bold, decisive, adaptable, and skilled in maneuver warfare.

MISSION

1-3. The fundamental mission of the tank platoon is to close with and destroy the enemy forces using fire, maneuver, and shock effect, or to repel his assault by fire and counterattack. The platoon's ability to shoot, move, and communicate while using the armored protection of the tank can be a decisive factor in large-scale combat. The tank platoon can conduct offensive, defensive, and tactical enabling operations to accomplish the mission and achieve the commander's intent within a multi-domain environment.

1-4. Success in large-scale combat operations hinges on the decisive actions of tank platoons such as: their ability to react to contact, employ direct fires, maneuver, and fight to destroy, defeat, neutralize, or repel an enemy.

1-5. Successful leaders understand how to train, maintain, and fight their platoons as cohesive organizations that can accomplish the mission against any threat, and in any terrain and operational environment (OE). Leaders must also understand how to best integrate their platoon into the larger company mission in support of combining arms to achieve victory.

1-6. To increase survivability, tank platoons employ security operations, take evasive action, maneuver to gain positional advantages, decrease electromagnetic signatures, and disperse forces. Dispersed formations improve survivability by complicating targeting, making it more difficult for enemy forces to identify targets. *Survivability* is a quality or capability of military forces which permits them to avoid or withstand hostile actions or environmental conditions while retaining the ability to fulfill their primary mission (ATP 3-37.34).

MULTIDOMAIN OPERATIONS

1-7. Platoon leaders should understand how higher headquarters (HQ) analyze different domains in the OE and understand how leaders define large-scale combat operations. *Multidomain operations* are the combined arms employment of joint and Army capabilities to create and exploit relative advantages that achieve objectives, defeat enemy forces, and consolidate gains on behalf of joint force commanders (ADP 3-0).

1-8. Multidomain operations are the Army's contribution to joint campaigns, spanning the competition continuum. During conflict, Army forces close with and destroy the enemy, defeat enemy formations, seize critical terrain, and control populations and resources to deliver sustainable political outcomes. All operations are multidomain operations: however, the maneuver force's role in multidomain operations is to conduct combined arms maneuver. Leaders must understand that, while they are not conducting operations in all domains, their ground operations will be contested by threats across all domains.

DOMAINS

1-9. A *domain* is a physically defined portion of an operational environment requiring a unique set of warfighting capabilities and skills (FM 3-0). Land operations require mastery of terrain and ground maneuver. Cyberspace operations require mastery of digital information systems and computer code. Space, air, and maritime operations require specific capabilities and skills. The five domains in multidomain operations are land, maritime, air, space, and cyberspace. The three dimensions are human, physical, and information. (See FM 3-0 for more information.)

LARGE-SCALE COMBAT OPERATIONS

1-10. *Large-scale combat operations* are extensive joint combat operations in terms of scope and size of forces committed, conducted as a campaign aimed at achieving operational and strategic objectives (ADP 3-0). During large-scale combat operations, the platoon conducts offensive, defensive, and enabling operations to accomplish the mission and achieve the commander's intent. (See ATP 3-90.1 for more information.)

1-11. An *offensive operation* is an operation to defeat or destroy enemy forces and gain control of terrain, resources, and population centers (ADP 3-0). These types of operations impose the commander's will on the enemy. Even when conducting defensive operations, seizing, and retaining the initiative requires executing offensive operations at some point. (See ATP 3-90.1 for more information.)

1-12. A *defensive operation* is an operation to defeat an enemy attack, gain time, and develop conditions favorable for offensive or stability operations (ADP 3-0). Successful defenses are aggressive, and commanders use all available means to disrupt enemy forces. (See ATP 3-90.1 for more information.)

1-13. An *enabling operation* is an operation that sets the friendly conditions required for mission accomplishment (FM 3-90). Enabling operations, by themselves, do not directly accomplish the end state, but are required to conduct offensive, defensive, and stability operations successfully. Examples include reconnaissance, security, passage of lines, and breaching.

PLATOON COMPOSITION

1-14. A tank platoon consists of four tanks organized into two sections: A and B sections. There are two tanks in each section, and each tank is designated a specific number, 1 through 4 based on the leadership role of the tank commander. (See figure 1-1.) The A section consists of the platoon leader, who commands the 1 Tank, and their wingman on the 2 Tank. The platoon leader's wingman should be the most experienced tank commander in the platoon other than the platoon sergeant (PSG). The B section includes the PSG on the 4 Tank, and their wingman on the 3 Tank.

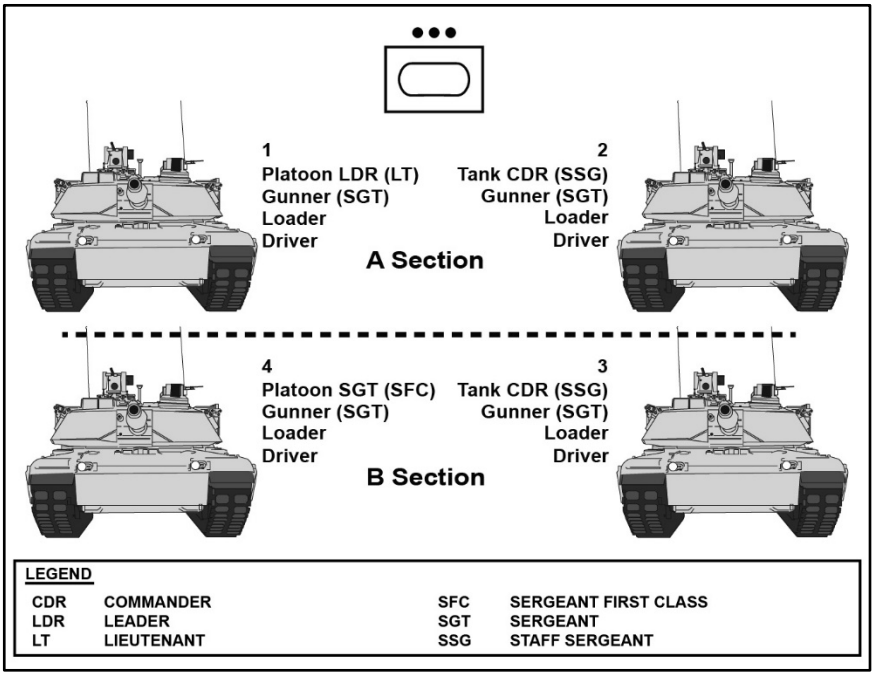


Figure 1-1. M1 series tank platoon

1-15. The wingman concept aids command and control and drives lethality and security in the platoon. A tank crew leverages standing orders to follow the movement of their wingman; this reduces cognitive load and communications requirements for tactical direction. Single tanks fighting by themselves have scanning blind spots and are more vulnerable to the enemy; fighting with a wingman ensures mutual support and protection. Tanks are more lethal when employing the wingman concept, by fighting in pairs, which improves target acquisition, engagement, and destruction which improves platoon lethality.

1-16. In the tank platoon, the platoon leader's tank is the base of the formation, and the PSG visually orients off the platoon leader's tank location to determine the appropriate position of B section. The two wingmen then visually orient themselves off their respective leader's tank to determine suitable locations for their position. Tank commanders must maintain continuous spatial awareness of their tank and their wingman, directing necessary course corrections to achieve the desired movement

formation and movement technique. This habitual spatial awareness between wingmen also provides a framework for internal overwatch within the platoon, allowing tank commanders to mitigate dead space and blind spots for each other and the other section.

CAPABILITIES AND LIMITATIONS

1-17. To win in battle, leaders must have a clear understanding of the capabilities and limitations of their equipment. Figures 1-2 through 1-4, pages 6 through 8, list the specifications, characteristics, and significant features of the M1-series main battle tanks. These listings will assist the platoon leader in evaluating transportability, sustainment, and mobility considerations for the platoon and for those with whom the platoon may operate as part of a company team or troop.

CAPABILITIES

1-18. Leaders must have a clear understanding of the capabilities and limitations of their equipment to ensure mission accomplishment. The tank platoon has the following capabilities:

- Conducts operations and/or exploits penetrations requiring firepower, speed, mobility, armor protection, and shock effect.
- Uses sophisticated communications, digital equipment, Global Positioning Systems (GPSs), and inertial position navigation systems (POSNAVs).
- Uses onboard optics and sighting systems for observation and target acquisition during the day, night, or during periods of limited visibility.
- Each tank can carry up to 42 rounds of ready and semi-ready 120-millimeter (mm) main gun ammunition, 900 rounds of .50 caliber ammunition, and up to 11,400 rounds of 7.62-mm.
- Can destroy stationary or moving enemy troop formations, light-skinned and armored vehicles, and low-flying aircraft during the day, night, or during periods of limited visibility, while firing platform is on the move or stationary.
- Suppresses enemy positions with machine gun or main gun fire.
- Assaults enemy positions.
- Defends by repelling enemy attacks with direct fire.
- Provides flexibility in defensive operations and can rapidly reposition to defeat the enemy attack.
- Secures terrain.
- Conducts mounted patrols.
- Provides armor protection and overwhelming direct fire to supported elements during large-scale combat operations.
- Provides mounted overwatch to mounted and dismounted friendly forces.
- Breaches obstacles and barriers for dismounted Infantry in urban environments.
- Operates in a chemical, biological, radiological, or nuclear (CBRN) environment.
- Reduces mine and wire obstacles or proofs lanes when equipped with mine rollers and mine plows (M1 series).
- Fords water obstacles up to 4 feet in depth.

LIMITATIONS

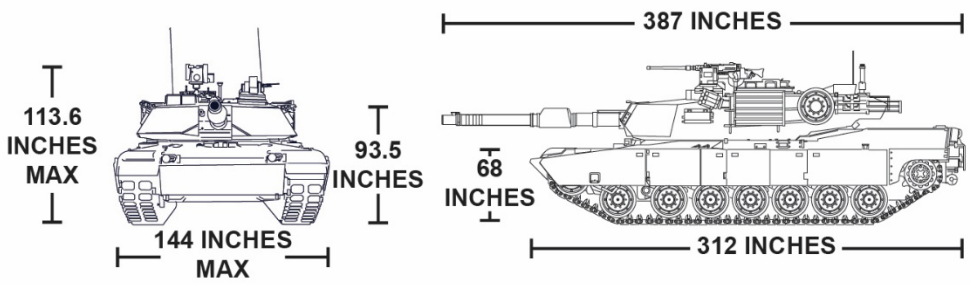
1-19. The tank platoon has the following limitations:

- Requires proficient operators, extensive maintenance, and skilled mechanics.
- Relies on four operators (the crew's combat efficiency quickly degrades if not fully manned).
- Requires large quantities of Class III, (petroleum, oils, and lubricant products), limiting the operational reach of the tank platoon and tethering the formation to the capability of the forward support company (FSC) of the brigade support battalion (BN) to provide a daily logistics package (LOGPAC).
- Limits to maneuver and fire when operating in built-up/urban areas, dense woods, or other restricted terrain.
- When operating with closed hatches, it decreases visibility around the vehicle.
- Reduced visibility, leaving platoon vulnerable to dismounted Infantry attacks, unmanned aircraft systems (UASs), and explosive hazards.
- Requires the close, dedicated support of dismounted Infantry or Cavalry while maneuvering in restricted terrain and urban environments, and to augment local security in assembly areas (AAs).
- May be restricted to trails, roads, or streets, which severely limits maneuverability and observation, and increases their vulnerability to enemy antiarmor weapons.
- May have operational and tactical mobility issues because of weight limitations.
- May have considerable dead space in an urban environment because the main gun can depress only to negative 10 degrees and elevate only to positive 20 degrees.

CHARACTERISTICS OF THE M1 SERIES TANK

1-20. Figures 1-2 through 1-3, pages 6 through 7, list the specifications, characteristics, and significant features of the M1-series main battle tank. These listings will assist the platoon leaders in evaluating transportability, sustainment, and mobility considerations for their own vehicles and for those with which the platoon may operate as part of a company team or troop.

M1A2SEPV2



Weight – 70.9 tons (fully combat loaded)
Engine – 1,500 hp Turbine
Fuel – Diesel, MOGAS, Jet Fuel
Fuel Capacity – 445.4 gal
Miles per gallon - .425
Cruising range – 290 miles
Transmission – 2 reverse/4 forward
Fording depth – 48 inches
Max speed – 42 mph
Ground pressure – 15.5 psi
Armament
M256 120mm smooth bore
Main gun capacity 42 rounds
M2A1 HBMG .50cal 900 rounds
M240 coaxial MG 11,400 rounds
L8A1 Smoke Grenades 24

Significant Features

- Drivers Steer to capability
- Intergraded Drivers Display (IDID)
- Two 2nd Generation Sights for Main Gun
- CITV provides Hunter/Killer Capability
- Thermal Sight with Laser Range Finder for 50 cal Commanders Weapon
- Armor with Urban Survivability Enhancements
- JBC-P Capability
- Far-Target Location with auto fill of C2 messages
- SINCGARS
- Tactical Display
- Built in Test and Diagnostics
- Thermal Management System
- Under Armor AP04U

LEGEND

C2	COMMAND AND CONTROL	JBC-P	JOINT BATTLE COMMAND-PLATFORM
CITV	COMMANDERS INDEPENDENT THERMAL VIEWER	mg	MACHINE GUN
		mm	MILLIMETER
gal	GALLON	mph	MILES PER HOUR
hb	HEAVY BARREL	psi	POUNDS PER SQUARE INCH
hp	HORSEPOWER	SINCGARS	SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM

Figure 1-2. M1A2SEPV2

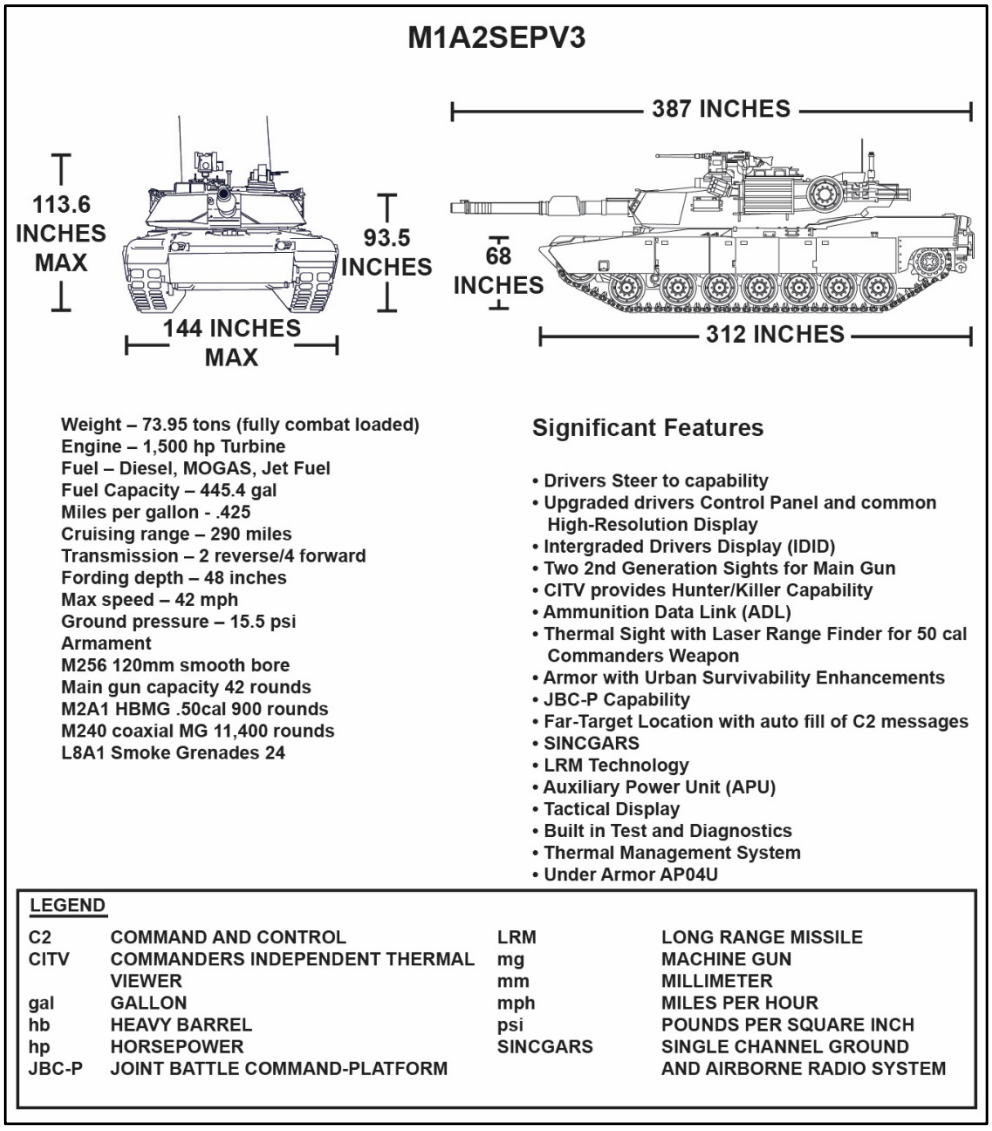


Figure 1-3. M1A2SEPV3

SECTION II – THE ARMOR FORCE FUNDAMENTALS

1-21. Fundamentals are defined set tasks or actions that allow a formation to fight effectively. These fundamentals form the foundation of combat-ready formations. During training, Armored formations must build proficiency in executing the fundamentals to be ready to fight. During combat operations, Armored formations leverage their mastery of the fundamentals to accomplish the mission.

TANK PLATOON FUNDAMENTALS

1-22. The tank platoon fundamentals are a list of the most important tasks, that when mastered, make the tank platoon as lethal as possible. These seven fundamentals support a tank platoon's tactical purpose: Close with and Destroy the Enemy. (See chapter 3, section I for more information.)

- Execute movement techniques: traveling, traveling overwatch, and bounding overwatch (see chapter 3, section II for information).
- Achieve local direct fire superiority through attack by fire or support by fire (see appendix G, section I for information).
- Conduct an assault (see appendix G, section I for information).
- Destroy an inferior force using fire and maneuver (see appendix G, section I for information).
- Conduct a hasty occupation of a battle position (BP) (see chapter 4, section IV for information).
- Execute direct fire control and distribution (see appendix A for information).
- Bypass an obstacle (see chapter 5, section IX for information).

CRITICAL TACTICAL TASKS

1-23. These twelve tasks enable formations to fight effectively. Critical tactical tasks are common to all unit types and are applicable to the company, platoon, section, squad echelons.

- Establish security (short/long duration) (see chapter 4, paragraph 4-11, and chapter 5, section IV).
- Execute battle drills/react to contact: (PLT/SEC/SQD/CREW/SQD) (see chapter 3, paragraph 3-72, paragraph 3-84 through 3-91, and appendix F).
- Conduct consolidation and reorganization (see chapter 3, section VIII and chapter 4, section VI).
- Conduct field maintenance, preventive maintenance checks and services (PMCS) in the tactical assembly area (PMCS/DA Form 5988-E [*Equipment Maintenance and Inspection Worksheet*] Flow/Parts Flow/Parts Installation) (see chapter 6, section II).
- Conduct tactical combat casualty care (TCCC) and casualty evacuation (CASEVAC) operations (see chapter 6, section III).
- Conduct LOGPAC in the tactical assembly area, logistics release point operations, and emergency resupply (see chapter 6, paragraphs 6-10 through 6-29 and see ATP 3-90.1).
- Conduct troop leading procedures (TLP) and rehearsals (see chapter 2, section I, and section III).
- Establish and operate communications and reporting (see chapter 3, paragraphs 3-125, chapter 5, paragraphs 5-128, 5-150, table 5-4, appendix D, paragraph D-25, and chapter 6, paragraph 6-14).
- Coordinate with adjacent units (see chapter 4, paragraph 4-132).
- Execute detachments/receive attachments/integrate unit enablers (see chapter 1, paragraph 1-23).
- Employ UAS (when equipped) (see chapter 3, paragraph 3-121, chapter 4, paragraph 4-54, chapter 5, paragraph 5-79).

- Conduct counter-unmanned aircraft system (C-UAS) operations (see chapter 4, paragraph 4-101, see chapter 5, paragraphs 5-09, 5-205 through 5-219 and appendix F).

COMMON FUNDAMENTALS—THE DAILY DOZEN

1-24. The Daily Dozen is the fieldcraft that all units at all echelons do every day. These are twelve actions that units do every day during operations.

1-25. **Security plus Cover, Concealment, and Emissions Control**—units must secure themselves so that the enemy does not take them by surprise. This is about protecting the force so that they can continue to accomplish their assigned missions.

1-26. **Timelines and Priorities of Work**—timelines and priorities of work drive action at the unit level. The first priority of work is always security. The second priority of work is usually maintenance. Leaders establish and refine timelines and priorities of work. When Soldiers know what they must do, they will do it, usually with minimal supervision.

1-27. **Boresight/Prep to Fire Checks**—units must hit and destroy the first time they engage the threat. Live fire and Multiple Integrated Laser Engagement System (also called MILES) boresighting are key to ensuring they are lethal with their weapons systems. Boresight, zero, muzzle reference system update, and prep-to-fire checks for all weapons systems will be conducted in accordance with the applicable technical manual for live fire operations.

1-28. **Communications**—Soldiers and leaders are responsible for the operation and maintenance of their communications equipment. Subordinate formations have the duty to maintain communications with their higher HQ. Units fight better when their formations can communicate with each other.

1-29. **PCCs/PCIs**—shoot, move, communicate. Precombat checks (PCCs) (leaders check everything) and precombat inspections (PCIs) (leaders check a specific number of items) are the bedrock of preparation. They are a basic leader's responsibility. Good PCCs/PCIs ensure that units are not caught short during the execution of a mission.

1-30. **PMCS and DA Form 5988-Es**—crews must perform PMCS to standard using the -10 technical manual to identify faults. Leaders should not have to accept broken vehicles or equipment. Proper PMCS and DA Form 5988-Es ensure the force gets what they need to keep their vehicles and equipment ready for the mission.

1-31. **Sensitive Items and Accountability Checks**—Soldiers and leaders are accountable for their equipment, their personnel, and their actions. At a minimum, leaders perform sensitive item checks twice each day. One of these checks is a by serial number inventory. Leaders also check accountability before and after every movement.

1-32. **Reconnaissance**—every Soldier is a scout. Units perform reconnaissance so that they can determine what the enemy is trying to do. When leaders know what the enemy is doing, they can find the position of advantage and exploit the enemy's weaknesses.

1-33. **Operation Orders (OPORDs) and Graphics**—operations require an OPORD or FRAGORD that must be briefed and understood down to the Soldier level. This ensures a common understanding of the mission and fosters initiative at all levels. Graphics are

distributed and understood down to the vehicle/squad/section level. They provide a common reference point for the operations. Units are more effective when they understand the mission and when they fight using common graphics.

1-34. **Rehearsals**—units that rehearse well perform well. Rehearsals ensure a common understanding of the operation and enable more effective execution of the mission.

1-35. **Risk Management**—field training and combat operations are dangerous. Leaders identify environmental, accidental, and tactical risks. They then implement control measures to reduce the residual risk to the force and mission.

1-36. **After Action Reviews (AARs)—**effective units execute AARs after every training event or combat operation. Units identify what was supposed to happen, what did happen, sustain, improve, who is responsible for correcting identified deficiencies for the future, and how they will execute differently the next time. Effective and candid AARs ensure continuous improvement of tactical proficiency.

SECTION III – DUTIES AND RESPONSIBILITIES

1-37. Tank crews are a tightly integrated team, and each member has primary duties. Ultimately, success depends on them working together as a crew. They must work together to maintain and service their tank and equipment, and function as one in combat. Tank crew cohesion is vital to mission accomplishment and survivability in combat. All members of the platoon must be physically, mentally, and emotionally fit. The cross-training of crew roles must remain a priority in the unfortunate event that an Armor crewman is incapacitated.

PLATOON LEADER

1-38. The platoon leader responsible is for all that the platoon does or fails to do. The platoon leader is responsible for the tactical employment, collective training, administration, personnel management, and logistics of the platoon. The platoon leader must know each crewmember's capabilities, and how to employ the platoon and its equipment. The platoon leader must—

- General Military Authority:
  - Be responsible to the commander for the discipline and readiness (personnel, supply, maintenance, and training) of the platoon.
  - Monitors the morale, discipline, and health of platoon members.
  - Knows, establishes, and enforces appropriate standards.
  - Be flexible and capable of using sound judgment to make prudent decisions quickly.
  - Operate with disciplined initiative within the commander's intent and update the commander on the actions of the platoon at the earliest opportunity.
  - Be prepared to assume duties of the executive officer (XO) or company commander per the succession of command.
- Readiness:
  - Know the capabilities and limitations of the platoon's personnel and equipment.

  - Be responsible for the platoon's deployable status, including medical and administrative readiness.
  - Receive status reports from the PSG, tank commanders, and gunners during planning.
  - Assist the PSG in planning and coordination of sustainment for the platoon.
  - Request the necessary support and information from the company commander to assist the platoon in achieving its mission.
  - Ensure all personnel are issued isolated Soldier guidance to facilitate recovery prior to capture (see FM 6-99, appendix A for more information on isolated Soldier guidance format).
- Tactical:
  - Serve as a tank commander.
  - Lead Alpha Section.
  - Be well-versed in enemy organizations, doctrine, and equipment.
  - Know and understand the mission and the commander's intent.
  - Execute TLPs and apply them quickly and efficiently.
  - Plan operations in coordination with the PSG, tank commanders, and other key personnel.
  - Issue warning orders (WARNORDs), OPORDs, and fragmentary orders (FRAGORDs), to drive mission accomplishment.
  - Understand and accomplish tasks assigned to the platoon requirements based on the tactical plan.
  - Develop the platoon maneuver and direct-fire plan with the PSG and tank commanders.
  - Develop the fire support plan with the fire support officer (FSO).
  - Coordinate the obstacle plan and manage the employment of engineers.
  - Analyze the information environment within the platoon's assigned area that supports the commander's intent and concept of operations.
  - Lead platoon rehearsals focused on movement, actions on the objective, and battle drills.
  - Conduct PCCs for the tank crew.
  - Conduct PCIs.
  - Be a subject matter expert in the tactical employment of the platoon, both independently and as part of a company team.
  - Analyze tactical situations and available intelligence, disseminate and filter information, and employ the full capabilities of the platoon's equipment to accomplish the mission.
  - Fight the platoon using appropriate formations, movement and maneuver techniques.
  - React to contact with the appropriate battle drills.
  - Control, distribute, and focus platoon direct fire, utilizing direct fire control measures (DFCMs) and fire commands.
  - Prevent fratricide and mitigate risk.
  - Ensure the effective integration of combined arms assets, including indirect fire, aviation, and engineer capabilities.
  - Maintain situational awareness of changes to friendly and enemy positions, graphical control measures, and both analog and digital reports.

- Identify and assess threats, patterns, and changes in the OE.
- Responsible for the security of tank's position including cover, concealment, and emissions control.
- Recognize opportunities and seize the initiative based on the commander's intent and the tactical situation.
- Ensure situation reports and recommendations are accurately prepared and sent forward to the company commander.
- Analyze and disseminate pertinent tactical friendly and enemy information to subordinates.
- Direct implementation of protection and local security requirements, including CBRN protection, air guards, security levels, readiness condition (REDCON) levels, and other requirements.

PLATOON SERGEANT

1-39. The PSG is the most experienced and senior enlisted Soldier in the platoon. In the absence of the platoon leader, the PSG performs all duties of the platoon leader. It is the PSG's duty to:

- General Military Authority:
  - Assist and advise the platoon leader.
  - Lead the platoon in the absence of the platoon leader.
  - Monitor the morale, discipline, and health of platoon members.
  - Account for Soldiers, equipment, and supplies.
  - Coach, counsel, and mentor Soldiers.
  - Uphold standards and platoon discipline.
- Readiness:
  - Be responsible for the training, discipline, and welfare of the platoon members.
  - Mentor and train crewmen, other noncommissioned officers (NCOs), and the platoon leader on the tactical and technical employment of the platoon's assigned equipment.
  - Supervise individual and crew training.
  - Supervise the platoon's administration, logistics, and maintenance.
  - Be responsible for the platoon's deployable status, including medical and administrative readiness.
  - Be responsible for the professional development and career management of the NCOs in the platoon.
  - Advise the platoon leader on appointments, promotions and reductions, assignments, and discipline of the NCOs and enlisted members of the platoon.
  - Ensure the platoon maintains all equipment before, during, and after operation.
  - Submit shortages and anticipated consumption of classes of supply prior to operations and during transitions.
  - Collect, prepare, and submit routine logistic status updates and requests to the company XO or first sergeant (1SG).
  - Coordinate and supervise platoon resupply operations to ensure ammunition and supplies are properly and evenly distributed during mission preparation.

- Submit reports as necessary to the company HQ.
- Maintain platoon crew-manning information.
- Receive and assign crew replacements.

- Tactical:
  - Serve as a tank commander.
  - Lead Bravo Section.
  - Enforce the execution of the platoon's timeline and priorities of work.
  - Conduct PCCs for the tank crew.
  - Conduct PCIs.
  - Take charge of task organized elements in the platoon during tactical operations, including quartering parties and support elements.
  - Monitor the common operational picture to maintain awareness of the platoon's position relative to the company formation.
  - Perform actions on the battlefield which complement those of the platoon leader's maneuver plan.
  - Supervise execution of directed protection requirements.
  - Responsible for the platoon's current operations and implementing direct guidance now and for the next several hours.
  - Monitors consumption of critical supplies; designates priorities of support within the platoon.
  - Brief the platoon leader on important friendly and enemy status updates.
  - Direct the platoon's CASEVAC plan.
  - Consolidate and submit the platoon's casualty reports.

TANK COMMANDER

1-40. The tank commander is responsible to the platoon leader and PSG for maintaining the tank and training a lethal crew, proficient with crew and individual tasks that support the platoon's mission. The tank commander is also the section sergeant for each tank section. Alpha section sergeant assists the platoon leader with planning OPORDs, route planning/graphics, and assisting the PSG with administrative tasks. Bravo section sergeant assists platoon leader/PSG with tracking maintenance and DA Form 5988-E flow, be responsible for the maintenance of weapons, communications, and other items. It is the tank commander's duty to:

- Understand the equipment and be an expert at using the tank's weapon systems, requesting indirect fires, and executing land navigation using both digital systems and more traditional methods, such as terrain association.
- Train and supervise the tank crew on the maintenance and accountability of assigned equipment, and the tactical employment of the tank.
- Be responsible for the medical and administrative readiness of the tank crew to maintain a deployable status.
- Foster crew cohesion.
- Ensure the welfare of the crew.
- Know and understand the company mission and company commander's intent by using all available tools, equipment, products, or personnel at their disposal.
- Ensure equipment is stowed and secured properly per unit load plans or standard operating procedures (SOPs).
- Execute crew drills and crew rehearsals.

- Perform PCCs, including the prep to fire checklist.
- Brief the crew, direct the movement of the tank, submit all reports, and supervise initial first-aid treatment and evacuation of wounded crewmen.
- Control vehicle direct fires in accordance with the platoon DFCMs and direct fire plan.
- Develop DA Form 5517 (*Standard Range Card*) for their tank section.
- Responsible for the outcomes of all direct fire engagements.
- Issue fire commands.
- Operate the .50 caliber machine gun.
- Lay the gun for direction, if necessary.
- Serve as a primary or alternate observer for indirect-fire targets, as directed.
- Maintain situational awareness from the open hatch to identify dismounted, AT, and UAS threats.
- Execute mission-specific tasks to include breaching and proofing lanes or designated roles such as CASEVAC.
- Assume the role as PSG, as required.
- Assist other crewmembers, as necessary.

GUNNER

1-41. The gunner has the following duties:

- Detect and identify targets and engage them with both the main gun and the coaxial machine gun.
- Be proficient with the functions and maintenance of the main gun and all machine guns.
- Be responsible to the tank commander for the immediate supervision of and assisting with the overall maintenance of the entire vehicle and accountability of all equipment.
- Maintain the tank's communications and internal control systems.
- Be responsible for the manual inputs into the fire control system through the gunner's control digital panel.
- Be responsible for boresight accuracy and manual calibration.
- Maintain situational awareness of weapon status, ammo selection, and battle carry.
- Assume control of the tank in the absence of the tank commander.
- Assist the tank commander with leader responsibilities, including crew supervision, maintenance, load planning, mission preparation, monitoring radios, and updating graphics, as necessary.
- Assist other crewmembers, as needed.

LOADER

1-42. The loader has the following duties:

- Stow and care for ammunition.
- Load the main gun and the coaxial machine gun ready box.
- Aim and fire the loader's machine gun.
- Search for targets, maintain rear security, and act as air guard against enemy air attack and UASs, and as the antitank (AT) guided missile guard.

- Assist the tank commander as needed by providing directions to the driver, so the tank avoids obstacles, maintains its position in formation, and maneuvers effectively.
- Dismount the tank to provide local security or check dead space beyond intervisibility lines and visual obstructions.
- Dismount the tank to ground guide or check dead space around the tank.
- Be responsible for the turret maintenance of the tank.
- Inspect communication equipment and ensure it operates properly to include communications security.
- Assist other crewmembers, as necessary.

1-43. Because the loader is ideally positioned to observe around the tank and to monitor the tank's digital displays, platoon leaders and tank commanders should consider assigning an experienced crewman as the loader.

DRIVER

1-44. The driver has the following duties:

- Move, position, and stop the tank.
- Maneuver the tank smoothly to provide a stable firing platform.
- Maintain the tank's position in formation and watch for visual signals.
- Monitor the steer-to indicator, if the tank is equipped, and select the best tactical route following the tank commander's guidance.
- Seek covered and concealed routes.
- Maneuver to covered positions when conducting a short halt.
- Perform survivability moves, as needed.
- Assist the gunner and tank commander by scanning for targets and sensing fired rounds during engagements.
- Monitor the Drivers Display Panel and notify the tank commander of any cautions, warnings, or mechanical issues that arise.
- Monitor fuel levels and the quantity of Class III petroleum, oil, and lubricants added to the tank.
- Be responsible for the maintenance of the tank with the assistance of the other crewmembers.
- Perform track maintenance whenever possible to ensure proper lubrication and track tension.
- Assist other crewmembers, as needed.

SECTION IV – COMPANY ORGANIZATIONS

1-45. The tank platoon is organic to Armor companies of a combined arms battalion (CAB) or a Cavalry squadron. (See appendix I for information on tank platoon in a Cavalry squadron.) Depending on the mission, the Armor company may be task-organized with Infantry or Cavalry units to create a company team. If a tank platoon is attached to a different HQ and controlled by a mechanized Infantry company, Infantry BN, or armored Cavalry troop, a portion of the field maintenance team (FMT), and a recovery vehicle should also be attached. The exact amount of control the gaining unit

would have over the platoon is determined by the command relationship established by its HQ.

Note. For information on the organization of the Infantry BN, and Infantry company, see appendix D in the manual.

ARMOR COMPANY

1-46. The Armor company is organized, equipped, and trained to fight pure or as a task organized company team. (See ATP 3-90.1 for more information.) The Armor company includes an HQ and three tank platoons. The company HQ is equipped with two tanks, an armored personnel carrier (M113A3 or Armored Multi-Purpose Vehicle [also called AMPV]), and wheeled vehicles for command and control and sustainment. (See figure 1-4.)

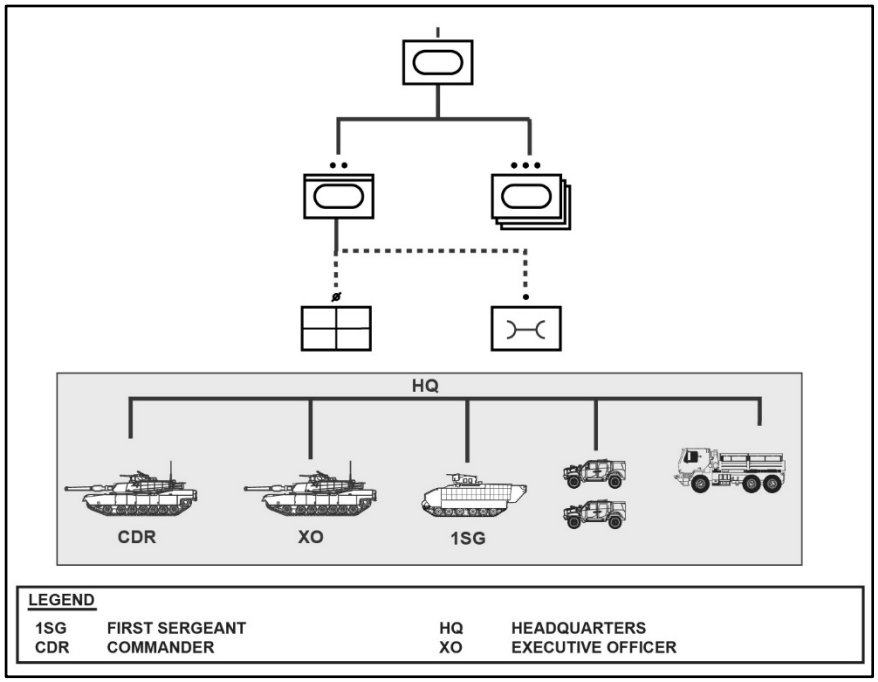


Figure 1-4. Armor company

MECHANIZED INFANTRY COMPANY

1-47. The mechanized Infantry company is organized, equipped, and trained to fight with organic assets or as a task-organized company team. The mechanized Infantry company includes an HQ and three Bradley fighting vehicle (BFV) platoons. Each platoon has four BFVs. (See ATP 3-90.1 for more information.) (Figure 1-5 illustrates the organization of a mechanized Infantry company.)

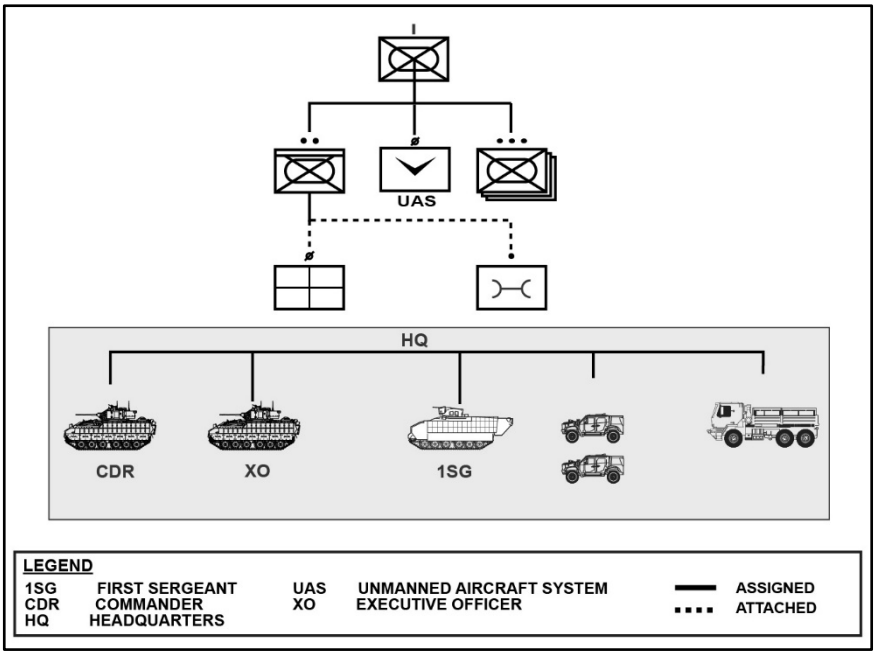


Figure 1-5. Mechanized Infantry company

CAVALRY TROOP

1-48. The Armored brigade combat team (ABCT) Cavalry troop is organized, equipped, and trained to conduct reconnaissance and security tasks throughout the squadron and brigade area of operations (AO). The ABCT Cavalry troop organization includes an HQ section, two scout platoons with six BFVs each, and a 120-mm mortar section. (See ATP 3-20.97 for more information.) (Figure 1-6, page 18 illustrates the organization of an ABCT Cavalry troop.)

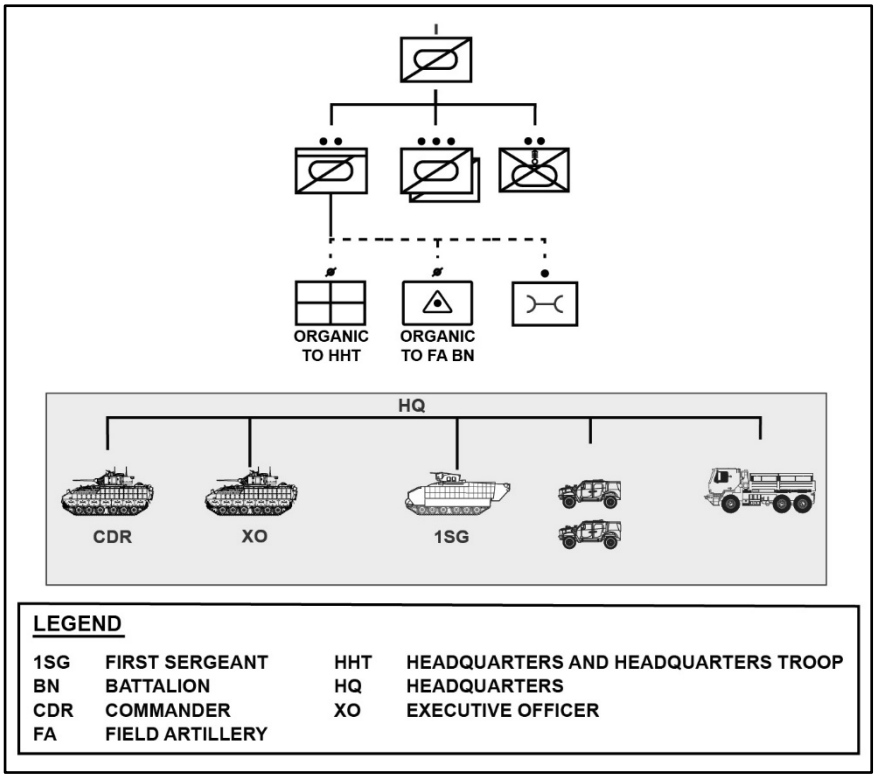


Figure 1-6. Armored brigade combat team Cavalry troop

SECTION V – THE COMBINED ARMS BATTALION

1-49. *Combined arms* is the synchronized and simultaneous application of arms to achieve an effect greater than if each element was used separately or sequentially (ADP 3-0). The tank platoon and company operate within a larger organization such as the CAB. The CAB is part of the ABCT. While ABCTs are the Army's armored combined arms force, it is the CAB, with the main battle tanks, BFVs, 120-mm mortar systems, scouts, and Infantry squads that provide their tremendous striking power. The combination of firepower, mobility, protection, and information collection capabilities make it invaluable to the ABCT commander when conducting large-scale combat operations. Depending upon the threat, the CAB can fight without augmentation. It can also be tailored and task-organized to meet the precise needs of its mission that are directly influenced by the OE. (See ATP 3-90.5 for more information.)

1-50. CABs are organized to fight and win offensive and defensive operations but are equally capable of executing stability and defense support of civil authority tasks as part of a joint task force. The CAB combines the efforts of its HQ, Armor, and mechanized Infantry companies to execute tactical missions as part of an ABCT operation. CABs can mass combat power quickly while integrating and synchronizing the supporting and sustaining multipliers.

1-51. The CAB is designed around one of two configurations, either two mechanized Infantry companies and one Armor company or two Armor companies and one mechanized Infantry company. (See figures 1-7 and 1-8, page 20.) The brigade support BN provides an organic FSC, which is attached to the CAB and is responsible for maintenance and sustainment. The FSC is organized with maintenance and vehicle recovery platoons and sections, a distribution platoon and field feeding section. The FSC is in direct support of the CAB for all sustainment operations. Besides the maneuver companies and FSC the CAB also has an HQ company with CAB staff and enablers. The CAB organization also includes the following:

- Scout platoon.
- Mortar platoon.
- Sniper squad.
- Medical platoon.

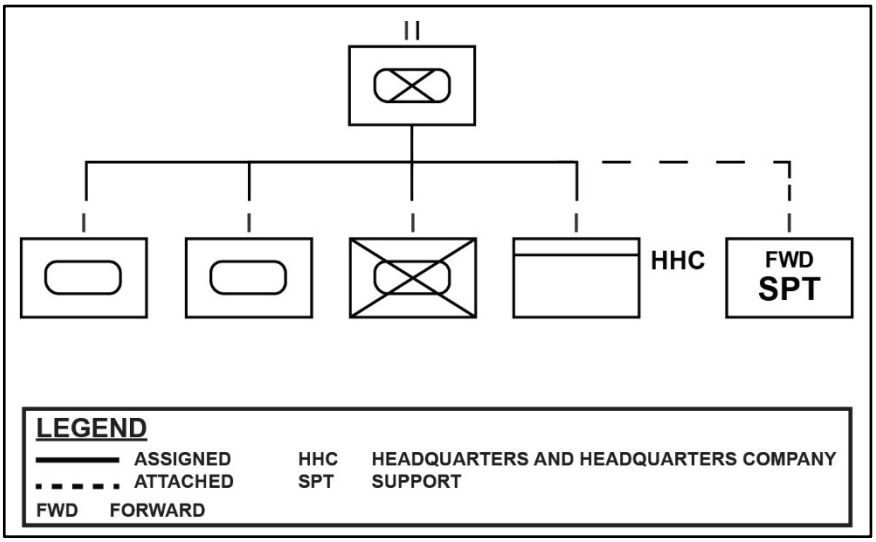


Figure 1-7. Combined arms battalion (Armor heavy)

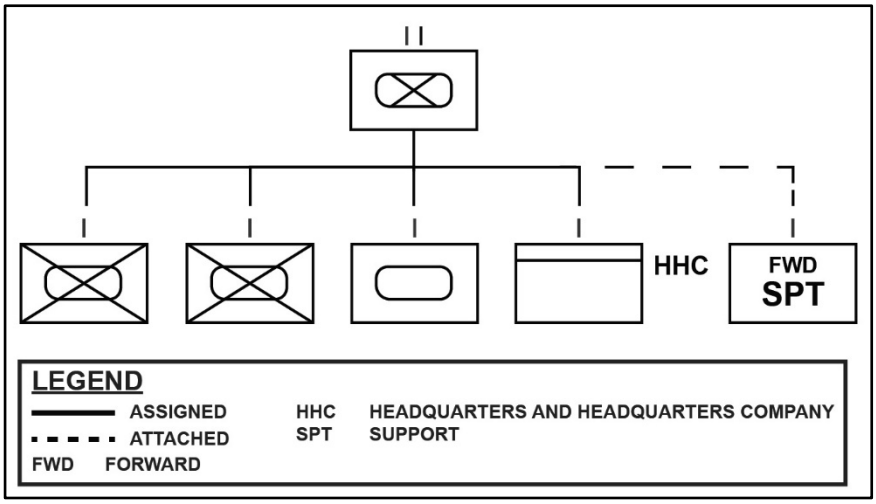


Figure 1-8. Combined arms battalion (Infantry heavy)

Chapter 2

Planning and Preparing for Operations

Leaders at the company level and below use TLPs to plan and prepare for operations. In a platoon-level operation, TLPs begin when the platoon leader receives notice of an upcoming mission and they continue throughout the operational process (plan, prepare, execute, and assess). All leaders, from platoon leaders to tank commanders, conduct TLPs using the same steps described in this chapter.

SECTION I – TROOP LEADING PROCEDURES

2-1. *Troop leading procedures* is a dynamic process used by small-unit leaders to analyze a mission, develop a plan, and prepare for an operation (ADP 5-0). An *operation* is a sequence of tactical actions with a common purpose or unifying themes (JP 1, Volume 1). In a tank platoon, TLPs begin when the platoon leader receives the WARNORD from the company commander. TLPs are a sequence of actions that help leaders use time available effectively and efficiently to issue orders and execute tactical operations. TLPs are not a rigid set of steps, but rather a guiding process that must be consistently applied throughout an operation. (See figure 2-1, page 22.)

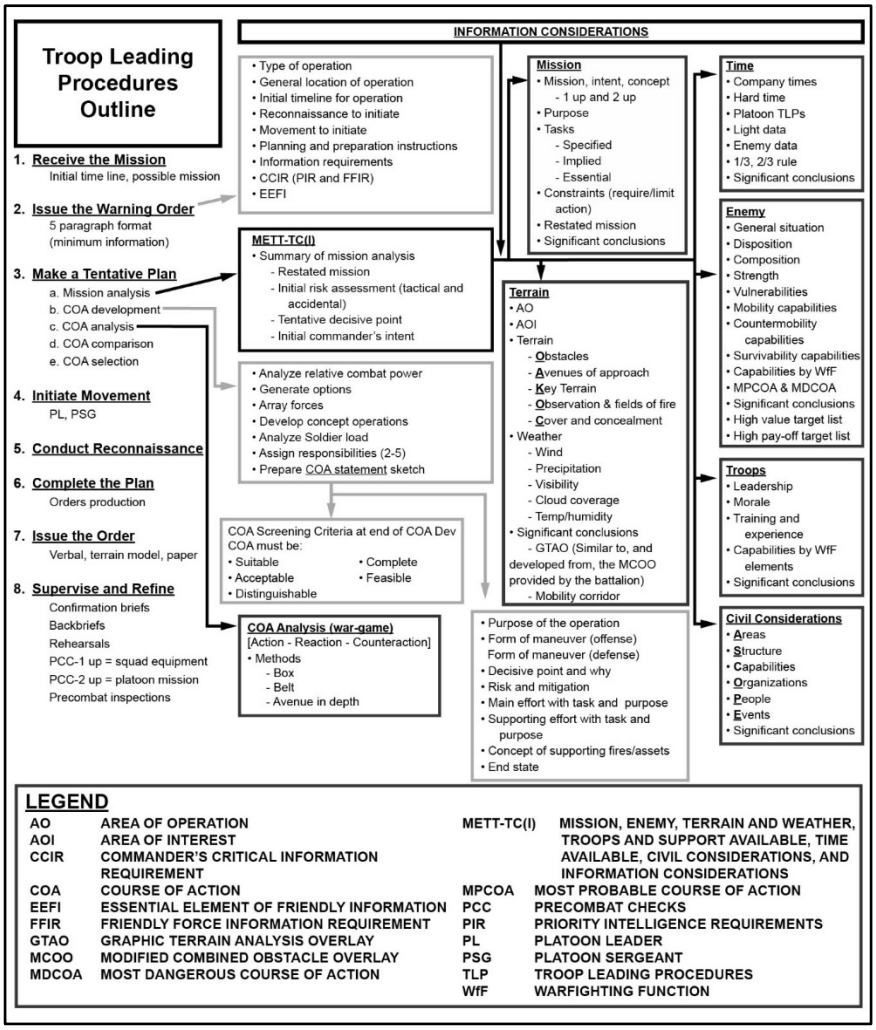


Figure 2-1. Troop leading procedures outline

2-2. Some actions such as initiating movement or issuing the WARNORD may recur during the process. Reconnaissance and activities associated with supervising and refining the plan occur continuously throughout TLPs. Subordinate leaders conduct TLPs the same way as the platoon leader.

2-3. The platoon leaders must understand that their planning is parallel with the company. (See figure 2-2.) As the company plan develops the platoon leaders must continue to develop their own plan, up until execution. The platoon leaders should provide a confirmation backbrief to the company commander following the company OPORD to ensure they understand the commander's intent. Once they confirm their commander's intent, they continue the TLPs process. The *commander's intent* is a clear

and concise expression of the purpose of an operation and the desired objectives and military end state (JP 3-0).

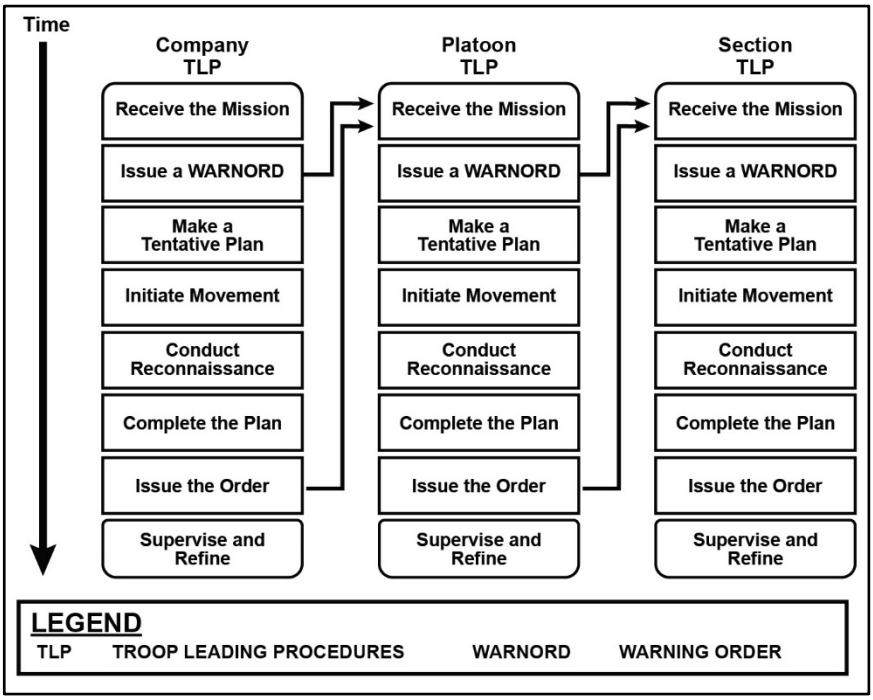


Figure 2-2. Parallel planning

2-4. The platoon leaders do not plan in isolation. They should utilize their PSG and experienced tank commanders to aid in the planning process. The experience of the NCOs enables the platoon leader to plan effectively in a time-constrained environment. Examples of assigned planning responsibilities include the following:

- The platoon leader and tank commanders help plan paragraph 3, execution.
- Platoon leader assists the PSG with paragraph 4, sustainment and paragraph 5, command and signal.

2-5. TLPs provide small-unit leaders with a framework for planning and preparing for operations. This section discusses each step of TLPs. TLPs are a sequence of actions that assist leaders to use available time effectively and efficiently to issue orders and execute tactical operations while understanding and mitigating the inherent risk that is involved with any operation. TLPs have eight steps. The sequence of the steps of TLPs is not entirely rigid. Leaders can modify the sequence to meet the mission, situation, and available time. The steps of TLPs are—

- Step 1. Receive the mission.
- Step 2. Issue a WARNORD.
- Step 3. Make a tentative plan.
- Step 4. Start necessary movement.
- Step 5. Conduct reconnaissance.
- Step 6. Complete the plan.

- Step 7. Issue the complete order.
- Step 8. Supervise and refine.

2-6. Time management is the key; the platoon leader maximizes available planning time by starting as soon as they receive the first information about an upcoming operation, usually in the form of a WARNORD. Some of the following steps are done concurrently, and others are continuous throughout the operation. One of the most critical aspects of planning is providing subordinates with a timeline for the mission that includes both operational planning and execution.

2-7. The platoon leader follows the one-thirds, two-thirds rule when planning their operations. The one-thirds, two-thirds rule allocates one-third of the planning time to the leader and the remaining two-thirds planning time for their subordinates to conduct TLPs.

STEP 1: RECEIVE THE MISSION

2-8. Receiving the mission may occur in several ways. It may begin with the initial WARNORD or OPORD from higher HQ, or when a leader anticipates a new mission. The platoon leader determines their unit's missions and assesses the time available to accomplish them.

2-9. Upon receipt of the WARNORD, FRAGORD, or OPORD, the platoon leader's first task is to extract their mission from the commander's overall plan. The key to understanding the platoon mission as part of the company mission lies in two elements of the plan: one- and two-level higher commander's intent and the concept of operations. The platoon leader's understanding of the commander's intent, as well as their task and purpose, allows them to use their initiative, exploit battlefield opportunities, and accomplish the commander's plan. It is imperative for the platoon leader to consult with their PSG once they receive the mission to develop the platoon's WARNORD. If they do not understand the intent or purpose, they must ask the commander for clarification.

STEP 2: ISSUE A WARNING ORDER

2-10. The platoon leader alerts their platoon to the upcoming operation by issuing a WARNORD. The amount of detail included in a WARNORD depends on the available time, the platoon's communications capability, and the information subordinates need to initiate proper planning and preparation. The platoon leader issues the WARNORD as soon as possible to facilitate subordinate preparation and planning. (See figure 2-3.) The WARNORD may include the following information:

- Changes to task organization.
- Updated graphics.
- Enemy and friendly situation changes.
- Company mission.
- Commander's intent.
- Platoon's mission.
- Specified tasks and implied tasks.
- Initial rehearsal guidance.
- Tentative timeline, to include the following:
  - Earliest time of movement.

- REDCON and vehicle preparation schedule.
- Reconnaissance.
- Rehearsal schedule.
- Time and location at which the platoon OPORD will be issued.
- Time of PCC and PCI.

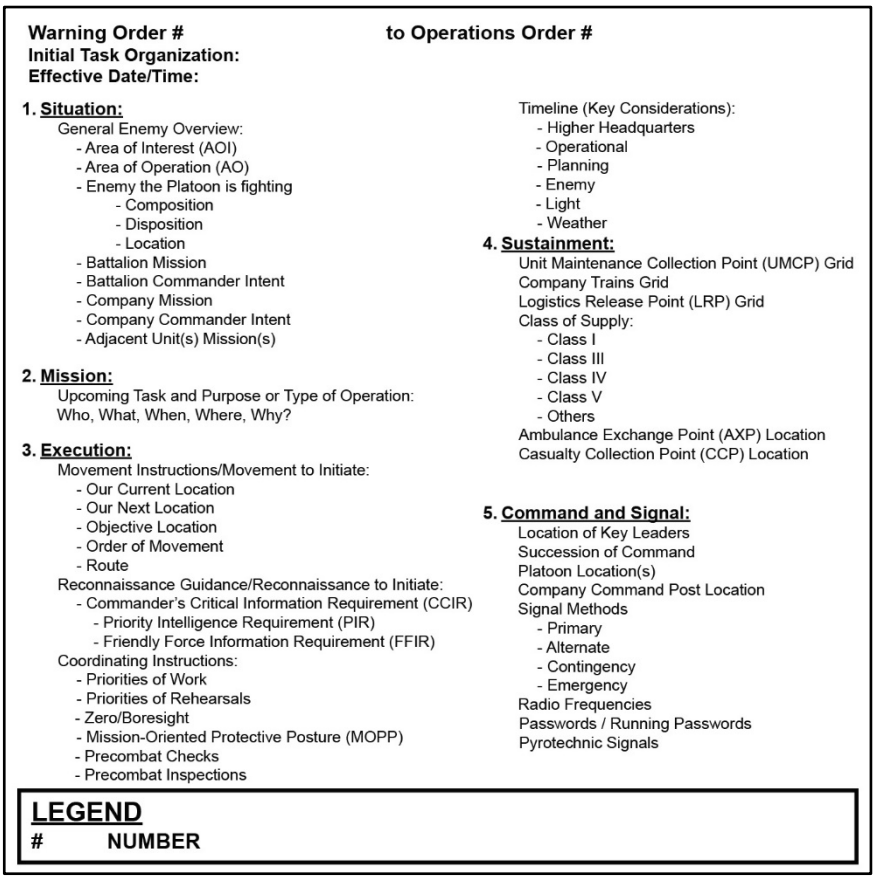


Figure 2-3. Warning order, example

STEP 3: MAKE A TENTATIVE PLAN

2-11. Once the platoon leader has issued the WARNORD, they develop a tentative plan. To form the tentative plan, the platoon leader performs mission analysis, utilizing the following mission variables METT-TC (I): mission, enemy, terrain and weather, troops, and support available, time available, civil considerations, and informational considerations. The platoon leader should utilize their PSG's and tank commanders' tactical knowledge and experience to assist in developing the plan.

2-12. Platoon leaders should not wait for a complete company OPORD before starting to develop a tentative plan. Platoon leaders should begin mission analysis upon receipt of the company WARNORD.

2-13. *Situational understanding* is the product of applying analysis and judgement to relevant information to determine the relationships among the operational and mission variables (ADP 6-0). The platoon leader conducts mission analysis to develop and to confirm what the platoon must do to accomplish the mission. The platoon leader conducts mission analysis by evaluating the mission variables of METT-TC (I). The platoon leader plans within the time constraints of the mission while still adhering to the one-third, two-thirds rule.

2-14. Mission analysis helps the platoon leader answer the following questions:

- What is the current situation?
- What is my mission?
- How can the platoon best accomplish the mission?
- What are the possible risks?

2-15. The platoon leader begins mission analysis immediately upon receipt of the mission from the company commander. During mission analysis, the platoon leader—

- Restates the given mission.
- Conducts an initial risk assessment.
- Identifies tentative decisive point.

2-16. The platoon leader can divide the planning amongst the subordinates in the platoon. The platoon leader relies on the expertise and experience of the NCOs to develop a complete plan.

2-17. The platoon leader is responsible for the planning of the mission. However, in a time-constrained environment, assistance from experienced NCOs will allow the platoon leader more flexibility to coordinate with the company and plan for the integration of assets available.

MISSION ANALYSIS

2-18. The platoon leader uses mission analysis to gain a complete understanding of the assigned mission and both the company and BN commander's intent. During mission analysis the platoon leader gathers all the tools to conduct mission planning. These tools may include but are not limited to:

- Modified combined obstacle overlay developed by the BN's intelligence staff officer (S-2).
- Graphic terrain analysis overlay (GTAO) developed by the company commander.
- Enemy situation template developed by the company commander.
- Company's tentative timeline.
- Company OPORD.
- Company WARNORDs.

2-19. The platoon leader uses the mission variables of METT-TC (I) to conduct mission analysis. The platoon leader analyzes the variables as the information comes available from the company. They can lean on their NCOs to assist in analysis of the variables. At the conclusion of mission analysis, the platoon leader will understand—

- BN and company commander's intent.
- Factors of the mission variables relate to what the platoon must achieve.

- Tentative decisive point is essential to mission success.
- Tentative communications and electromagnetic warfare (EW) activities (see chapter 5 for more information).
- Type, nature, and probable location of enemy contact throughout the operation.
- Threat-based and accident-based risk hazards to platoon operations (see ATP 5-19 for more information on risk management).
- Platoon's mission statement is nested with higher mission and intent.
- GTAO for all pertinent terrain in the AO.
- Enemy situation template, as it pertains to the operation.
- Timeline.

METT-TC (I)

2-20. Analyzing METT-TC (I) is a continuous process. Information considerations are expressed as a parenthetical variable (I) in that it is not an independent variable, but an important consideration combined with each mission variable that the platoon leader should pay particular attention to in understanding a situation. During execution, continuous analysis of the mission variables facilitates the issuing of well-developed FRAGORDs. Platoon leaders assess whether any new information presented during the planning process changes their mission and if so, decide how to adjust the plan to meet these new situations.

2-21. METT-TC (I) analysis does not need to occur in any order; how and when platoon leaders analyze the variables depends on when they receive information as well as on their experience and preferences. One technique is to parallel the TLPs based on the products received from their company commander.

Analysis of Mission

2-22. Platoon leaders must understand the mission, intent, and operation concept one and two-levels higher. Doing so makes it possible to exercise disciplined initiative and act within limited windows of opportunity. The platoon leader looks to answer the question, "What have I been told to do and why?"

2-23. Platoon leaders use the following to gain understanding of the mission:

- BN/squadron (two-levels up) mission, intent, and concept.
- Company (one-level up) mission, intent, and concept.
- Unit's purpose.
- Constraints.
- Specified, implied, and essential tasks.
- Restated mission.

Battalion/Squadron (Two-Levels Up) Mission, Intent, and Concept

2-24. Leaders understand the concept of the operations two levels up. They identify tasks and purposes, and how their one-level up is contributing to the fight. They must also understand the commander's intention two levels up.

2-25. Understanding of the BN's/squadron's mission, intent, and concept allows the platoon leader to understand where their platoon fits into the greater mission. This assists

the platoon leader in developing a plan to meet the BN/squadron commander's intent. A thorough understanding of the one- and two-levels up allows the platoon leader to exercise disciplined initiative in the absence of orders.

Company (One-Level Up) Mission, Intent, and Concept

2-26. Leaders understand their immediate HQs' concept of the operation. They identify their HQs' tasks and purposes as well as their own contributions to the operation. They must clearly understand their commander's intent. Also, they identify the tasks, purposes, and dispositions for all adjacent maneuver elements under the HQs' control.

Unit's Purpose

2-27. Platoon leaders find their platoon's purpose in the concept of the operation in the commander's OPORD. The platoon's purpose usually matches or achieves the purpose of the immediate company. They must understand why their commander assigned their platoon its purpose. Then, they determine how they fit into the company's concept of operations. If the leaders are unclear of their purpose, they should consult their commander for further explanation.

2-28. Understanding the company commander's intent and purpose helps the platoon leader in executing the philosophy of mission command. In the presence of new information, the platoon leader knows the intent and purpose of the next higher HQ and so can adjust as needed to meet them. The platoon leader must be able to answer the question, "If all else fails around me, what must my platoon accomplish and why?"

Constraints

2-29. A *constraint* is a restriction placed on the command by a higher command (FM 5-0). The platoon leader determines all constraints the company's OPORD places on the platoon's ability to execute the mission. Annexes to the order may also include constraints. The operation overlay, for example, may contain a restrictive fire line (RFL) or a no-fire area. Constraints may also be issued verbally, in WARNORDs, or in policy memoranda. Constraints may also be based on resource limitations within the command, such as organic fuel transport capacity or physical characteristics of the OE.

Specified, Implied, and Essential Tasks

2-30. A *task* is a clearly defined action or activity specifically assigned by the appropriate authority to an individual or organization, or derived during mission analysis, that must be accomplished (JP 1, Volume 1). The platoon leader must identify and understand tasks required to accomplish a given mission. The tasks assigned to the platoon leader are outlined in the company's OPORD. The three types of tasks (specified, implied, and essential) are discussed in paragraphs 2-31 to 2-33.

Specified Task

2-31. A *specified task* is a task specifically assigned to a unit by its higher headquarters (FM 5-0). They are found throughout the OPORD, including in the annexes and overlays. Examples are seize Objective Cow; reconnoiter Route Red; assist the forward

passage of First Platoon, B Company; send two Soldiers to assist in the loading of ammunition.

Implied Task

2-32. An *implied task* is a task that must be performed to accomplish a specified task or mission but is not stated in the higher headquarters' order (FM 5-0). Implied tasks derive from a detailed analysis of the company's order, from the enemy situation and course of action (COA), from terrain, and from knowledge of doctrine and history. Analyzing the platoon's current location in relation to future assigned areas as well as the doctrinal requirements for each specified task might reveal the implied tasks. Only those requiring resources should be used. For example, if the specified task is to seize Objective Cow and a new intelligence update has Objective Cow surrounded by reinforcing obstacles, this intelligence update would drive the implied task of breach reinforcing obstacles in the vicinity of Objective Cow.

Essential Task

2-33. An *essential task* is a specified or implied task that must be executed to accomplish the mission (FM 5-0). An essential task, along with the company's purpose, is usually assigned by the BN's/squadron's OPORD in the concept of operation or tasks to subordinate units. For offensive and defensive operations, since the purpose is the same nested concept, the essential task accomplishes the company's purpose. For supporting efforts, it accomplishes the assigned purpose, which shapes the main effort.

Decisive Point

2-34. A *decisive point* is key terrain, key event, critical factor, or function that, when acted upon, enables commanders to gain a marked advantage over an enemy or contribute materially to achieving success (JP 5-0). Identifying a tentative decisive point and verifying it during COA development is the most important aspect of the TLPs. Visualizing a valid decisive point is how leaders determine how to achieve success and accomplish their purpose. Leaders develop their entire COA from a decisive point. A decisive point might be where or how, or from where, the unit will combine the effects of combat power against the enemy. A decisive point might be the event or action (with respect to terrain, enemy, time, and generation of combat power) that will ultimately and irreversibly lead to the unit achieving its purpose.

Restated Mission

2-35. The platoon leader concludes mission analysis by restating the mission. A *mission statement* is a short sentence or paragraph that describes the organization's essential task(s), purpose, and action containing the elements of who, what, when, where, and why (JP 5-0). The five elements of a mission statement answer the following questions, commonly referred to as the five Ws:

- Who will execute the operation (unit or organization)?
- What is the unit's essential task (tactical mission task)?
- When will the operation begin (by time or event) or what is the duration of the operation?

- Where will the operation occur (assigned area, objective, grid coordinates)?
- Why will the force conduct the operations (for what purpose)?

ANALYSIS OF ENEMY

2-36. Analyzing the enemy answers the question, what is the enemy doing and why? The leader answers the following questions:

- What is the composition and strength of the enemy?
- What are the capabilities of their weapons and other systems?
- What is the location of current and probably enemy positions?
- What is the enemy's most probable COA (defend, reinforce, attack, withdraw, or delay)?

Assumptions

2-37. The leader must understand assumptions the company commander uses to portray the enemy's COA. The leader's own assumptions must nest with those of the higher commander. They must continually update their enemy templates as new information becomes available. Assumptions must be valid and necessary.

Doctrinal Analysis (How the Enemy Will Fight)

2-38. The platoon leader must understand when, where, and how the enemy fights or tends to use their available assets. They must know more than just the enemy's number and types of vehicles, troops, and weapons. A threat template is a visual illustration of how the enemy force might look and act without the effects of weather and terrain. The platoon leader takes into consideration recent enemy actions and uses the appropriate threat template from doctrine to gain insight into how the enemy may fight. (See TC 7-100 for more information.)

2-39. The platoon leader must rely on information provided from the company's OPORD, and the commander's analysis and deductions about the enemy in its assigned area. The platoon leader uses the higher echelon's analysis to drive the logical assumptions about how the enemy may fight at their level.

Disposition

2-40. The platoon leader determines how the enemy is arrayed using the enemy analysis from the commander's OPORD. The company OPORD contains the information the platoon leader needs to determine the disposition of the higher enemy elements. The platoon leader then determines the enemy's patterns in the employment of troops and equipment. The platoon leader leverages recent S-2 intelligence updates and surveillance assets available to determine the enemy's disposition.

Composition

2-41. The platoon leader's analysis must determine the types of vehicles, troops, and equipment the platoon may encounter on the operation. They can utilize the company OPORD to help conduct their analysis. The platoon leader must be familiar with the basic characteristics of the enemy units and platforms identified.

Strength

2-42. The platoon leader identifies the strength of enemy units the platoon will be encountering in the operation. They derive the strength of their templated enemy from the analysis done by the commander in the company OPORD.

Capabilities

2-43. Based on the company OPORD, enemy's doctrine, and current location, the platoon leader must determine the enemy's capabilities and threat. A *threat* is any combination of actors, entities, or forces that have the capability and intent to harm United States forces, United States national interest, or the homeland (ADP 3-0). This includes studying and knowing the maximum effective range for each enemy weapon system, their doctrinal rates of march, and how the enemy doctrinally executes offensive and defensive operations. The hybrid threat force structure and organizational guide shows examples of threat organizations and equipment. This reference can help platoon leaders understand threat capabilities when conducting mission analysis. (See TC 7-100.4 for more information.) A *hybrid threat* is the diverse and dynamic combination of regular forces, irregular forces, terrorists, or criminal elements unified to achieve mutually benefitting effects (TC 7-100). All enemy capabilities are different and unique to the type of unit or formation friendly forces are expected to encounter. Platoons will have to rely on the latest intelligence update to make decisions on—

- Maneuver plan.
- Types of weapons systems to employ.
- Types of ammunition requirements.
- Types of special equipment requirements.

2-44. The platoon leader determines the capabilities of the next higher enemy element. These capabilities should include reasonable assets the next higher element, or other higher enemy HQs, may provide. This includes the employment of enemy reserves, CBRN weapons, artillery or mortar locations and ranges, reconnaissance and surveillance, and security operations.

Recent Activities

2-45. Gaining complete understanding of the enemy's intentions can be difficult when the enemy's situation templates, composition, and disposition are unclear. The enemy's recent activities must be understood because they can provide insight into future activities and intentions. When time permits, the platoon leader conducts a pattern analysis of the enemy's actions to predict future actions. The platoon leader must receive updates from the commander and BN intelligence cell to understand the enemy situation. The commander's analysis will be the main input into the platoon leader's recent enemy activity analysis.

Enemy Situation Template

2-46. The platoon leader analyzes the company OPORD and the commander's enemy and terrain deductions to identify how the enemy may fight. The platoon leader develops the enemy's most likely and most dangerous COA based on their analysis of the commander's deductions and company enemy situation template. (See table 2-1, page 32.)

The platoon's situation template depicts one echelon lower than that developed by the company OPORD. The platoon leader, using knowledge of the enemy's doctrine and terrain, develops a situation template depicting enemy BPs, crew-served weapons positions, key enablers, or defensive trenches.

Table 2-1. Recommended enemy situation template items

Enemy Defense	*Enemy Offense*
Primary, alternate, subsequent positions.	Attack formations.
Engagement area(s).	Axes of advance.
Individual vehicles.	Firing lines.
Crew-served weapons.	Objectives.
Tactical and protective obstacles.	Reserve force commitment.
Trenches.	Planned indirect-fire targets.
Planned indirect-fire targets.	Situational obstacles.
Observation posts.	Reconnaissance objectives.
Command and control positions.	Reconnaissance force routes.
Final protective fires and final protective line.	Phase lines.
Location of reserves.	Planned point of penetration.
Routes of reserve commitment.	
Battle positions, strong points, area of operation.	
Sectors of fire.	

ANALYSIS OF TERRAIN AND WEATHER

2-47. Terrain and weather are key aspects to mission analysis. When analyzing terrain, the platoon leader considers man-made features and effects of natural terrain features and climate. They also consider the effects of man-made and natural terrain in conjunction with the weather on friendly and enemy operations. In general, terrain and weather do not favor one side over the other unless one is better prepared to operate in the environment or is more familiar with it. The terrain, however, may favor defending or attacking. Analysis of terrain answers the question: What is the terrain's effect on the operation? The platoon leader analyzes terrain using the five military aspects of terrain.

2-48. The platoon leader develops a GTAO. They must utilize the command analysis of the terrain to help facilitate their planning. The platoon leader analyzes the five military aspects of terrain: observation and fields of fire, avenues of approach, key terrain, obstacles, and cover and concealment (OAKOC). The platoon leader includes this analysis in their plan and briefs their subordinates on the effects of the terrain on friendly and enemy units.

2-49. For the platoon leader to have a starting point for the company's terrain analysis, the platoon leader must first define the OE. The *operational environment* is the aggregate of conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander (JP 3-0). The platoon leader must understand the platoon's assigned area and areas of interest, which are—

- Boundaries to define a platoon's assigned area.

- An *area of interest*, which is that area of concern to the commander, including the area of influence, areas adjacent to it, and extending into enemy territory (JP 3-0).
- Areas occupied by enemy forces who could jeopardize the accomplishment of the mission.

2-50. Based on time available, the platoon leader may have to prioritize portions of terrain analysis. For example, if conducting an attack, the platoon leader might prioritize the areas around the objective for analysis and the route they intend on using. Given more time, the platoon leader would conduct analysis on the remainder of the assigned area and area of interest.

Five Military Aspects of Terrain

2-51. The platoon leader analyzes terrain using the five military aspects of terrain OAKOC. Military aspects of terrain are used to analyze the terrain features on the map. The sequence of analysis can vary. The leader determines the effects of each aspect as pertaining to friendly and enemy forces. These effects translate directly into conclusions applying to friendly or enemy COA. Utilizing OAKOC, the procedure is to first identify where forces have difficulty maneuvering (obstacles) then identifying areas where forces can travel unobstructed (avenues of approach) become more evident. Leaders can analyze OAKOC in any order they choose.

Obstacles

2-52. An *obstacle* is any barrier designed or employed to disrupt, fix, turn, or block the movement and maneuver, and to impose additional losses in personnel, time, and equipment (JP 3-15). The leader identifies existing, reinforcing, tactical, and protective obstacles, specifically highlighting those in their assigned area and on/around the objective (see FM 3-90 for more information):

- Existing obstacles are inherent aspects of the terrain that impede movement and maneuver.
- Existing obstacles may be natural or man-made:
  - Natural obstacles (intractable soils, rivers, mountains, wooded areas).
  - Man-made (enemy explosive and nonexplosive obstacles and structures, including bridges, canals, railroads, and embankments).
- Reinforcing obstacles are those man-made obstacles that strengthen existing terrain to achieve a desire effect.
- Tactical obstacles are used to shape enemy maneuvers and to maximize the effects of fires.
- Tactical obstacles directly affect the ability of a force to move, mass, and reinforce.
- Protective obstacles are employed to protect people, equipment, supplies, and facilities against threats.
- Protective obstacles have two primary roles, which are defense and security.

2-53. The platoon leader utilizes the commander’s graphical terrain overlay to plot obstacles identified by commanders on their maps. They can analyze the map to determine locations of other existing obstacles that can influence their operation. The

platoon leader analyzes the terrain to identify possible locations on the map when the platoon may have to change movement formation and speed.

2-54. Unrestricted. Terrain free of restrictions to movement, so no actions are needed to enhance mobility. For armored forces, unrestricted terrain typically is flat or moderately sloped, with scattered or widely spaced obstacles such as trees or rocks. This terrain generally allows wide maneuver and offers unlimited travel over well-developed road networks. It allows the platoon to move with little hindrance.

2-55. Restricted. Terrain hinders movement somewhat. Little effort is needed to enhance mobility, but units might have to zigzag or make frequent detours. They could have a hard time maintaining optimum speed, moving in some types of combat formations, or transitioning from one formation to another. For armored forces, restricted terrain typically means moderate to steep slopes or moderate to dense spacing of obstacles such as trees, rocks, or buildings. Swamps and rugged ground are two examples of restricted terrain for dismounted Infantry and Cavalry forces. Poorly developed road systems may hamper logistical or rear area movement.

2-56. Severely restricted. Terrain that severely hinders or slows movement in combat formations unless some effort is made to enhance mobility. Engineer forces might be needed to improve mobility, or the platoon might have to deviate from doctrinal tactics. For example, they might have to move in columns rather than in lines. Or, they might have to move much more slowly than they would like. For armored forces, steep slopes, densely spaced obstacles, and absence of a developed road system characterize severely restricted terrain.

Note. Terrain categorization is especially important to armored forces and reinforces the need to conduct additional analysis and reconnaissance at the platoon level despite being provided with a geographic terrain overlay from the commander.

Avenues of Approach

2-57. An *avenue of approach* is an air or ground route leading to an objective (or to key terrain in its path) that an attacking force can use (ADP 3-90). Avenues of approach are classified by type (mounted, dismounted, air, or subterranean), formation, and speed of the largest unit traveling on it.

2-58. The platoon leader can include the following considerations in evaluation of avenues of approach:

- How can I use each avenue of approach to support the platoon's movement and maneuver?
- How will each avenue support movement techniques, formations and, once the platoon makes enemy contact, maneuver?
- Will variations in trafficability force change in formation or movement techniques, or require clearance of restricted terrain?
- What are the advantages and disadvantages of each avenue?
- What are the enemy's likely counterattack routes?
- What lateral routes could the platoon use to shift to other axes, and which could the enemy use to threaten the platoon's flanks?

- How will each avenue of approach affect the rate of movement of each type of force?

2-59. The platoon leader can include the following defensive considerations in evaluation of avenues of approach:

- What are all likely enemy avenues into the company's sector?
- How can the enemy use each avenue of approach?
- What lateral routes could the enemy use to threaten the company's flanks?
- What avenues would support a friendly counterattack or repositioning of forces?

Key Terrain

2-60. *Key terrain* is an identifiable characteristic whose seizure or retention affords a marked advantage to either combatant (ADP 3-90). It is a conclusion, usually arrived after enemy analysis and COA development, rather than an observation. The platoon leader must assess which terrain in their assigned area is essential to mission accomplishment.

2-61. Next, the platoon leader identifies decisive terrain that, if held or controlled, provides an extraordinary impact on the mission. *Decisive terrain* is key terrain whose seizure and retention is mandatory for successful mission accomplishment (ADP 3-90). Some operations will not have decisive terrain.

2-62. The platoon leader references the company OPORD to understand if the commander has designated any terrain in their assigned areas as key or decisive. They must understand the company's key and decisive terrain to make their own deductions and incorporate the designated terrain into their order.

Observations and Fields of Fire

2-63. Observation is the condition of weather and terrain that permits a force to see the friendly, enemy, and neutral personnel and systems, and the key aspects of the environment. The platoon leader identifies locations along each avenue of approach providing clear observation and fields of fire for the attacker and defender. They analyze the area surrounding key terrain, objectives, engagement area (EA), and obstacles. The platoon leader analyzes the intervisibility lines on the map to determine what locations will give their platoon the most advantageous observation and what locations will obscure the enemy's line of sight onto their formation.

2-64. A field of fire is the area that a weapon or group of weapons may cover effectively from a given position. When a platoon leader is selecting positions for their platoon, they must balance how the individual fields of fire will provide a direct fire advantage while also providing cover from the enemy's weapons systems.

2-65. Offensive considerations in analyzing observation and fields of fire include the following:

- Where do enemy observers and weapon systems have clear observation and fields of fire available on or near the objective?
- Where can the enemy concentrate fires?
- Where will the enemy be unable to concentrate fires?

- Where is the enemy vulnerable?
- Where can the platoon support the movement of a friendly force with direct fires and indirect fire planning?
- Where can friendly forces conduct support by fire or attack by fire?
- Where are the natural target reference points (TRPs)?

Note. The platoon should seek to avoid maneuvering with a natural TRP that could be used by the enemy.

- Where does the platoon leader position indirect-fire observers?

2-66. Defensive considerations in analyzing observation and fields of fire:

- What locations have clear observation and fields of fire along enemy avenues of approach?
- Where will the enemy establish firing lines or support by fire positions?
- Where will the platoon be unable to mass fires?
- Where is the dead space in the platoon's assigned area?
- Where is the platoon vulnerable?
- Where are the natural TRPs?
- Where can the platoon destroy the enemy?
- How obvious are these positions to the enemy?
- Where does the platoon leader position indirect-fire observers?

Cover and Concealment

2-67. Cover is protection from the effects of fires and concealment is protection from observation or surveillance. Understanding the difference in the two allows the platoon leader to emplace tanks effectively to have effective fields of fire on the enemy while enhancing survivability. Platoon leaders look at the terrain, foliage, structures, and other features along avenues of approach, and on objectives or key terrain, to identify sites offering cover and concealment. In the defense, weapon positions must be lethal to the enemy and survivable to the Soldier. Cover and concealment are just as vital as clear fields of fire. Cover and concealment can be either part of the environment or something brought in by the unit to create the desired effect. Both offensive and defensive considerations must be made:

- Offensive considerations include the following:
  - What axes afford clear fields of fire and cover and concealment?
  - Which terrain provides bounding elements with cover and concealment while increasing lethality?
- Defensive considerations include the following:
  - What locations afford cover and concealment as well as good observation and fields of fire?
  - How can friendly and enemy forces use the available cover and concealment?
  - How does the platoon conceal from aerial platforms?

Conclusions From Terrain Analysis

2-68. Following terrain analysis, the platoon leader should have a fully developed GTAO. The GTAO analysis should produce several specific conclusions to include the following:

- Potential locations for battle, support by fire, and attack by fire positions.
- Potential locations that support EAs and ambush sites.
- Immediate and intermediate objectives.
- Potential asset locations such as enemy command posts (CPs) or ammunition caches.
- Potential AAs for friendly or threat forces.
- Potential observation posts (OPs).
- Likely location for artillery firing positions.
- Likely locations for air defense artillery system positions.
- Locations that enable reconnaissance, surveillance, and target-acquisition positions.
- Locations for forward area arming and refueling points.
- Suitable landing and drop zones.
- Potential breach locations.
- Optimized infiltration lanes.

Military Aspects of Weather

2-69. The military aspects of weather are visibility, wind, precipitation, cloud cover, temperature, humidity, and, as required, atmospheric pressure. The platoon leader must reference the company OPORD, and information provided by the BN/squadron S-2 to review the commander's deductions of the weather and to help form their own conclusions. The platoon leader determines how the weather is going to affect both friendly and enemy forces during the operation.

Visibility

2-70. The platoon leader identifies critical conclusions from visibility from the company OPORD and the commander's deductions. Factors such as light data, fog, beginning of morning nautical twilight, end of evening nautical twilight, moonrise, moonset, sunrise, sunset, and cloud cover will affect the platoon's ability to operate during day and night. Illumination during night operations will have a direct effect on the effectiveness of the platoon's night vision capabilities. Low visibility is beneficial to the platoon's effectiveness during offensive operations because it conceals the movement from the enemy. Low visibility can hinder defensive operations because it degrades the platoon's target acquisition capabilities and conceals the enemy's movement.

Winds

2-71. Winds of sufficient speed can reduce the combat effectiveness of a force downwind as the result of blowing dust, obscurants, sand, or precipitation. High winds near the ground can lower visibility due to blowing dust; they can also affect movement or stability of some vehicles.

2-72. The platoon leader references the company OPORD to analyze the impact of the wind as determined by the command and BN/squadron S-2. High winds can reduce the effectiveness of communication platforms and other electronic devices. The platoon leader describes how the wind is going to affect the operation in terms of friendly and enemy forces. Wind is always described as moving from one cardinal direction to another cardinal direction. For example, winds are moving from the east to the west. The platoon leader must analyze the effect of wind upon platoon operations, answering the following questions:

- Will wind speed cause obscurants to dissipate quickly?
- Will wind speed and direction favor friendly or enemy use of obscurants?
- How will the wind affect the spread of CBRN contamination?

Precipitation

2-73. Precipitation is any moisture falling from a cloud in frozen or liquid form. Precipitation affects soil trafficability, visibility, and the function of many electro-optical systems needed for information collection. Heavy precipitation can affect all aspects of military operation. The platoon leader can utilize the PSG and tank commanders' expertise to determine the effect of precipitation on the platoon's operations.

Cloud Cover

2-74. Cloud cover affects ground operations by limiting illumination and could affect the thermal signature of targets. The platoon leader must analyze the commander's OPORD to ascertain the expected weather and illumination deductions for the operation. Cloud cover at night will affect ambient moonlight, starlight, and will impede the platoon's ability to operate its night vision devices. Heavy cloud cover often canalize aircraft within air avenues of approach and on the final approach to target. Cloud cover also negatively impacts efficacy of aerial reconnaissance for both friendly and enemy forces.

Temperature

2-75. Temperature extremes can reduce the effectiveness of troops and equipment capabilities. It can affect the timing of operations; extremely high temperatures may require crews to operate at night. Leaders should always watch for signs of heat injuries. High temperatures can affect fuel consumption rates in vehicles and affect the muzzle velocity of direct and indirect-fire weapons. Extreme cold weather can impact operations and leaders must ensure that Soldiers have proper cold weather equipment when operating in extreme cold environments. Leaders should always watch for signs of cold weather injuries. Extreme cold can also have a significant impact on weapons, vehicles, and equipment. Leaders should conduct prior planning and exercise precautions when operating in extreme temperatures.

2-76. One of the most significant effects of temperature on a tank platoon is thermal crossover. Thermal crossover is the condition in which the temperature of a ground-based vehicle is close to, if not the same as, the surrounding land and ambient air. Because of this condition, thermal optics are unable to detect threat vehicles until a temperature disparity exists between the land and the vehicles. Platoon leaders must take

thermal crossover into account when planning operations because it will affect their platoon's target acquisition ability.

Humidity

2-77. Humidity is the state of the atmosphere with respect to water vapor content. High humidity affects the human body's ability to cool itself. The platoon leader must take humidity into account for anticipating physical fatigue, and planning rest cycles. Higher humidity in high temperatures will require the platoon leader to coordinate water resupplies more frequently throughout the operation. When the difference between the temperature and absolute humidity (dew point) coincides, there is a higher chance of fog. Fog will negatively affect the platoon's visibility and target acquisition.

ANALYSIS OF TROOPS AND SUPPORT AVAILABLE

2-78. One of the most important aspects of TLPs is understanding and knowing the capabilities of the platoon. This includes support and attachments to the platoon and status of all equipment in the platoon. The platoon leader must review the task organization assigned to them by the commander in the company OPORD to know what support is available to them for the operation. Analysis of troops and support available answers the question: What assets are available to accomplish the mission? Additional questions the platoon leader answers include:

- What is the strength of the platoon?
- What is the platoon's operational readiness rate?
- What are the strengths and weaknesses of subordinate leaders?
- What is the supply status of ammunition, water, fuel, and other necessary items?
- What is the present physical condition of Soldiers (morale, sleep)?
- What is the condition of the equipment?
- What is the unit's training status and experience related to the mission?
- What additional attachments will accompany the team?
- What additional assets are required to accomplish the mission?

ANALYSIS OF TIME

2-79. Time refers to many factors during the operations process (planning, preparation, execution, and assessment). Leaders consider including the following categories found in the memory aid HOPE-LW:

- Higher echelon's timeline.
- Operational.
- Planning and preparation.
- Enemy timeline.
- Light and weather.

2-80. During all phases, leaders consider critical times, unusable time, the time it takes to accomplish activities, the time it takes to move, priorities of work, and tempo of operations. Other critical conditions to consider include visibility and weather data, and events such as company tasks and required rehearsals. Implied in the analysis of time is leader prioritization of events and sequencing of activities.

2-81. As addressed in step 1 of TLPs, time analysis is a critical aspect to planning, preparation, and execution. Time analysis is often the first thing a leader does. The leader must not only appreciate how much time is available but also must be able to appreciate the time/space aspects of preparing, moving, fighting, and sustaining. The leader must analyze their own tasks and assess enemy actions. Most importantly, as events occur, the leader must adjust the time available and assess its impact on what the leader wants to accomplish. Finally, the leader must update previous timelines for subordinates, listing all events affecting the platoon and its subordinate elements.

ANALYSIS OF CIVIL CONSIDERATIONS

2-82. Civil considerations include the influences of man-made infrastructure, civilian institutions, attitudes about the conduct of military operations, and activities of civilian leaders, populations, and organizations within the AO, to include informational aspects for each. Civil considerations generally focus on the immediate impact of civilians on operations in progress. Civil considerations of the environment can either help or hinder friendly or enemy forces. The platoon leader's understanding of the civilian empathy toward friendly and enemy forces allows them to prepare their platoon for expected civilian interactions. Analysis of civil considerations answers two critical questions as follows:

- How do civilian considerations affect the operation?
- How does the operation affect civilians?

2-83. The company provides the platoon leader with civil considerations affecting the next echelon's mission. The mnemonic: areas, structures, capabilities, organizations, people, and events (ASCOPE) are used to analyze and describe these civil considerations. (See ATP 3-90.1 for more information.)

COURSE OF ACTION DEVELOPMENT

2-84. The purpose of COA development is to determine one or more ways to accomplish the mission consistent with the immediate higher commander's intent. A COA describes how the unit might generate the effects of overwhelming combat power against the enemy at the decisive point with the least friendly casualties. Each COA the platoon leader develops must be detailed enough to describe clearly how the leader envisions using all assets and combat multipliers to achieve the platoon's essential tasks within their commander's intent. The platoon leaders ensure they are incorporating all attachments and assets into the COA.

2-85. To develop a COA, the platoon leader focuses on the actions the unit must take at the decisive point and works backward to the start point (SP). The platoon leader focuses on developing one primary COA but should develop contingencies within the plan. The result of the COA development process is paragraph 3 (execution) of the OPORD. A COA should position the platoon to support the company and BN/squadron-level missions. It should also give subordinates the maximum latitude for initiative. The platoon leaders ensure they are adhering to the one-thirds, two thirds rule when planning and developing a COA.

SCREENING CRITERIA

2-86. The platoon leader uses screening criteria to ensure the COA they develop achieves the commander's intent and accomplishes the mission. The platoon leader considers each of the five screening criteria separately to determine if a COA is a viable solution to a tactical problem. A COA should be suitable, feasible, acceptable, distinguishable, and complete as follows (see ATP 3-90.1 for a detailed discussion):

- Suitable—accomplishes the given task.
- Feasible—is executable given the skills, time, and resources at hand.
- Acceptable—the tactical advantage justifies the expected human and material cost.
- Distinguishable—differs sufficiently from other solutions.
- Complete—contains the critical aspects of solving the problem from start to finish.

Note. Leaders assess risk continuously throughout COA development.

STEPS OF COURSE OF ACTION DEVELOPMENT

2-87. The platoon leader analyzes relative combat power, generates options, arrays forces, develops a concept of the operation, assigns responsibility, and prepares a COA statement and sketch. The following paragraphs describe the process that must be taken when developing a COA. The platoon leader should leverage the experience of subordinate leaders to improve COA development.

ANALYZE RELATIVE COMBAT POWER

2-88. *Combat power* is the total means of destructive and disruptive force that a military unit/formation can apply against an enemy at a given time (JP 3-0). During the first step of COA development, analyzing relative combat power, leaders compare friendly combat power with the enemy.

2-89. This step compares combat power strengths and weaknesses of both friendly and enemy forces. At the platoon level this should not be a complex process. For the platoon leader, it starts with returning to the conclusions the commander arrived at during mission analysis, specifically the conclusions about the enemy's strength, weakness, and vulnerabilities. In short, the platoon leader is trying to identify where, when, and how the effects of the platoon's combat power can be superior to the enemy's while achieving the mission. This analysis should lead to a greater understanding of available assets and how to best employ them against a given enemy during the operation.

2-90. The platoon leader should utilize the experience of their PSG and subordinate leaders to best determine how to implement their available combat power against the enemy. This is achieved through a thorough analysis of enemy composition, disposition, and identified weaknesses.

GENERATE OPTIONS

2-91. After gathering information relevant to the mission variables and commander's intent, the platoon leader formulates possible solutions to accomplish the mission. The

platoon leader carefully considers the guidance provided by the commander and develops several alternatives to accomplish the mission. The platoon leader focuses on developing one COA that meets the screening criteria, but they should develop contingencies for the COA to remain flexible during mission execution. The experience of the platoon and time available to plan determines how many COAs the platoon leader considers.

ARRAY FORCES

2-92. The platoon leader analyzes how the platoon will accomplish its essential tasks by assigning combat power to those tasks. It is useful to do this on a map or sketch. They must then determine the personnel and equipment necessary to accomplish the mission and provide a basis for the development of a scheme of maneuver. The platoon leader will consider the platoon's restated mission statement, the commander's intent, and the enemy's most probable COA. They should allocate resources to the main effort (at the decisive point) and continue with support efforts in descending order of importance to accomplish the assigned tasks.

DEVELOP A CONCEPT OF OPERATIONS

2-93. The concept of operations describes how the platoon leader envisions the operation occurring from start to conclusion. The platoon leader determines how to accomplish each task assigned by the company commander. The concept of operation is a framework to assist leaders, not a script. The normal cycle for an offensive operation is tactical movement, actions on the objective, and consolidation and reorganization. (See chapter 3.) The normal cycle for defensive operation is EA development and preparation of the BPs, actions in the EA, counterattack, consolidation, and reorganization. (See chapter 4.)

2-94. The concept of operations should identify the best way to utilize terrain and employ the platoon's strengths against the enemy's weaknesses. In addition to maneuvering, the concept of the operation should also include the tactical employment of all available enablers. Fire support is an important enabler and a crucial part of the concept of operations. *Fire support* is fires that directly support land, maritime, amphibious, space, cyberspace, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives (JP 3-09). The platoon leader identifies assigned fires in the company OPORD and integrates them into their plan. The platoon leader utilizes company graphic control measures and further develops platoon graphic control measures for all aspects of the operation to ensure mutual understanding. The platoon leader is responsible for disseminating graphical control measures to each tank commander.

ANALYZE EQUIPMENT LOAD

2-95. The platoon leader analyzes equipment load to determine what mission-essential equipment will be carried by each tank or individual Soldiers during the operation. This analysis should be aided by the PSG and tank commanders. The experience of the NCOs in the platoon will help the platoon leader determine which mission-essential equipment will be utilized during the operation. A thorough analysis of equipment load ensures that necessary equipment is effectively positioned on the battlefield and available to trained personnel during an operation.

ASSIGN RESPONSIBILITIES

2-96. The platoon leader assigns responsibility for each task to a subordinate. They ensure that each element of their platoon, organic and attached, is accounted for, and utilized effectively during the operation. The company FSO can help the platoon leader plan the most effective use of fires available during the mission. *Fires* are the use of weapon systems or other actions to create specific lethal or nonlethal effects on a target (JP 3-09).

PREPARE A COURSE OF ACTION SKETCH

2-97. The COA sketch is a drawing or series of drawings to assist the platoon leader in describing how the operation will unfold. The ad hoc sketch provides a picture of the maneuver aspects of the concept. The platoon leader uses tactical mission task graphics and control measures (see FM 3-90) to convey the operation in a doctrinal context. The COA sketch is focused on the decisive point.

2-98. The COA ad hoc sketch should identify how the platoon intends to focus on the effects of overwhelming combat power at the decisive point. When integrated with terrain, the refined product becomes the platoon's operations overlay. The COA sketch is used to help the platoon leader during planning and during briefing to the subordinates and to visualize the sequence of events as an operation unfolds. (See figure 2-4, page 44.)

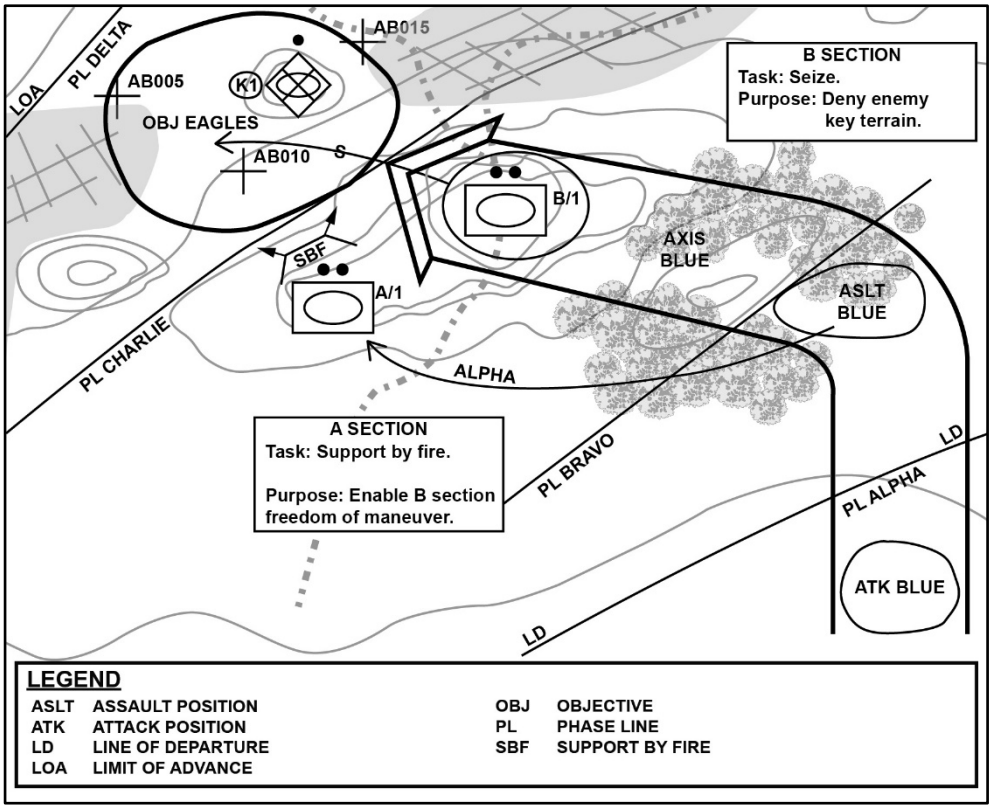


Figure 2-4. Course of action sketch Course of Action Analysis

2-99. After developing a COA, the platoon leader analyzes it to determine its advantages and disadvantages, to visualize the flow of the battle, and to identify requirements to synchronize actual execution. Typically, this is either done mentally or during a discussion with the PSG and tank commanders. This technique is not complicated, and it facilitates a total understanding of the plan. This is not a rehearsal.

COURSE OF ACTION COMPARISON AND SELECTION

2-100. If the platoon leader had the time to develop more than one COA, they must compare them by weighing the specific advantages, disadvantages, strengths, and weaknesses of each. These attributes may pertain to the accomplishment of the platoon's purpose, the use of terrain, the destruction of the enemy, or any other aspect of the operation that the platoon leader believes is important. The platoon leader uses these factors as the frame of reference in tentatively selecting the best COA. They make the final selection of a COA based on their own analysis.

STEP 4: INITIATE MOVEMENT

2-101. Many company-level operations require movement to a forward AA, an area a unit occupies to prepare for an operation (see FM 3-90), or a BP during the planning

phase of an operation. The platoon leader addresses movement in their timeline; they order the platoon to begin movement according to the company plan. Activities may include sending platoon representatives to an AA with the company quartering party or beginning priorities of work.

STEP 5: CONDUCT RECONNAISSANCE

2-102. Whenever time and circumstances allow or as directed by company HQ, leaders personally observe the assigned area for the mission before execution. The minimum action desired is a thorough map reconnaissance supplemented by geospatial intelligence and other intelligence products and assessments. As directed, subordinates or other elements, such as scouts, may perform the reconnaissance for the leader while the leader completes other TLP steps.

2-103. To exploit the principles of speed and surprise, leaders should weigh the advantages of reconnoitering personally against using only the supplied information from higher echelon information systems. They realistically consider the dangers of reconnoitering personally, and the time required to conduct them. Leaders might be able to plan their operations using combat information provided by higher echelon information collection assets. Combat information is the unevaluated data that is gathered by or provided directly to the tactical commander which, due to its highly perishable nature or the criticality of the situation, cannot be processed into tactical intelligence in time to satisfy the user's tactical intelligence requirements. It can be extremely important in a time-constrained environment.

2-104. However, if time permits, leaders should verify company HQ's intelligence requirement by reconnoitering visually. They should seek to confirm the priority intelligence requirements (PIRs) supporting their tentative plans. These PIRs usually consist of assumptions or critical facts about the enemy. This can include strength and location, especially at templated positions. It also can include information about the terrain. For example, verification that a tentative support by fire position can suppress the enemy, or an avenue of approach is useable. (See FM 3-90 for suppress and support by fire.)

2-105. If possible, leaders should include their subordinate leaders in their reconnaissance efforts. This allows the subordinates to see as much of the terrain and enemy as possible. The reconnaissance also helps subordinate leaders gain insight into the leaders' visions of the operation.

2-106. The leaders' reconnaissance might include moving to or beyond the line of departure (LD), reconnaissance and security of an assigned area, or moving mounted from the forward edge of the battle area back to and through the platoon assigned area or BP along likely enemy avenues of approach. If possible, leaders should select vantage points with the best possible view of the decisive point. In addition to the leaders' reconnaissance efforts, units can conduct additional reconnaissance operations. Examples include surveillance of an area by mounted or dismounted patrols (if available) to determine enemy locations, and establishment of OPs (see chapter 6) to gain additional information. If available, leaders also can incorporate unmanned systems as reconnaissance and surveillance tools.

2-107. The nature of the reconnaissance and surveillance, including what it covers and how long it lasts, depends on the tactical situation and time available. Leaders should use the results of the COA development process to identify information and security requirements of the unit's reconnaissance and surveillance mission.

2-108. Leaders must include disseminating results and conclusions derived from reconnaissance and surveillance into their time analysis. They also must consider how to communicate changes in the COA to their subordinates and how these changes affect their plans, actions of the subordinates, and other supporting elements.

STEP 6: COMPLETE THE PLAN

2-109. During this step, leaders expand their selected (or refined) COA into completing the OPORD. The platoon leader refines the plan based on the results of the reconnaissance and coordination. They then complete the plan using these results and new information from their commander, other platoon leaders, and members of their platoon. The platoon leader utilizes this time to ensure the reconnaissance, fires, and sustainment plans are refined to meet the needs of the platoon. They should keep the plan as simple as possible, while at the same time, ensuring that the platoon scheme of maneuver supports the commander's intent.

STEP 7: ISSUE THE ORDER

2-110. If possible, the platoon leader issues the order (see figure 2-5) from a vantage point overlooking the terrain on which the platoon will maneuver. If not, they use a terrain model, sand table, sketches, or their map to orient the platoon. If time permits, the platoon leader should lead the platoon in a walk-through using a sand table.

2-111. To ensure complete understanding of the operation, the platoon leader and tank commanders can conduct confirmation briefings immediately after the OPORD is issued.

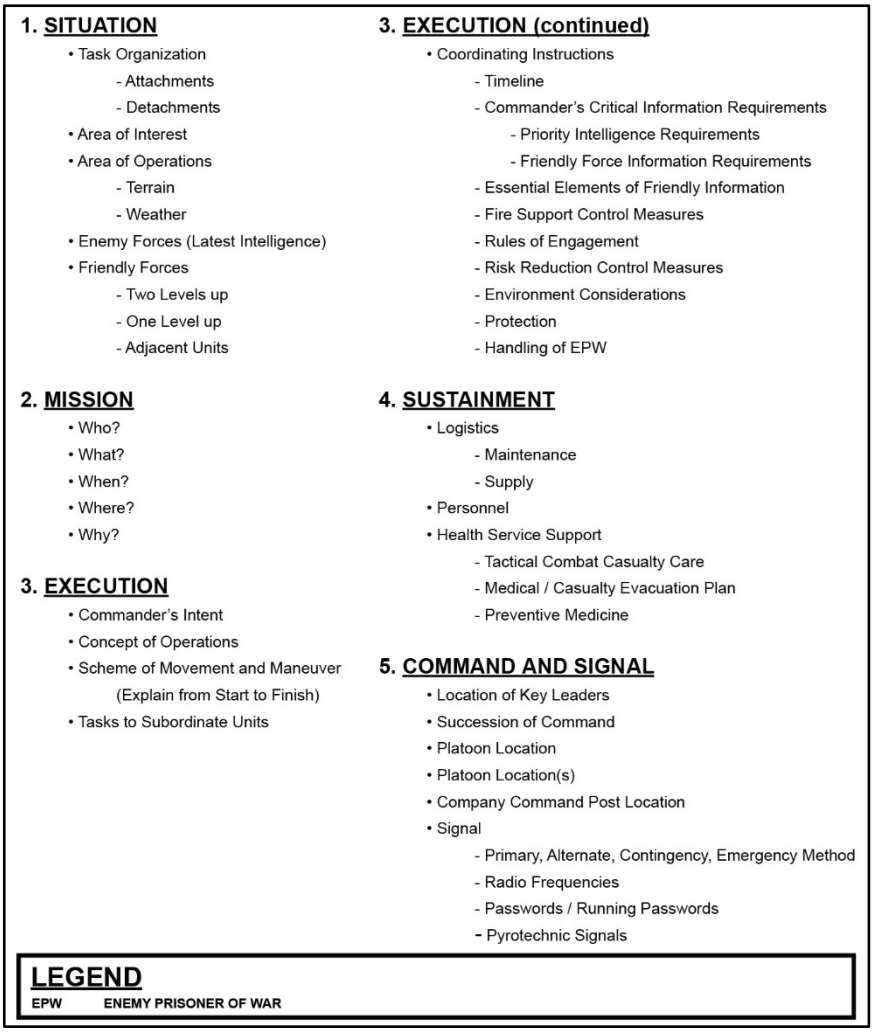


Figure 2-5. Operation order format

STEP 8: SUPERVISE AND REFINE

2-112. Leaders must supervise the execution of rehearsals and mission preparation such as PCIs and PCCs. (See section IV of this chapter.)

2-113. Flexibility is the key to effective operations. The platoon leader must be able to refine their plan whenever new information becomes available. If they adjust the plan, they must inform the platoon and supervise the implementation of the changes. Once the operation has begun, the platoon leader must be able to direct the platoon in response to new situations and new orders.

SECTION II – ORDERS

2-114. Orders are how the platoon leader receives and transmits information from the earliest notification that an operation will occur through the final steps of execution. WARNORDs, OPORDs, and FRAGORDs are critical to mission success. In a tactical situation, the platoon leader and subordinate leaders work with orders daily and they must have precise knowledge of the correct format for each type of order. Orders at the platoon and tank crew level are preferably given orally. The platoon leader develops orders with input from the PSG and tank commanders. Orders can be given as a preformatted message or as a free text message in mission command systems. They follow the five-paragraph field order format as follows:

- Situation.
- Mission.
- Execution.
- Sustainment.
- Command and signal.

WARNING ORDER

2-115. A *warning order* is a preliminary notice of an order or action that is to follow (JP 5-0). Platoon leaders alert their platoons by using a WARNORD during the planning of an operation and issue additional WARNORDs as additional information and guidance becomes available. The WARNORD follows the five-paragraph field order format, but the amount of detail it includes depends on the information and time available when the order is issued, and the information subordinate leaders need for proper planning and preparation. A WARNORD clearly informs the recipient of what tasks they must do now as well as possible future tasks. However, a WARNORD does not authorize execution other than planning unless specifically stated. WARNORDs—

- Allow subordinates to begin to plan their missions.
- Provide a planning timeline.
- Provide initial task organization.
- Provide priority for rehearsals.

OPERATION ORDER

2-116. An *operation order* is a directive issued by a commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation (JP 5-0). The five-paragraph format is used to organize the information, to ensure completeness, and to help subordinate leaders understand and follow the order. The platoon leader normally gives the OPORD orally. Whenever possible, the leader gives the order while observing the objective or uses a terrain model or an operational overlay along with a map to explain the order. When giving the OPORD, the platoon leader should consider—

- Time available.
- Whether to give the order to their tank commanders or to the whole platoon.

FRAGMENTARY ORDER

2-117. A *fragmentary order* is an abbreviated operation order issued as needed to change or modify an order or to execute a branch or sequel (JP 5-0). It provides timely changes of existing orders to subordinates while providing notification to higher and adjacent commands. At the platoon level, a FRAGORD is usually an oral brief or written order that addresses only those parts of the original OPORD that have changed. The OPORD format and all the five-paragraph headings are used. After each heading, state either no change or new information. This ensures that recipients know they have received the entire FRAGORD. A FRAGORD may—

- Communicate changes in the enemy or friendly situation.
- Change tasks of subordinate elements based on changes in the situation.
- Implement timely changes to existing orders.
- Provide pertinent extracts from more detailed orders.
- Provide interim instructions until the leader can develop a detailed order.

STANDARD OPERATING PROCEDURES

2-118. A *standard operating procedure* is a set of instructions applicable to those features of operations that lend themselves to a definite or standardized procedure without loss of effectiveness (JP 3-31). SOPs detail how to apply tactics, techniques, and procedures within a specific unit. They may be adapted in each location for a given threat. SOPs standardize routine or recurring actions that do not require the leader's personal involvement. However, SOPs may include rare or abnormal events that could cause mission failure. SOPs regulate operations within and between mission command system elements.

RISK MANAGEMENT

2-119. *Risk management* is the process to identify, assess, and mitigate risks and make decisions that balance risk cost with mission benefits (JP 3-0). This process is used to mitigate risks associated with all hazards that have the potential to injure or kill personnel, damage, or destroy equipment, or otherwise impact overall mission accomplishment. Commanders, platoon leaders, and Soldiers at all levels must understand the guiding principles to prevent unnecessary loss.

2-120. The principles of risk management are (see ATP 5-19)—

- Integrate risk management into all phases of missions and operations.
- Make risk decisions at the appropriate level.
- Accept no unnecessary risk.
- Apply risk management cyclically and continuously.

2-121. Risk assessment is the identification and assessment of hazards allowing a leader to implement measures to control hazards. Leaders assess risk to protect the force and aid in mission accomplishment. Leaders consider two kinds of risk: threat (tactical) and hazard (accident).

2-122. Tactical risk is associated with hazards existing due to the enemy's presence. Accident risk includes all operational risk other than tactical risk and can include hazards

concerning friendly personnel, equipment readiness, and environment. Fratricide is an example of an accident risk.

2-123. The leader must identify risks based on the results of the mission analysis. Once identified, risk must be reduced through controls. For example, fratricide is a hazard categorized as an accident risk; surface danger zones (SDZs) and risk estimate distance are used to identify the controls, such as TRPs and phase lines (PLs), to reduce this accidental risk. (See ATP 5-19 for additional information.)

FRATRICIDE AVOIDANCE

2-124. Fratricide is defined as the employment of friendly weapons with the intent of killing the enemy or destroying their equipment that results in the unforeseen and unintentional death or injury of friendly personnel. Fratricide prevention is the platoon leader's responsibility.

EFFECTS

2-125. The effects of fratricide within a unit can be devastating to morale, good order, and discipline. Fratricide causes unacceptable losses and typically affects the unit's ability to survive and function, increasing the risk of mission failure.

CAUSES

2-126. Leaders must identify the factors that may affect their units and then strive to eliminate or correct them. The primary causes of fratricide are—

- Inability to maintain situational awareness.
- Vague or unclear orders.
- Poor target recognition, acquisition, and vehicle identification.
- Failures in the direct-fire control plan.
- Failures in land navigation.
- Failures in combat identification.
- Inadequate control measures.
- Failures in reporting and communications.
- Individual and weapons errors.
- Battlefield hazards.
- Reliance on instruments.
- Training.

SECTION III – REHEARSALS

2-127. A *rehearsal* is a session in which the commander and staff or unit practices expected actions to improve performance during execution (ADP 5-0). Rehearsals allow the platoon leader and their Soldiers to practice key aspects of the concept of operations. These actions help Soldiers orient themselves to their environment and the planned actions of other units before executing an operation. Rehearsals help Soldiers build a lasting mental picture of the sequence of key action within the operation. By seeing the platoon leader's, PSG's, and tank commander's actions, rehearsals also enable Soldiers to assume the role of their supervisors if that situation were to arise (see FM 6-0 for more information).

TYPES OF REHEARSALS

2-128. Each rehearsal type achieves a different result and has a specific place in the preparation timeline. The types of rehearsals are the—

- Backbrief.
- Combined arms rehearsal.
- Support rehearsal.
- Battle drill or SOP rehearsal.

BACKBRIEF

2-129. A backbrief is a briefing by subordinates to the platoon leader to review how subordinates intend to accomplish their mission. Tank commanders perform backbriefs throughout preparation to allow the platoon leader to clarify the commander's intent and provide additional guidance early in subordinate planning.

2-130. Backbriefs are performed sequentially in which the tank commanders review assigned tasks and planned actions from start to finish of the operation. When time is available, backbriefs can be combined with other types of rehearsals to allow subordinate leaders to coordinate plans before performing more elaborate drills. Backbriefs require the fewest resources and may be the only option under time-contained conditions.

Note. The backbrief must not be confused with a confirmation brief. A confirmation brief is an opportunity for the tank commanders to verify receipt and understanding of the mission, specified tasks, immediately following the issuance of the order.

COMBINED ARMS REHEARSAL

2-131. A combined arms rehearsal is a rehearsal in which subordinate units synchronize their plans with each other. A maneuver battalion or higher normally executes a combined arms rehearsal after subordinate units issue their OPORD. This rehearsal type helps ensure that subordinate commanders' plans achieve the higher commander's intent. Platoons can participate in the combined arms rehearsal.

SUPPORT REHEARSAL

2-132. The support rehearsal helps synchronize each warfighting function with the overall operation. This rehearsal supports the operation so units can accomplish their mission. Throughout preparation, units conduct support rehearsals within the framework of a single or limited number of warfighting functions. These rehearsals typically involve coordination and procedure drills for aviation, fires, engineer support, or CASEVAC. Support rehearsals and combined arms rehearsals complement preparations for the operation. Units may conduct rehearsals separately and then combine them into full-dress rehearsals. Although these rehearsals differ slightly by warfighting function, they achieve the same result.

Note. To save time, the combined arms rehearsal and support rehearsal may be conducted together at the platoon level.

BATTLE DRILL OR STANDARD OPERATING PROCEDURE REHEARSAL

2-133. A battle drill is a collective action rapidly executed without applying a deliberate decision-making process. A battle drill or SOP rehearsal ensures that all participants understand a technique or a specific set of procedures. Throughout preparation, units and staff rehearse battle drills and SOPs. These rehearsals do not need a completed order from higher HQ. Leaders place priority on those drills or actions they anticipate occurring during the operation. For example, a tank platoon may rehearse a battle drill on reacting to contact while waiting to begin movement.

REHEARSAL TECHNIQUES

2-134. Rehearsals should follow the crawl-walk-run training methodology whenever possible. This prepares the platoons and subordinate elements for increasingly difficult conditions. (See ATP 3-90.1 for more information.) Resources required for each technique range from broad to narrow and each rehearsal technique imparts different levels of understanding to participants. Units can conduct these forms of rehearsals if mission variables permit: (See ATP 3-90.1 for more information.)

- Full-dress rehearsal.
- Key leader rehearsal.
- Terrain-model rehearsal.
- Digital terrain-model rehearsal.
- Sketch-map rehearsal.
- Map rehearsal.
- Network rehearsal.

TERRAIN MODEL

2-135. Terrain models are a three-dimensional scale model of the terrain. They are effective for briefing and discussing actions on the objective. It may depict the entire mission area. However, for offensive missions, priority should be given to building a model of the objective area with the following in mind:

- It should be built oriented to the ground (north on the model is north on the ground) and should show the main terrain features in the area.
- The next step after orienting the model to the ground is the construction of grid squares.
- The leader should identify the grid squares that the model will show, which ensure a more accurate model.
- The terrain model should depict key terrain, friendly control measures, and enemy disposition.
- Materiel for constructing the model may include string, yarn (various colors), chalk (colored), 3 x 5 cards, target markers, or unit markers.
- The terrain model allows platoon leaders and tank commanders to rehearse their plan with their crewmembers.

SECTION IV – PRECOMBAT CHECKS AND INSPECTIONS

2-136. A PCI is a formal, time-intensive inspection that is done before the mission. Its goal is to make sure Soldiers and vehicles are fully prepared to execute the upcoming mission. In general, PCIs enable the platoon leader and PSG to check the platoon's operational readiness. It is essential that the entire platoon chain of command knows how to conduct PCCs and PCIs.

2-137. The PCI is an inspection while the PCC is a series of checks. The PCI allows the platoon leader and PSG to check selected list of mission-critical items. The PCC allows the leader to check everything required for mission execution. PCIs check a few of the most important things; PCCs check everything. In both cases, PCIs and PCCs ensure formations and Soldiers are not caught unprepared for the mission.

2-138. The platoon leader or PSG should observe each crew during preparation for combat. They should conduct the inspection once the tank commanders report that they are prepared.

2-139. PCCs and PCIs are critical to the success of missions. These checks and inspections are leader tasks and cannot be delegated below the tank commander level. For example, at the platoon echelon, the PSG spot checks throughout the unit's preparation for combat. The platoon leader and PSG make a final inspection. For the section echelon, tank commanders spot check throughout preparation, and the section sergeant makes a final inspection. They ensure the Soldier is prepared to execute the required individual and collective tasks supporting the mission. Checks and inspections are part of the TLPs protecting against shortfalls endangering Soldiers' lives and jeopardizing the execution of a mission.

2-140. PCCs and PCIs must be tailored to the specific unit and mission requirements. Each mission may require a separate set of checklists. Each platoon should have an established set of PCCs and PCIs nested with the company commander's guidance and provide each tank crew with identical checklists.

2-141. One of the best ways to ensure PCCs and PCIs are complete and thorough is with full-dress rehearsals. These rehearsals, run at combat speed with communication and full-battle equipment, allow the commander and subordinate leaders to envision minute details, as they will occur in the assigned area. If the operation is to be conducted at night, Soldiers should conduct full-dress rehearsals at night as well. PCCs and PCIs should include backbriefs on the mission, the task and purpose of the mission, and how the Soldiers' role fits into the scheme of maneuver. The Soldiers should know the latest intelligence updates, rules of engagement (ROE), be versed in casualty response, evacuation procedures, and sustainment requirements.

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Chapter 3
Offense

The purpose of the offense is to defeat or destroy enemy forces and to gain control of terrain, resources, or population centers. Offensive operations take something away from an enemy force. A tank platoon conducts the offense to destroy enemy forces, seize decisive terrain, deprive the enemy of resources, deceive, or divert the enemy, develop intelligence, or fix an enemy in position. Leaders within the tank platoon must understand the principles and tactics, techniques, and procedures associated with the offense. They must understand their role when operating within a larger organization's operations and when operating independently. This chapter covers the basic principles of the offense, common offensive planning considerations, actions on contact, limited visibility, battlefield obscuration, and transitions.

SECTION I – CONDUCT OF THE OFFENSE

3-1. Units must seize, retain, and exploit the initiative when conducting offensive operations. Even when conducting primarily defensive operations, taking the initiative from the enemy requires offensive operations that are force or terrain oriented. Force oriented operations focus on the enemy. Terrain-oriented operations focus on seizing and retaining control of terrain and facilities. (See FM 3-90 for more information.)

CHARACTERISTICS OF THE OFFENSE

3-2. The tank platoon gains and maintains the initiative, applying constant pressure on the enemy throughout its zone. Success in the offense greatly depends upon the proper application of the characteristics of the offense discussed in paragraphs 3-3 through 3-10.

AUDACITY

3-3. Audacity is a willingness to accept risk. The offense favors the bold execution of the plan. Platoon leaders display audacity by accepting risks commensurate with the value of their objectives. They dispel uncertainty by acting decisively. They compensate for any lack of information by developing the situation aggressively to seize the initiative and then engaging in continuous combat to create exploitable opportunities as they arise. Audacity depends upon the leader's ability to recognize opportunities, decide to seize opportunities rapidly, and accept prudent risks. Leaders understand when and where to take risks, plan, adapt to changes on the battlefield, and execute boldly.

3-4. Tank platoon leaders enable audacity by building flexible plans that allow leaders to recognize, react, and adapt to changing circumstances, such as emerging threats or new opportunities. Leaders must maintain situational awareness to identify and take advantage of opportunities. Additionally, the platoon leader must understand the true

value of an objective in relation to the larger operation and the risks involved in achieving it. It is the duty of leaders to maintain communication with higher HQ and ensure subordinate elements are aware of changes to the plan. Likewise, the platoon leader must request additional support as required to mitigate unnecessary risks.

CONCENTRATION

3-5. Concentration is the massing and synchronization of combat power to achieve a single purpose. The platoon leader achieves concentration through arraying tanks where they will have interlocking sectors of fire and can simultaneously engage targets as either a section or as a whole platoon. Additionally, the platoon should integrate effects from higher-level assets, including indirect fires, aviation assets, and EW. Concentration requires that leaders maintain continuous information flow to keep operations synchronized. The platoon leader must plan appropriate direct fire and fire support coordination measures to maximize effects at designated times and places.

3-6. To concentrate combat power effectively at the decisive point, the platoon leader must understand the commander's decisive point and the effects the platoon must achieve during the operation. Likewise, leaders must conduct thorough terrain and enemy analysis to synchronize and coordinate efforts. Leaders must balance the necessity for concentration against the need to disperse forces to avoid creating lucrative targets for the enemy.

SURPRISE

3-7. Leaders surprise enemy forces by attacking at a time or place or in a manner for which the enemy did not prepare or expect. Surprise overloads and confuses enemy command and control systems, induces psychological shock in enemy Soldiers and leaders, and reduces the coherence of a defensive operation. Surprise delays enemy reactions, enabling the attackers to exploit enemy paralysis and hesitancy.

3-8. Surprise requires thorough analysis of enemies and terrain coupled with creative and unorthodox thinking. The tank platoon achieves surprise by determining what actions the enemy is least prepared to counter and identifying opportunities the platoon can exploit in unexpected ways. For instance, surprise can be achieved by changing the tempo of operations, accepting risk in a way the enemy was unable to anticipate, or striking the enemy from an unexpected direction, at an unexpected time, and with a combination of capabilities that they are unable to defeat.

TEMPO

3-9. *Tempo* is the relative speed and rhythm of military operations over time with respect to the enemy (ADP 3-0). Controlling or altering tempo is necessary to retain the initiative. A faster tempo allows attackers to quickly penetrate obstacles quickly and defenses, and to destroy enemy forces in-depth before they can react. Leaders can also purposely slow the tempo to lull the enemy into a false sense of security, but this is rarely done at the platoon level. Leaders adjust tempo as tactical situations, sustainment necessity, or operational opportunities allow. They ensure synchronization and proper coordination, but not at the expense of losing opportunities to defeat the enemy. Rapid tempo denies the enemy the chance to rest while continually creating offensive opportunities but demands quick decisions and places ever increasing strain on Soldiers,

equipment, and systems. Tempo is not simply speed. Tempo is the constant application of maneuver elements against enemy combat power, balanced with tactical pauses to ensure appropriate conditions are set to enable continuous operations.

3-10. In an offensive operation, the tank platoon controls the tempo by maneuvering quicker than expected, especially when utilizing unlikely terrain and avenues of approach, and then engaging the enemy at multiple locations or simultaneously. Aggressive and decisive maneuver generates momentum and destabilizes the enemy defense. The goal is to deny enemy leaders a chance to think or to react in a coordinated effort. Control of tempo begins with deliberate planning and preparation. Performing detailed terrain and enemy analysis informs leaders when and how to maneuver to the decisive point and ultimately how to engage the enemy in a manner that maintains offensive momentum. In execution, the platoon leader must be careful to balance the platoon's tempo with adjacent units and higher HQ. Inappropriate use of tempo by one platoon may desynchronize the company's scheme of maneuver or the BN's indirect-fire plan.

TYPES OF OFFENSIVE OPERATIONS

3-11. Offensive operations impose the leader's will on an enemy. The offense is the most direct means of seizing, retaining, and exploiting the initiative to gain a physical and psychological advantage. In the offense, the platoon's main effort is a sudden action directed toward enemy weaknesses and capitalizing on speed, surprise, and shock. If that effort fails to destroy an enemy, operations continue until enemy forces are defeated. The *main effort* is defined as the designated subordinate unit whose mission at a given point in time is most critical to overall mission success (ADP 3-0). Offensive operations compel an enemy to react, creating new or larger weaknesses the attacking force can exploit. The four types of offensive operations are movement to contact (MTC), attack, exploitation, and pursuit.

MOVEMENT TO CONTACT

3-12. *Movement to contact* is an offensive operation designed to establish or regain contact to develop the situation (FM 3-90). During MTC, friendly forces should make initial contact with the smallest element possible to protect the rest of the unit, retaining enough uncommitted combat power to develop the situation and mitigate risk. The unit conducts an MTC when the enemy situation is vague or not specific enough to conduct an attack. MTC creates favorable conditions for subsequent tactical actions. The primary method of conducting an MTC is to maneuver the platoon through an assigned zone towards a specified objective or limit of advance (LOA). The tank platoon may utilize any form of initial contact although visual or direct fire contact with the enemy will be common. Once the platoon makes contact with the enemy force, the platoon leader has five options: attack, defend, bypass, delay, or withdraw. The platoon leader selects a COA, reports to the commander, and then executes. An MTC may result in a meeting engagement, which is combat occurring when a moving force engages an enemy at an unexpected time and place.

ATTACK

3-13. An *attack* is a type of offensive operation that defeats enemy forces, seizes terrain, or secures terrain (FM 3-90). An attack masses the effects of overwhelming combat

power against selected portions of an enemy force with a tempo and intensity that the enemy force cannot match. Attacking units seek positions of advantage and deliberately synchronize their combined arms teams. An attack differs from an MTC because enemy main body dispositions are at least partially known, allowing the leader to achieve greater synchronization. This enables more effective massing of an attacking force's combat power than in an MTC. The attack can be hasty or deliberate depending upon the time available for assessing the situation, planning, and preparation.

EXPLOITATION

3-14. *Exploitation* is a type of offensive operation following a successful attack to disorganize the enemy in depth (FM 3-90). Exploitations seek to disintegrate enemy forces to the point where they have no alternative but to surrender or retreat. Exploitation takes advantage of tactical opportunities, foreseen or unforeseen. Divisions normally plan exploitations as branches or sequels to plan. However, the tank platoon may participate as part of the fixing force or striking force.

PURSUIT

3-15. A *pursuit* is a type of offensive operation to catch or cut off a disorganized hostile force attempting to escape, with the aim of destroying it (FM 3-90). A pursuit normally follows a successful exploitation. However, any offensive operation can transition into a pursuit if it is apparent enemy resistance has broken down entirely and the enemy is fleeing the zone. Pursuits entail rapid movement, decentralized control, and a clear commander's intent. Like an exploitation, the tank platoon conducts a pursuit as part of a larger formation.

TACTICAL FRAMEWORK OF THE OFFENSE

3-16. The tactical framework helps visualize operations and to organize forces. The framework used to illustrate the execution of offensive operations tends to overlap each other during the conduct of offense. The tactical framework is used to describe in detail actions that elements of the platoon and company take to—

- Find the enemy—intel drives fires and maneuver.
- Fix the enemy—prevent repositioning or reinforcement making them easier to destroy.
- Finish the enemy—mass available combat power to accomplish the mission.
- Follow through—defeat in detail, consolidate, reorganize, and transition.

CLOSE WITH AND DESTROY THE ENEMY

3-17. As stated in chapter 1, the mission of the tank platoon is to close with and destroy the enemy forces using fire, maneuver, and shock effects, or to repel his assault by fire and counterattack. This is accomplished by the tank platoon's ability to place effective direct fire upon the enemy. Remember that if you can see the enemy, the enemy can see you. Terrain, obscuration, camouflage, and suppressive fires enable the tank platoon to close with and destroy the enemy. Terrain can mask your presence; even the smallest fold of terrain can reduce the enemy's sight picture of you. Obscuration and camouflage can aid in preventing the enemy from observing you. Suppressive fires inhibit the enemy's ability to scan, acquire, and engage you with their weapons systems.

3-18. Fundamentally, there are three ways the tank platoon closes with and destroys the enemy using its organic capabilities:

- Attack by fire. Remain stationary and engage the enemy with direct fire to destroy them. (See figure 3-1.) (See appendix G for information.)
- Assault. Advance in unison toward the enemy. While moving, close with the enemy and engage them with your direct fire weapons systems to destroy the enemy. (See figure 3-2, page 60.) (See appendix G for information.)
- Maneuver. This combines the attack by fire and with the assault. One element of the platoon establishes an overwatch position and supports by fire. Another element of the platoon advances on the enemy using a covered and concealed route to close with and destroy the enemy.

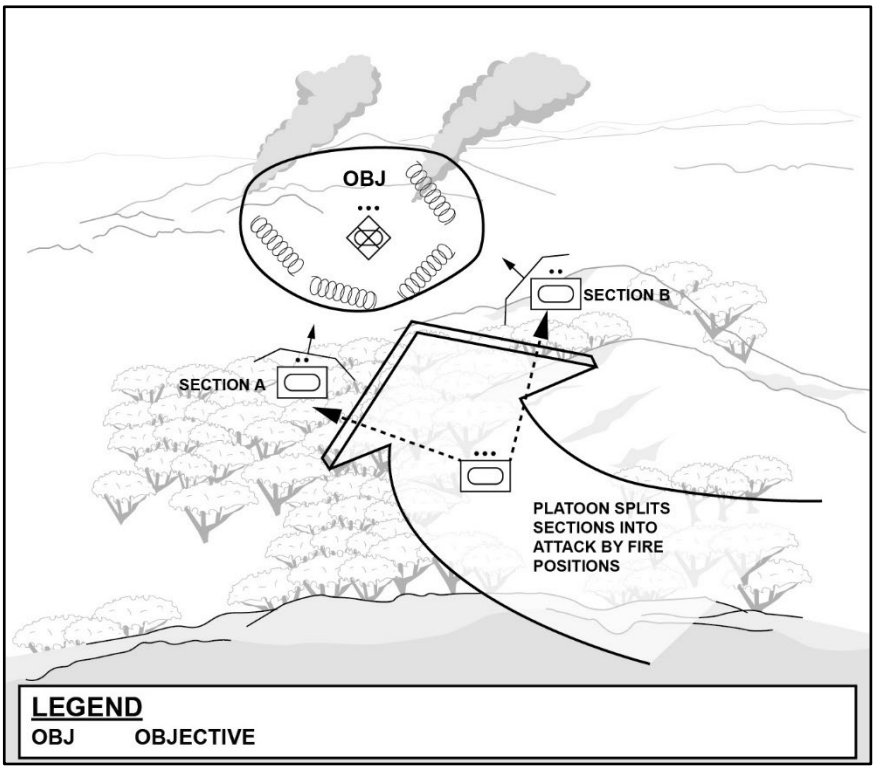


Figure 3-1. Platoon attack by fire

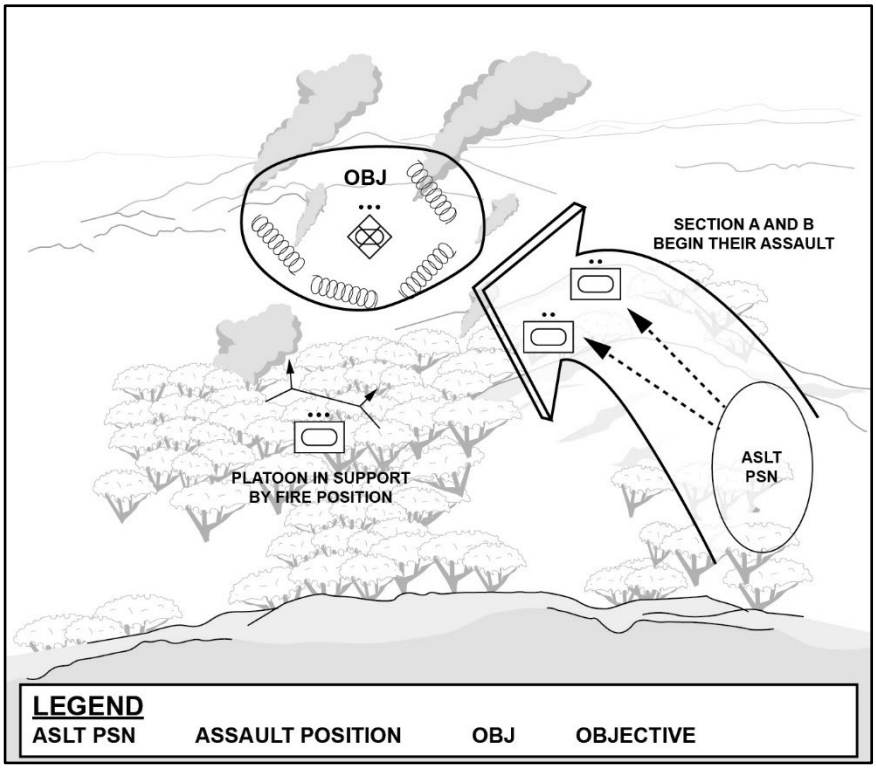


Figure 3-2. Platoon assault

SCANNING

3-19. Good scanning will keep you alive in combat. Good scanning allows you to find the enemy before they find you. The enemy wants to attack in the flank or to the rear—so do not just scan forward. Scan the flanks and rear. The platoon can only secure itself if they are disciplined in scanning, overwatch, and camouflage.

SUPPRESSION

3-20. Suppression is essential to defeating the enemy. If the enemy can see you, then you can be destroyed usually with their first shot. When under fire, you have three choices:

- #1. Advance on the enemy using covered and concealed terrain so that they cannot see you.
- #2. Suppress the enemy by shooting at them with a sufficient volume and duration of fires so that they become incapable of placing effective fire on you.
- #3. Or be destroyed.

3-21. You must simultaneously execute #1 and #2 so that #3 does not happen. The mutually supporting and simultaneous execution of #1 (movement) and #2 (suppressive fire) is **maneuver**.

DISPERSION

3-22. Spread out. Dispersion protects you from enemy artillery and forces the enemy to scan harder to find you. When fighting from a covered and concealed position, do not fire from the same position more than twice. If the enemy does not destroy you on the third exposure, they certainly will on the fourth. Even a 50-meter adjustment in your position forces the enemy to change their sight picture to reacquire you.

OVERMATCHED/OUTNUMBERED

3-23. When you find and have the enemy outmatched/outnumbered, maneuver to destroy the enemy quickly. Ideally, one section sets a base of fire while one section moves using covered and concealed routes to a position of advantage. From this position of advantage, develop the situation and close with and destroy the enemy.

3-24. When you find the enemy and they have you outnumbered/outmatched, find a covered and concealed position and set a base fire. You may have to break contact or disengage to do this. Setting the base of fire gives the commander options to maneuver on the enemy with other elements of the formation.

Know the Difference

3-25. Executing battle drills, developing the situation, and reporting are all critical to gaining an understanding of whether you have superior combat power over the enemy. If you attempt to maneuver on an enemy that greatly outnumbers/outmatches you, then you will simply be quickly destroyed. If you fail to maneuver on an enemy that you outnumber/outmatch, then you will miss opportunities to retain the initiative and maintain the tempo of the attack. Understand the size of the enemy force that you are in contact with and then share this understanding with your commander and subordinates, alike.

Disengagement May Be Your Best Move

3-26. When you make contact with an obstacle or a well-established enemy position, often, the best COA is to disengage (back-up). You will almost certainly be in the enemy's kill zone and be engaged with direct and indirect fires. When the platoon initially makes contact with the enemy (direct fire, indirect fire, visual, obstacle), sometimes the best COA is to disengage so that you can develop the situation. You should maintain a form of contact despite disengaging. This allows the commander to continue to develop the situation and develop a COA.

MAKE CONTACT WITH THE SMALLEST ELEMENT POSSIBLE

3-27. When the enemy situation is uncertain, make contact with the enemy using the smallest force possible. This prevents the entire platoon from committing prematurely and being destroyed. It also allows you to develop the situation, select the best location from which to set a base of fire, and subsequently maneuver on the enemy.

ISSUE EFFECTIVE ORDERS AND INSTRUCTIONS

3-28. Do not hesitate to issue effective orders and instructions to your subordinates during the fight. Usually this takes the form of telling your subordinates what to do (task and purpose), where to go, and where to orient fires/observation.

SUBORDINATES' INITIATIVE

3-29. Be comfortable when your teammates arrive at a tactical COA that differs from what was originally envisioned. Often, your subordinates are in the best position to develop the situation and recommend a COA. What matters is the end state and the accomplishment of the task that you have directed, not how subordinates arrive at that end state and task accomplishment.

SECTION II – MOVEMENT TECHNIQUES, FORMATIONS, AND FORMS OF MANEUVER

3-30. The formations and weapons orientations shown in illustrations in this section are examples only; they generally are depicted without consideration of terrain and other METT-TC (I) factors that are always the most crucial element in the selection and execution of a formation. Leaders must be prepared to adapt their choice of formation to the specific situation.

MOVEMENT TECHNIQUES

3-31. Movement techniques are not fixed formations. They refer to the distances between tanks based on mission, enemy, terrain, visibility, speed, and other factors affecting control. They limit the platoon's exposure to enemy fire and position it in a good formation to react to enemy contact. There are three movement techniques: traveling, traveling overwatch, and bounding overwatch. Factors to consider for each technique are control, ability to maneuver, dispersion, speed, and security.

3-32. Fundamental considerations for planning platoon movement techniques include understanding the company's movement and maneuver plan, including what movement technique the company will use during each phase of an operation, and who will provide overwatch to the platoon. If there is possible enemy contact and no external overwatch, the platoon leader must establish overwatch within the platoon.

TRAVELING

3-33. The platoon uses the traveling movement technique when speed is necessary and contact with enemy forces is not likely. All elements of the platoon move simultaneously. The platoon leader is located where they can best control the movement. When using the traveling movement technique, intervals between tanks are based on visibility, terrain, and weapon ranges.

TRAVELING OVERWATCH

3-34. The platoon uses the traveling overwatch movement technique when contact with enemy forces is possible, but speed is important. The lead section is continuously moving, while the trailing section moves at variable speeds, sometimes pausing to

overwatch the movement of the lead section. The trailing section conforms its movement to the terrain, overwatching from a position where it can support the lead section if it engages the enemy. The trailing section overwatches from positions and at distances that will not prevent it from firing or moving to support the lead section.

Overwatch

3-35. Overwatch is a technique in which an element observes and provides direct-fire support for a friendly moving element. Situational understanding is a crucial factor in all overwatch missions, whose objective is to prevent the enemy from surprising and engaging in the moving unit. The overwatch force must maintain communications with the moving force and provide early warning of enemy elements that could affect the moving force. It also scans gaps and dead space within the moving element's formations.

3-36. If the overwatch is unable to scan dead space and engage the enemy, it must alert the moving element of the lapse in coverage. The overwatch must also be able to support the moving force with immediate direct and indirect fires. The overwatch element can be either stationary or on the move.

Overwatch on the Move

3-37. The trail section or platoon maintains a designated location in the formation. It continuously scans the platoon's zone, closely monitoring gaps and dead space for the lead element as it advances. The trail element maintains an interval dictated by the capabilities of its weapon systems and the effects of terrain. As needed, it can execute a short halt on key terrain to provide more effective overwatch.

BOUNDING OVERWATCH

3-38. When executed properly the bounding overwatch is the foundation for effective fighting with direct fires. Use bounding overwatch when in contact with the enemy or when contact is likely. This movement technique allows one part of the formation to provide overwatching and suppressive fires while another part of the formation advances on the enemy. Bounding overwatch is effective because it allows maneuver under the protection of overwatching forces. When one element moves under the overwatch of another element, the stationary element can almost always scan better and engage targets more quickly and effectively and is more likely to observe the enemy firing.

3-39. The platoon uses the bounding overwatch movement technique when contact with enemy forces is expected. There are two variations of this technique: alternate bounds and successive bounds. In both cases, the overwatching section covers the bounding section from covered and concealed positions with good observation and fields of fire against possible enemy positions. They can immediately support the bounding section with maneuver or fires if the bounding section makes contact. Unless they make contact en route, the bounding section moves via covered and concealed routes into the next set of support by fire positions. The length of the bound is based on the terrain, the range of overwatching weapon systems, and the ability of the overwatch section to maintain a clear line of sight beyond the bounding element. In bounding overwatch, route selection for all forward movements is based on the availability of suitable overwatch positions, which must provide cover and concealment, good observation, and fields of fire. (See figure 3-3, page 64.)

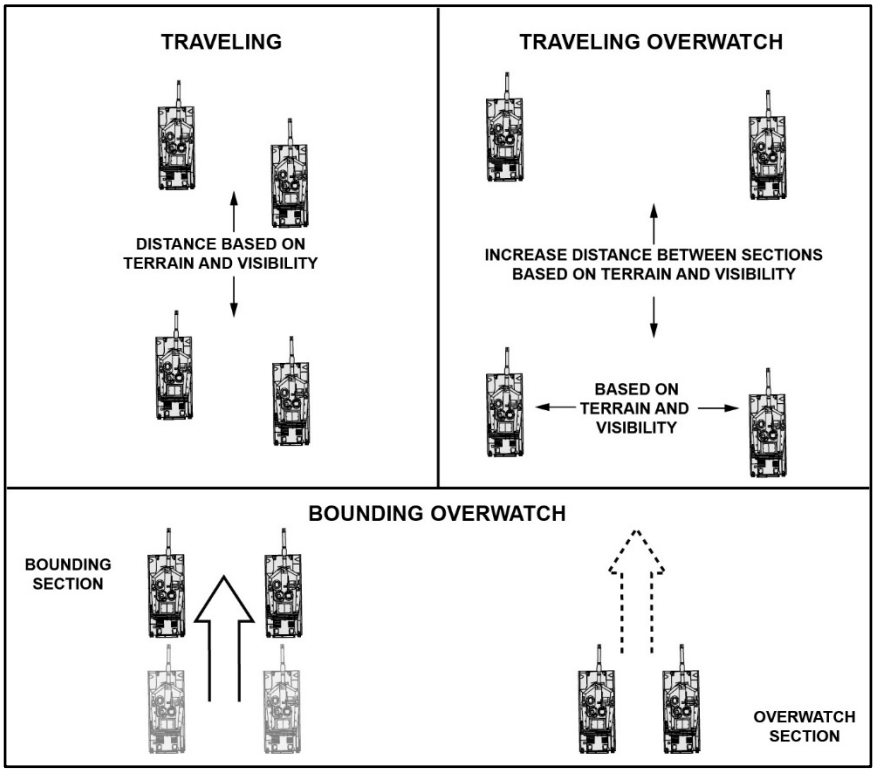


Figure 3-3. Traveling, Traveling Overwatch, and Bounding Overwatch

Stationary Overwatch

3-40. The section or platoon in overwatch occupies hull-down firing positions that provide effective cover and concealment, unobstructed observation, and clear fields of fire spanning the entire zone of the bounding elements advance. The platoon leader or section sergeant assigns sectors of fire and reports the element is prepared to provide overwatch. Depending on the tempo and time available, the leader may develop the position similarly to occupying a support by fire position; however, the emphasis is typically on rapid movement. Individual crews aggressively scan their sectors using applicable search techniques to identify enemy positions. The overwatch element scans, paying close attention to gaps and dead space. If contact is made, the overwatch element initiates a high volume of direct or indirect suppressive fires; it moves as necessary between primary and alternate positions to avoid being decisively engaged.

Alternate Bounds

3-41. If the platoon uses alternate bounds, only one section moves at a time, bounding past the other section in stationary overwatch. To initiate alternate bounding, the lead section maneuvers forward, halts, and sets in an overwatch position while the rear section provides continuous overwatch. The rear section then advances beyond the stationary lead element and sets up a new overwatch position in front. The platoon

continues alternating bounds, as necessary. This method is usually more rapid than successive bounds. (See figure 3-4.)

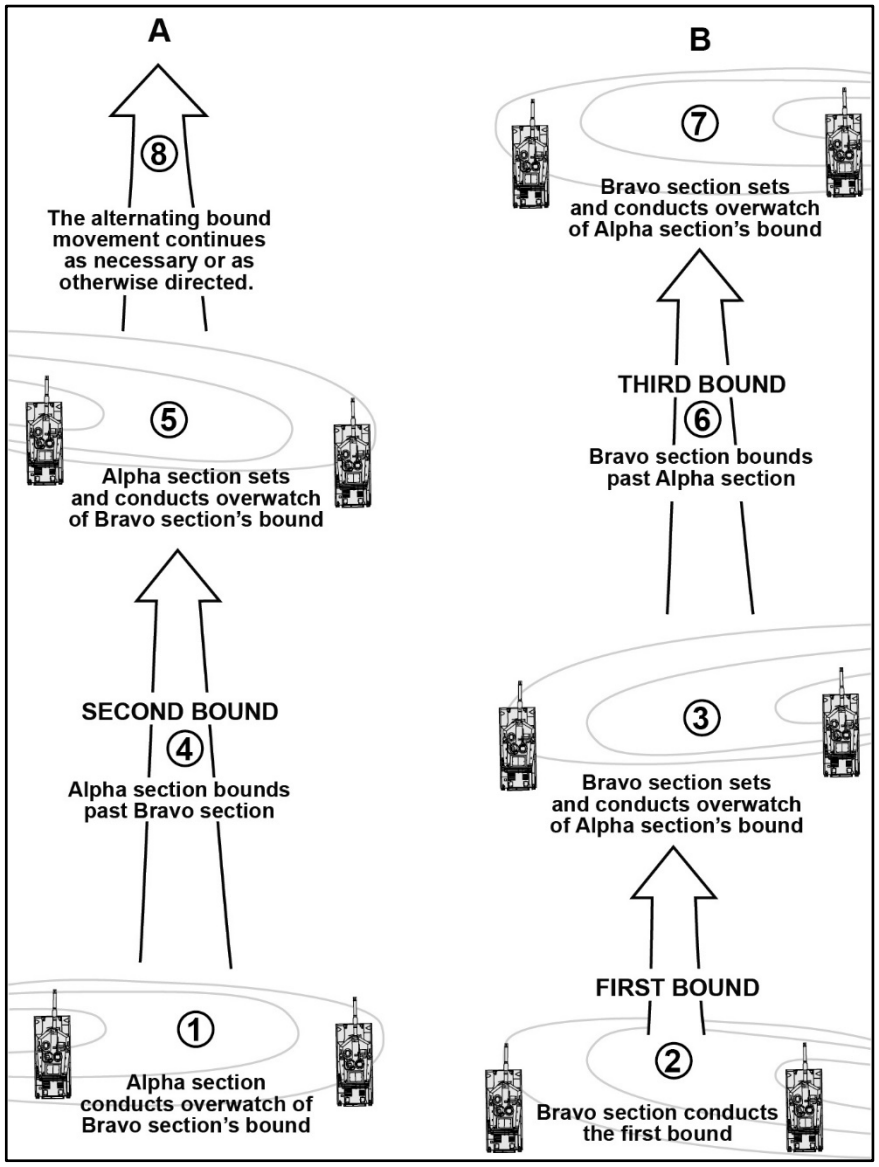


Figure 3-4. Movement by alternate bounds

3-42. Bounding overwatch is effective as it allows the bounding unit to maneuver under the protection of the overwatching element. It is much more effective to scan, maintain orientation, and engage the enemy from a stationary position.

Successive Bounds

3-43. If the platoon uses successive bounds, only one section moves at a time, advancing to be on-line with the other section already in a stationary overwatch position. To initiate successive bounding, the lead section advances and occupies a forward overwatch position while overwatched by the trail section. The trail section then advances to an overwatch position abreast with the lead section and halts. The lead section then maneuvers forward to the next overwatch position and successive bounds continue, as necessary. (See figure 3-5.)

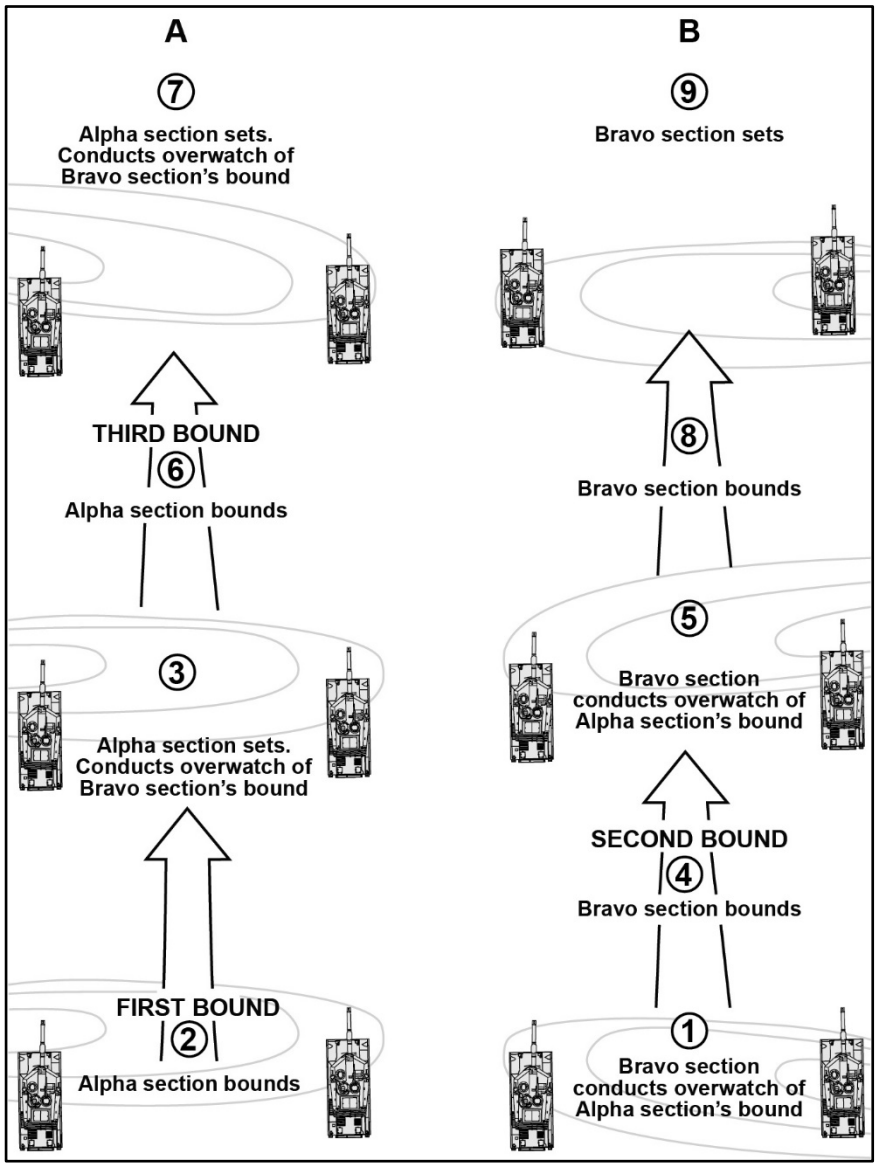


Figure 3-5. Movement by successive bounds

Clearing Defiles

3-44. In geography, a defile is a narrow pass or gorge between mountains or hills which could force tanks to move in a column with a narrow front. A defile presents a high threat risk to tank platoons; it gives enemy forces an excellent advantage to conduct antiarmor ambushes from covered and concealed positions. Tank platoon leaders should try to avoid or bypass restricted terrain such as defiles. Platoon leaders should develop contingency plans for clearing defiles if they cannot avoid or bypass. Although tank platoons are not organized with dismounts to clear defiles, one technique is having crewmembers (the loader from each tank) dismount and clear ahead of the column. Using this technique, crewmembers identify possible enemy positions then use indirect or direct fire from tanks to destroy or force the enemy to withdraw. Crewmembers should not become decisively engaged; this technique is very risky and not the preferred technique. However, without Infantry support, it is the safest way for tank platoons to move through the defile.

3-45. When tank platoons are operating in a company team with Infantry platoons, using Infantry is the preferred way to clear defiles. Using dismounts is an integral part of transition from movement to maneuvering through the defile. While using dismounted Infantry may slow down the tempo of the platoon, it is necessary to survive first contact. Critical to establishing tempo, the tank platoon leaders working with the Infantry ensure the dismounted and mounted forces synchronize their movements to be mutually supported. Clearing a defile can be understood as a deliberate and planned variation of the bounding overwatch movement technique. When conducted correctly, the dismounted Infantry moves ahead or to the flanks of the Armor elements and clear defile locations.

3-46. The platoon leader must plan for and allow time and space for the dismounted Infantry to approach and clear terrain. The platoon leader can use obscuration fires or terrain to deny the enemy observation as the Infantry clears the defile. The platoon leader may use UASs to conduct initial reconnaissance of known defiles. While the Infantry approaches the defile, the tank platoon leaders must plan for their tanks to overwatch dismounted movement and provide direct-fire support to the Infantry. The BN mortar platoon (if available) can also provide indirect fire support.

3-47. Once a defile has been cleared or seized, the Infantry can secure that terrain and bound the tanks forward. Once the tanks are set, the Infantry can once again push forward to clear the next defile. As with the decision to use Infantry, clearing a defile is slow and deliberate, sacrificing speed. However, it can maintain tempo with the goal of conserving enough combat power to get to the objective and achieve the mission.

MOVEMENT FORMATIONS

3-48. A *movement formation* is an ordered arrangement of forces for a specific purpose and the general configuration of a unit on the ground (ADP 3-90). The tank platoon normally only uses the first five of the seven formations; however, it may still conduct a box or diamond formation separately or as part of a larger force. The first five different combat formations are: column, line, echelon (left or right), wedge, and vee. Terrain characteristics and visibility determine the actual arrangement and location of the unit's personnel and vehicles in each formation. Formations are not intended to be entirely rigid with vehicles remaining a specific distance apart at every moment. Formations are

flexible, allowing the platoon to orient the firepower based upon the direction of anticipated enemy contact.

3-49. The platoon leader uses these formations for several purposes: to relate one section to another, to position firepower to support the direct-fire plan, to establish responsibilities for local security, or to aid in the execution of battle drills. Just as the platoon leader does with movement techniques, the platoon leader plans formations based on where to expect enemy contact, and on the company commander's plans to react to contact. The platoon leader evaluates the situation and decides which formation best suits the mission and situation.

3-50. Sometimes platoon and company formations differ due to METT-TC (I). For example, the platoons could move in wedge formations in a company vee. It is not necessary for platoon formations to be the same as the company formation unless directed by the company commander. However, the platoon leader coordinates the formation with other elements moving in the main body team's formation.

3-51. Generally, wingmen should remain as dispersed as terrain will allow while still maintaining visual contact and interlocking sectors of fire with all weapon systems. For the sake of survivability, it is recommended that tanks in the open should be maintained at least 250-meters apart and only reduce that interval if obstructions and restricted terrain do not allow visual contact or interlocking sectors of fire between wingmen. Proximity creates unnecessary risk and can make the whole tank platoon an easily identifiable and engageable target. Whenever possible, tank platoon leaders should avoid small intervals of less than 100 meters, reserving proximity for movements with little or no risk of enemy contact.

COLUMN

3-52. The *column formation* is a movement formation with elements arranged one behind another (FM 3-90). While utilizing the column formation, platoon leaders should assist the lead tank with the navigation of the platoon by providing instructions/recommendations throughout the movement. Column formations are most often used while traveling/maneuvering through restricted terrain and the lead tank will have to also focus on scanning for enemy targets and maintaining speed. The platoon uses the column when moving fast, when moving through restricted terrain on a specific route, or when it does not expect enemy contact. Each vehicle normally follows directly behind the vehicle in front of it. However, if the situation dictates, vehicles can disperse laterally to enhance security. This is sometimes referred to as a staggered column. (See figure 3-6.)

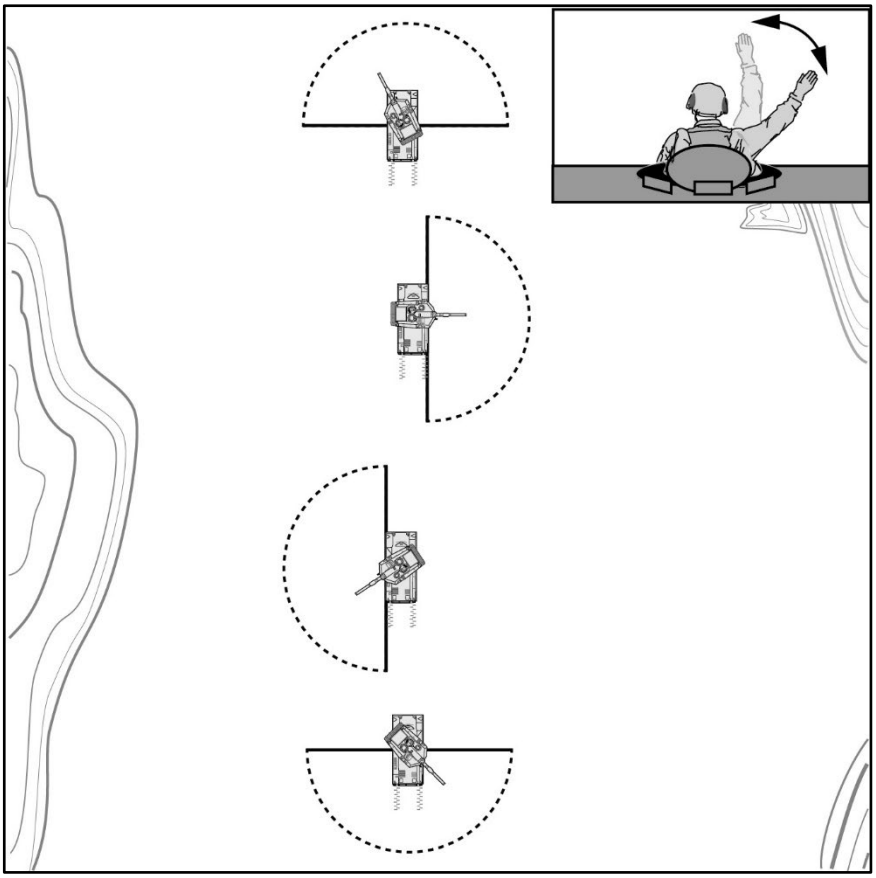


Figure 3-6. Column

STAGGERED COLUMN

3-53. The staggered column formation is a modified column formation with one section leading, and one section trailing to provide overwatch. The staggered column permits good fire to the front and flanks. It is used when speed is critical, when there is a limited area for lateral dispersion, or when enemy contact is possible. (See figure 3-7, page 70.)

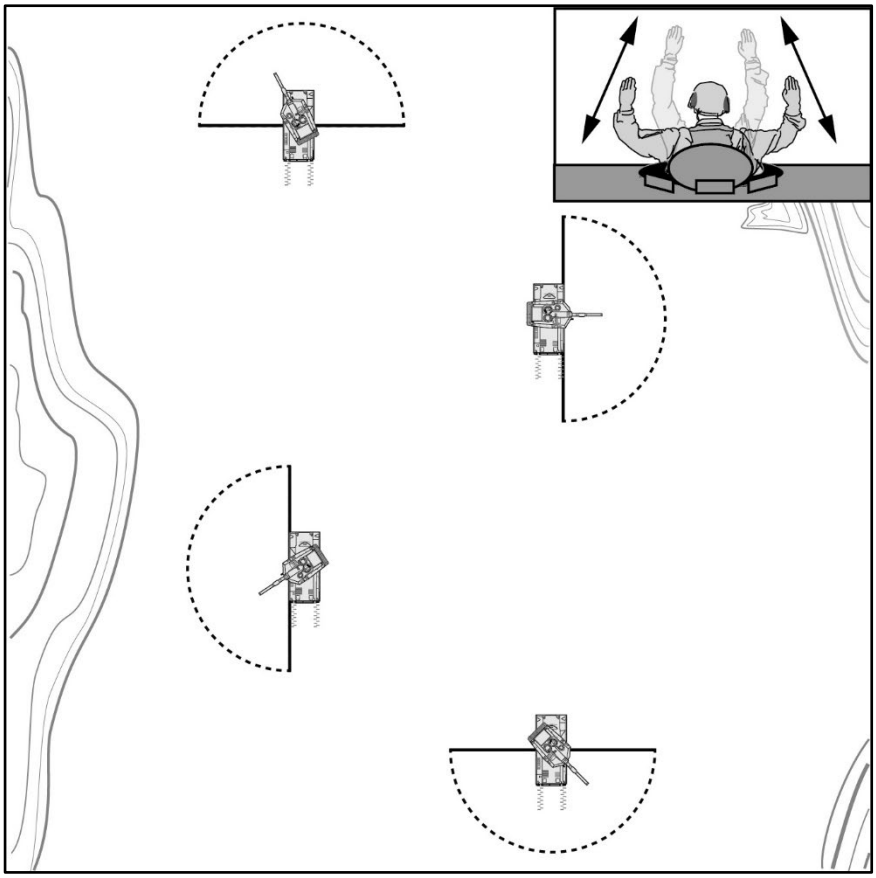


Figure 3-7. Staggered column

WEDGE

3-54. The *wedge formation* is a movement formation with one lead element and the trail elements are paired off abreast of each other on the flanks (FM 3-90). The wedge formation permits excellent firepower to the front and good fire to each flank. The platoon leader can easily control all vehicles and deploy rapidly into other formations. The wedge formation is often used when the enemy situation is vague. The platoon arranges one section to the left and one section to the right, orienting their sectors of fire to cover their respective side of the formation. The platoon leader and PSG direct their wingmen to positions on the outside and rear of the formation, orienting toward the rearward flanks. (See figure 3-8.)

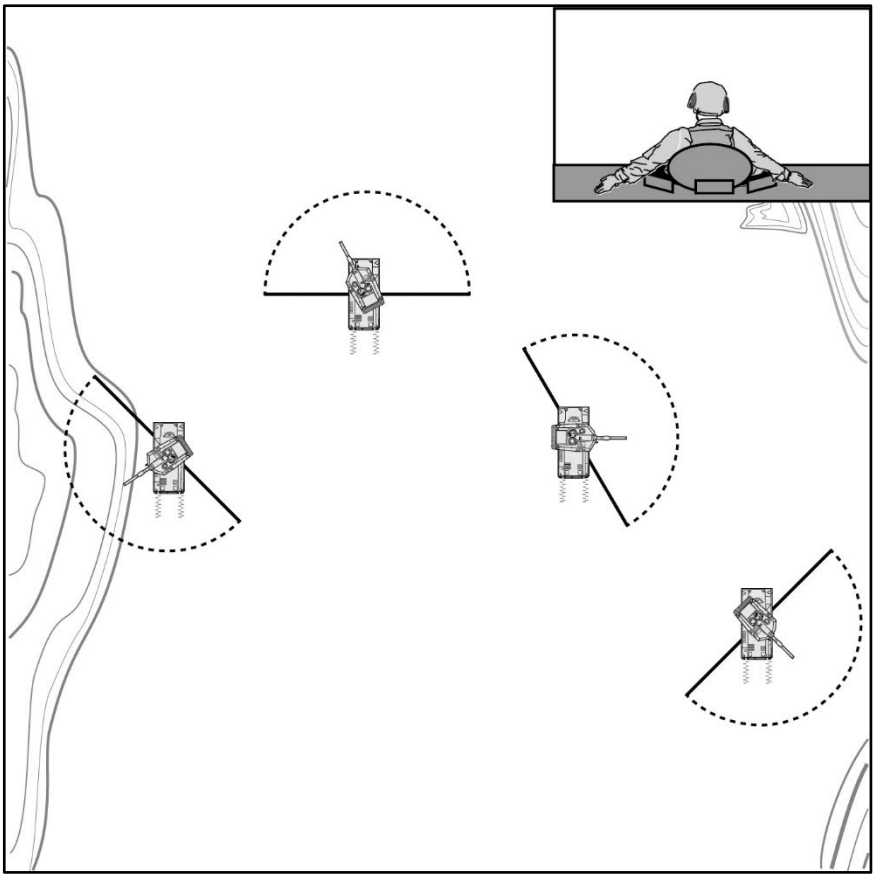


Figure 3-8. Wedge

ECHELON

3-55. An *echelon formation* is a movement formation with elements arranged on an angle to the left or to the right of the direction of attack (echelon left, echelon right) (FM 3-90). The echelon formation provides enhanced security and observation to either the left or right, providing excellent firepower to the front and to one flank. It is used to screen an exposed flank of the platoon or of a larger moving force. (See figure 3-9, page 72.)

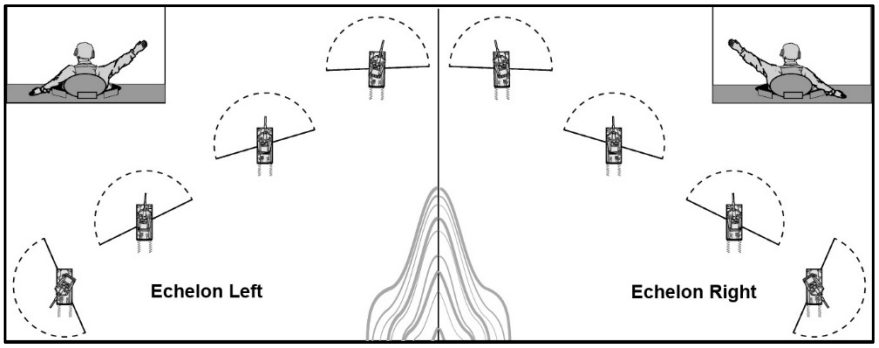


Figure 3-9. Echelon

VEE

3-56. A platoon vee formation is a movement formation with a section of two tanks abreast and a section of two tanks trailing in overwatch. (See FM 3-90.) While a wedge arranges one section to the left and one to the right, the vee formation arranges one section to the front and one to the rear. The vee formation allows a unit to transition smoothly from traveling to traveling overwatch, provide overwatch between sections, and to change quickly to a line, wedge, or column formation. This formation is best used when terrain restricts movement or when overwatch within the platoon is required. The vee formation is suited for an advance against a known threat to the front. Units use this formation when they know the enemy force's location, disposition, and expect enemy contact. The vee formation can also be utilized when approaching a potential obstacle by allowing the bravo section time and protection. The vee provides good firepower forward and to the flanks, but the firepower on the flanks is less than that provided by the wedge. (See figures 3-10 and 3-11, page 74.)

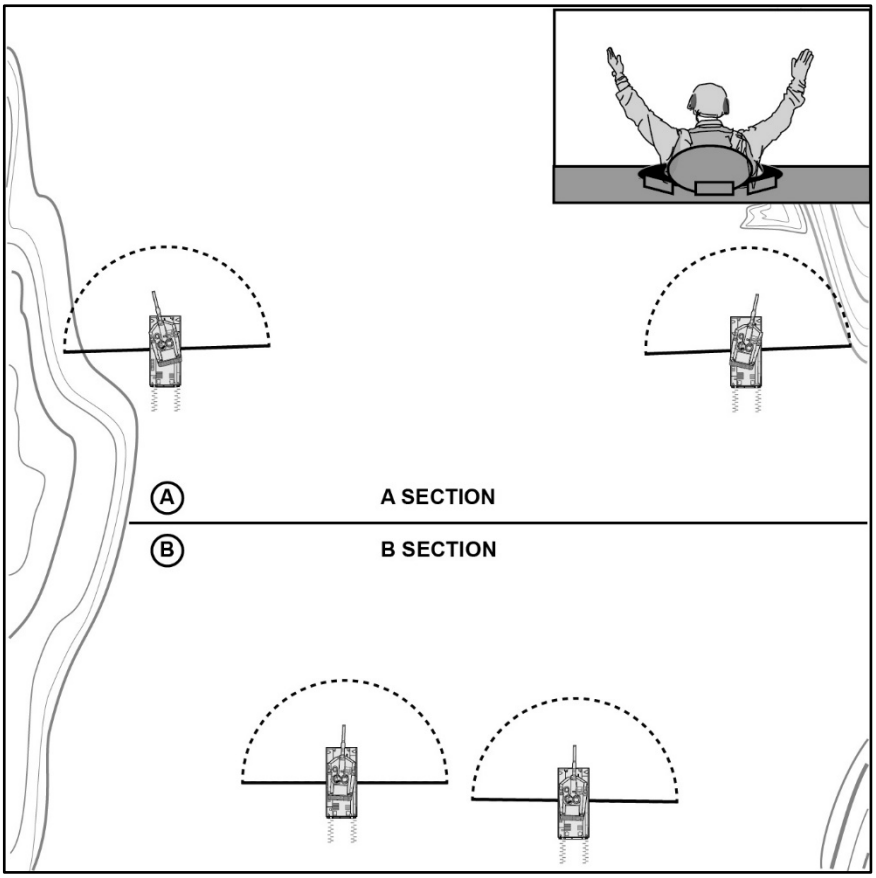


Figure 3-10. Vee

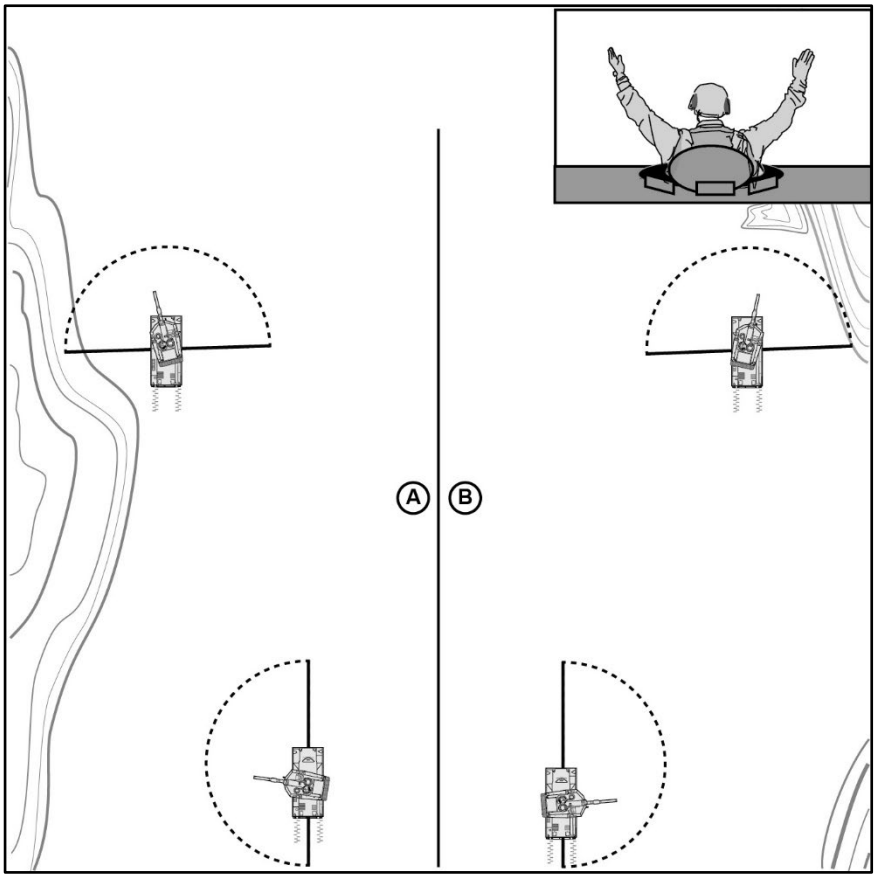


Figure 3-11. Vee overwatch

LINE

3-57. A *line formation* is a movement formation in which elements move abreast of each other (FM 3-90). The platoon uses the line formation when assaulting an objective, crossing open areas, or occupying a support by fire position. The line formation provides maximum firepower forward and facilitates speed and shock effect while closing with an enemy force. (See figure 3-12.)

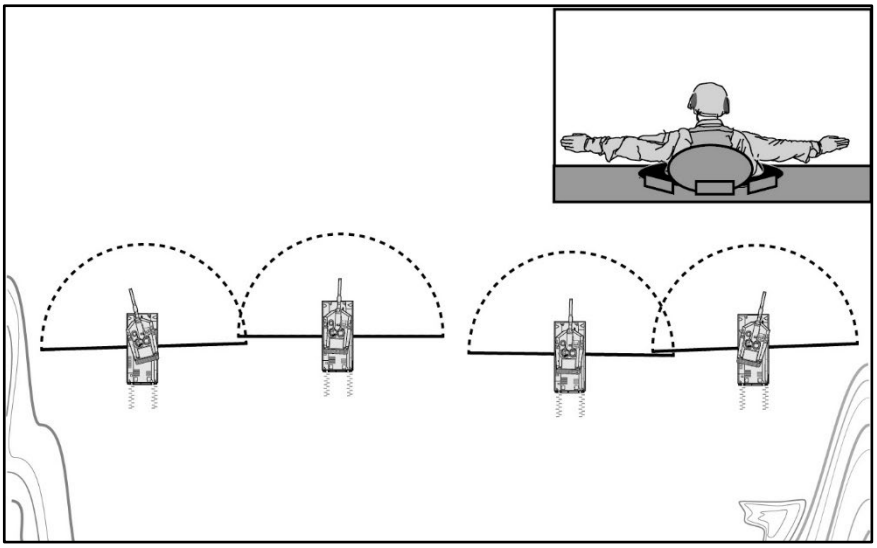


Figure 3-12. Line

COIL

3-58. The platoon uses the coil formation to establish a perimeter defense during extended halts, or lulls in combat, when it is operating independently. The lead vehicle halts the vehicle in the direction of travel (12 o'clock) while the other vehicles position themselves to form a circular formation covering all suspected enemy avenues of approach and providing 360 degrees of interlocking security. (See figure 3-13, page 76.)

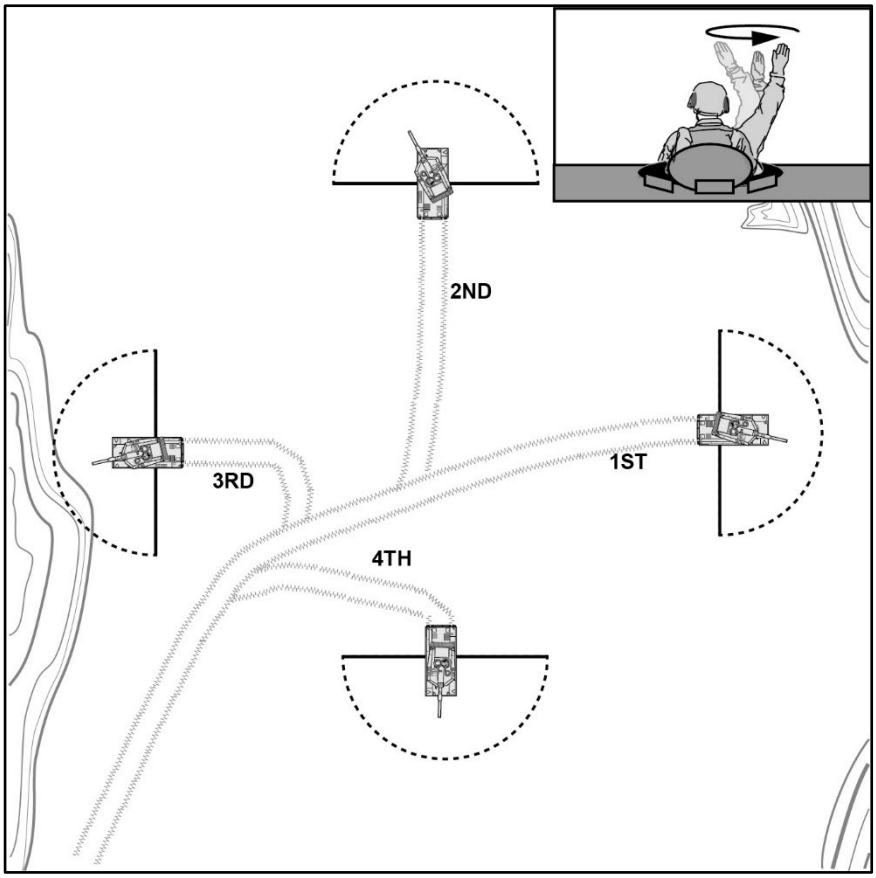


Figure 3-13. Coil

HERRINGBONE

3-59. The platoon uses the herringbone formation when it must assume a hasty defense with 360-degree security. The herringbone formation allows the platoon to remain ready to continue movement in its original direction of travel. If terrain permits, vehicles should move off the avenue of approach or roadway and stop at a 45-degree angle, allowing passage of vehicles through the center of the formation. Normally, platoons transition from a column to a herringbone formation for short or unscheduled halts during a road march. When applicable, tank commanders should be cautious to avoid roadside explosive hazards such as mines or improvised explosive devices that may be buried, emplaced in culverts, or disguised with debris. (See figure 3-14.)

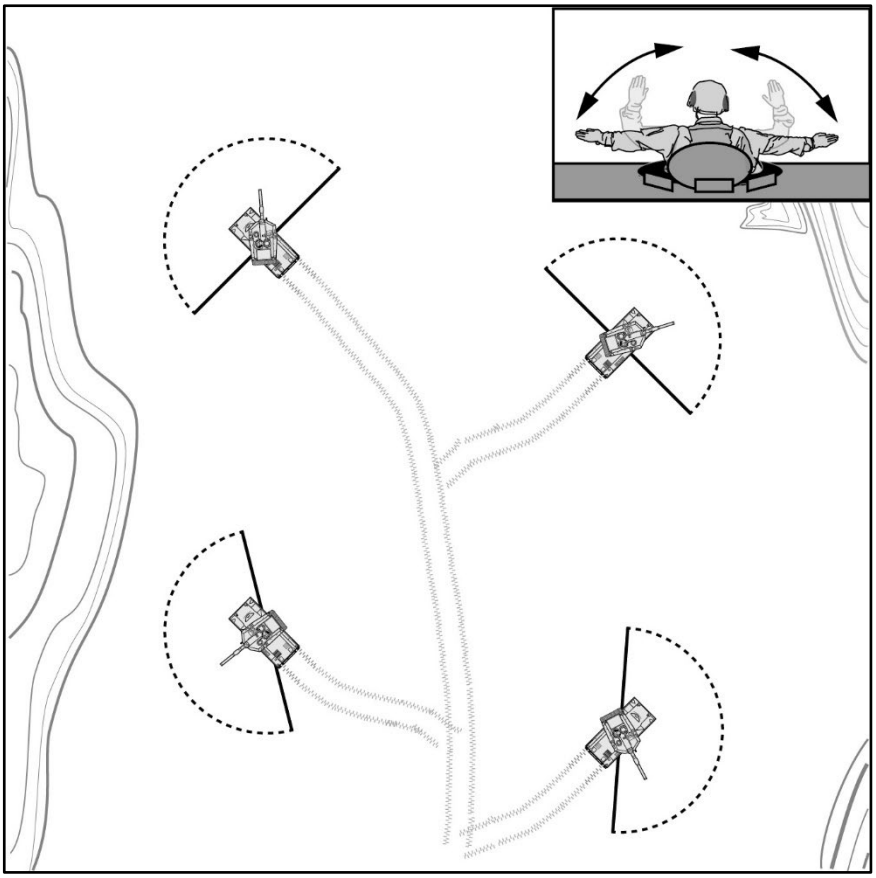


Figure 3-14. Herringbone

3-60. The coil and herringbone are platoon-level formations employed when elements are stationary and must maintain 360-degree security.

3-61. The platoon leader tracks the platoon's formation and movement in conjunction with the company's formation.

3-62. The transition from movement to maneuver occurs in the presence of, or expected contact with, the enemy. A probable line of deployment (PLD) is the graphic control measure that depicts anticipated transition from movement to maneuver.

FORMS OF MANEUVER

3-63. *Forms of maneuver* are distinct tactical combinations of fire and movement with a unique set of doctrinal characteristics that differ primarily in the relationship between the maneuvering force and the enemy (ADP 3-90). Leaders select the form of maneuver based on METT-TC (I) and synchronize the contributions of all warfighting functions to that form of maneuver. An operation may contain several forms of offensive maneuver, such as frontal attack to clear enemy security forces, followed by a

penetration to create a gap in enemy defenses, which in turn is followed by an envelopment to destroy a counterattacking force. While tank platoons do not have the combat power to conduct all forms of maneuver on their own, they can participate as part of a larger formation. The five forms of maneuver are—

- Frontal attack.
- Penetration.
- Envelopment.
- Turning movement.
- Infiltration.

FRONTAL ATTACK

3-64. A *frontal attack* is a form of maneuver in which an attacking force seeks to destroy a weaker enemy force or fix a larger enemy force in place over a broad front (FM 3-90). An attacking force can use a frontal attack to overrun a weak enemy force.

PENETRATION

3-65. A *penetration* is a form of maneuver in which a force attacks on a narrow front (FM 3-90). Destroying the continuity of a defense allows for the enemy's subsequent isolation and defeat in detail.

ENVELOPMENT

3-66. *Envelopment* is a form of maneuver in which an attacking force avoids an enemy's principal defense by attacking along an assailable flank (FM 3-90). By avoiding the enemy's front where the effects of enemy fires and obstacles are generally the greatest, envelopments force the enemy to fight in two or more directions simultaneously to meet the converging efforts of an attack. Envelopments focus either on seizing terrain, destroying enemy forces, or interdicting enemy withdrawal routes. The three varieties of envelopment are single envelopment, double envelopment, and vertical envelopment.

TURNING MOVEMENT

3-67. A *turning movement* is a form of maneuver in which the attacking force seeks to avoid the enemy's principle defensive positions by attacking to the rear of their current positions forcing them to move or divert forces to meet the threat (FM 3-90). A turning movement seeks to make the enemy force displace from their current locations, whereas an enveloping force seeks to engage the enemy in their current locations from an unexpected direction.

INFILTRATION

3-68. An *infiltration* is a form of maneuver in which an attacking force conducts undetected movement through or into an area occupied by enemy forces (FM 3-90). While tank platoons rarely conduct infiltrations, the platoon can perform overwatch, support by fire, or set conditions for other elements to infiltrate.

SECTION III – ACTIONS ON CONTACT

3-69. *Actions on contact* is a process to help leaders understand what is happening and to take action (FM 3-90). Actions on contact are a series of combat actions, often conducted simultaneously, taken upon contact with the enemy to develop the situation. Leaders analyze the enemy throughout TLPs to identify all likely contact situations that may occur during an operation and consider their initial actions. Analysis of the enemy will identify many areas where enemy contact is likely; however, it will not identify all of them. The framework for taking actions on contact should guide all enemy contact, whether anticipated or not. Actions on contact do not replace the use of battle drills; instead, battle drills may be elements of the broader process of taking actions on contact.

3-70. Typically, a unit's SOP dictates specific actions to include battle drills and reports, depending on the type of contact. Additionally, the mission variables, commander's intent and guidance, and scheme of maneuver guide the actions individual units take when they make enemy contact. (See FM 3-90 for more information.)

FORMS OF CONTACT

3-71. In offensive and defensive operations, contact occurs when the platoon encounters a situation requiring a lethal or nonlethal response to the enemy. These situations may entail one or more forms of contact:

- **Direct:** interactions from ground-based, line of sight weapons systems (small arms, tank main guns, and AT missiles).
- **Indirect:** interactions from non-line of sight weapons systems (including cannon artillery, mortars, and rockets).
- **Nonhostile:** neutral interactions that may degrade military operations (including civilians on the battlefield, nongovernmental organizations, or neutral forces).
- **Obstacles:** interactions from natural and man-made obstacles (including rivers and minefields).
- **CBRN:** interactions from friendly, enemy, and civilian CBRN effects (including chemical attacks, nuclear attacks, industrial accidents, and toxic or hazardous materials).
- **Aerial:** interactions from air-based combat platforms (including attack helicopters, armed or unarmed UAS, and fixed-wing aircraft).
- **Visual:** interaction from acquisition via the human eye, optical, or electro optical systems (including ground reconnaissance, telescopic, thermal, and infrared [IR] sights on weapons and sensor platforms such as UAS and satellites).
- **Electromagnetic:** interactions via systems used to acquire, degrade, or destroy using select portions of the electromagnetic spectrum (including radar systems, jamming, cyberspace, and electromagnetic pulse).
- **Influence:** interactions through the information dimension intended to shape the perceptions, behaviors, and decision making of people relative to a policy or military objective (including through social media, telecommunications, human interaction, and other forms of communication and contact).

FOUR STEPS OF ACTIONS ON CONTACT

3-72. The steps of actions on contact are not intended to generate a rigid, inflexible response to the enemy. Rather, the goal is to provide an orderly framework that gives leaders and Soldiers a process to survive the initial contact. When applied most or all the actions can and may happen simultaneously. Unit leaders must apply timely actions and sound decision making when applying the steps. Actions on contact are applicable to all types of operations. They are just as applicable to a tank section coming into direct fire contact with an enemy during an MTC, an Armor company observing the enemy in the defense, a signal element ambushed by the enemy, or a division in the attack. This framework is a way for leaders to determine quickly if things are going according to plan and what actions they need to take to either stay on plan or adjust to the new situation. (See FM 3-90 for more information.)

3-73. Tank platoons should execute actions on contact using a logical, well-organized process that guides the response. The four steps of actions on contact are—

- React.
- Develop the situation.
- Choose an action.
- Execute and report.

REACT

3-74. If the enemy initiates contact, the element in contact conducts the appropriate contact drill. (See paragraph 3-84.) These drills contain necessary actions to survive initial contact, deploying the platoon into a situationally appropriate formation from which the platoon leader can develop the situation. Any unengaged element monitors the situation and prepares to either support the portion of the platoon in contact or continue the mission. Simultaneously, the platoon or section in contact reports the contact to their company HQ, which helps them to develop the situation. This also alerts the echelon and allows the initiation of necessary actions.

3-75. If friendly forces make contact first without the enemy being aware, they determine if they have been detected, if not they move to a location where they will not be observed and continue the actions on contact process. The tank platoon should attempt to make contact with the smallest element possible to include any available unmanned systems. The element that makes contact reacts immediately, and the rest of the platoon develops the situation, chooses an action, executes the action, and reports.

DEVELOP THE SITUATION

3-76. After immediate actions to survive initial contact, the platoon leader develops the situation to define the threat. This includes all necessary steps to determine the strength, composition, disposition, location, and capabilities of threat forces in contact. The platoon leader may employ both direct and indirect fires while maneuvering the platoon to develop the situation, gain initiative, and generate options. It is critical that the platoon retains freedom of maneuver, providing flexibility for the platoon leader and company commander. The platoon leader's goals in developing the situation are first survival then, depending on the nature of contact, delivering an overwhelming response, and gaining the initiative. The platoon leader then considers whether the type and nature of contact will require the platoon to deviate from the current plan. While formulating

possible COAs, the platoon leader considers risk to force, risk to mission, and whether there are emerging opportunities.

3-77. As the situation develops and the enemy force's composition, disposition, strength, and activity become clearer, the unit in contact submits additional reports. Typical things to consider include but are not limited to the following:

- Size, activity, location, composition, and orientation of the enemy force.
- Understanding of enemy capabilities with respect to friendly forces (superior or inferior enemy force).
- Identification of enemy flanks and whether they are assailable.
- Impact of obstacles and terrain.
- Enemy capabilities.
- Probable enemy intentions.
- Potential method of gaining positional advantage over the enemy.
- Friendly situation (location, strength, and capabilities).
- Possible friendly actions to achieve the specified end state.
- Means of presenting the enemy with multiple dilemmas.

3-78. For lower echelons with a small frontage such as platoons and below, it will not take long to develop the situation. Additional considerations should include aerial reconnaissance from friendly UAS, employment of mortars and artillery, and reconnaissance by fire.

CHOOSE AN ACTION

3-79. After the platoon makes contact, the platoon leader gathers information to make an assessment based on their understanding of the enemy and friendly forces' composition and disposition and chooses an action consistent with the higher echelon commander's intent and within the unit's capabilities. These actions typically are—

- Attack.
- Attack by fire.
- Breach.
- Bypass.
- Defend.
- Delay.
- Support by fire.
- Withdraw.

3-80. Many actions require the company commanders' approval prior to execution. Reasons for needing a higher commander's approval could include the following:

- Action requires additional resources.
- Action consumes scarce, limited, or otherwise mission-essential resources (for example, breaching assets).
- Action crosses established platoon boundaries or directly affects adjacent units.
- Action is not within the commander's intent.
- Action affects conditions for the higher echelon mission.
- Action changes company commanders' scheme of maneuver.
- Action commits the company commanders' scheme of maneuver.

EXECUTE AND REPORT

3-81. With the action selected and, if required, approved by their company commander, the platoon in contact takes necessary action. If appropriate, the platoon initiates direct and indirect fires to engage enemy forces and gain the initiative. If maneuvering as a company, the platoon in contact will often establish an attack by fire or support by fire position to enable the rest of company to continue to maneuver against the enemy. If the action is to defend or withdraw, the platoon in contact does so while maintaining contact and continuing to gain as much information as possible about the enemy forces' disposition and positions. To *withdraw* is to disengage from an enemy force and move in a direction away from the enemy (ADP 3-90). If the action is to bypass the enemy, the unit in contact maintains contact and continues their mission. Unless they are specifically told by their HQ to break contact, the unit in contact will maintain contact no matter which action is chosen. Regardless of the chosen action, reporting to the next higher echelon is required to ensure the unit is staying within the commander's intent.

Actions on Contact with an Anticipated Inferior Force

3-82. Figures 3-15 through 3-17, pages 83 through 85, depict actions on contact when the platoon encounters an inferior enemy element. In this case, the commander and platoon leader have anticipated contact with such a force and have planned for actions on contact by including possible COAs in their OPORDs and rehearsals.

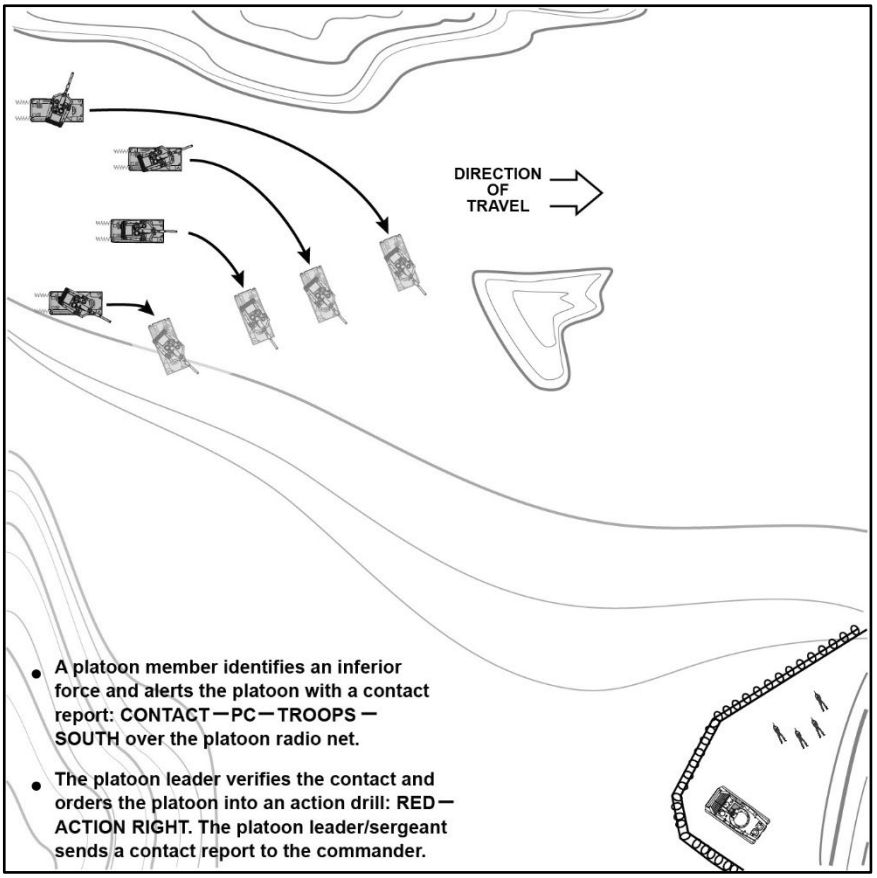


Figure 3-15. Platoon makes initial contact, deploys using action drill, and reports

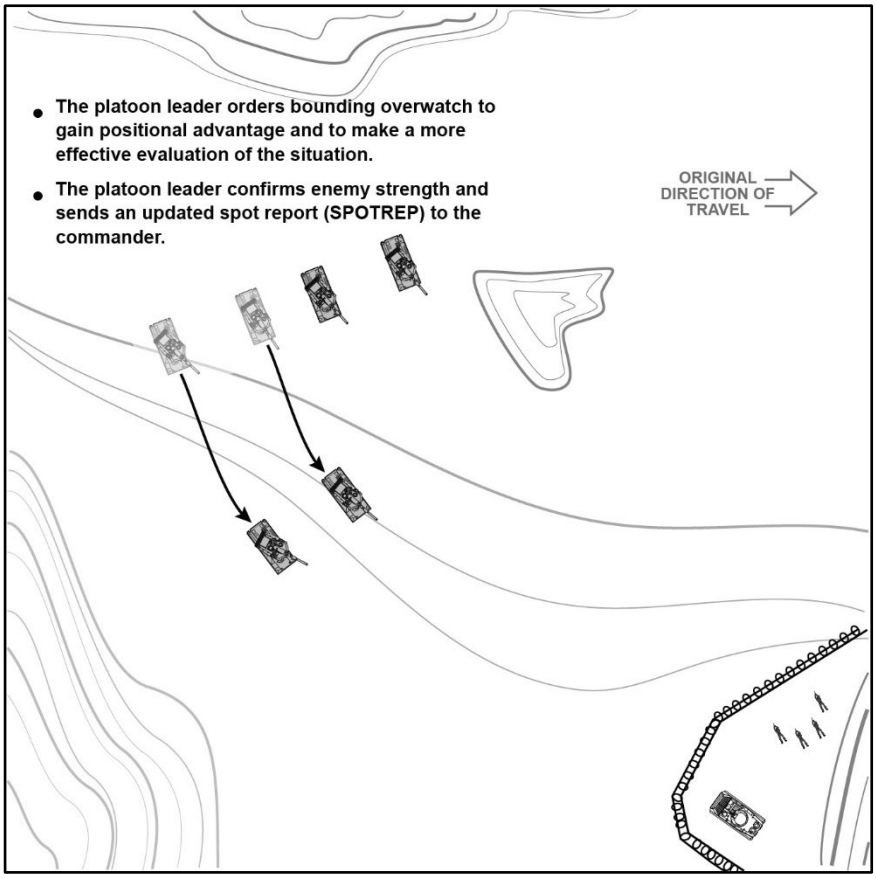


Figure 3-16. Platoon develops the situation

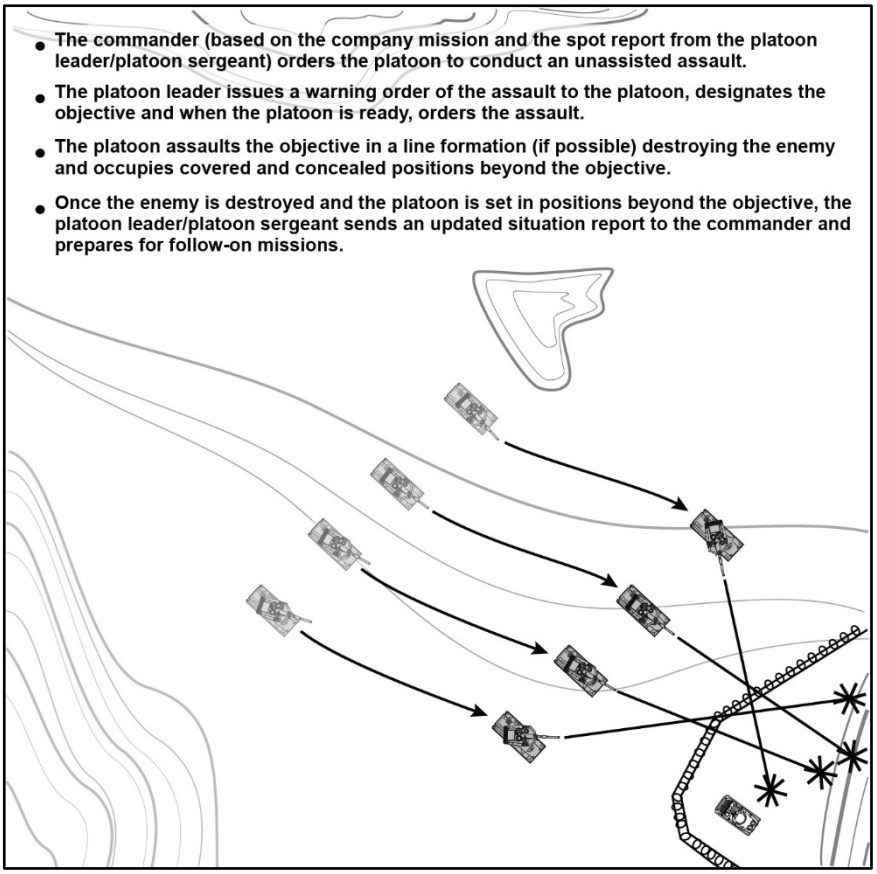


Figure 3-17. Platoon leader chooses course of action; platoon executes the assault

Actions on Contact with an Unanticipated Superior Force

3-83. Figure 3-18 through figure 3-20 pages 86 through 88 show actions on contact when the platoon unexpectedly encounters a superior enemy force.

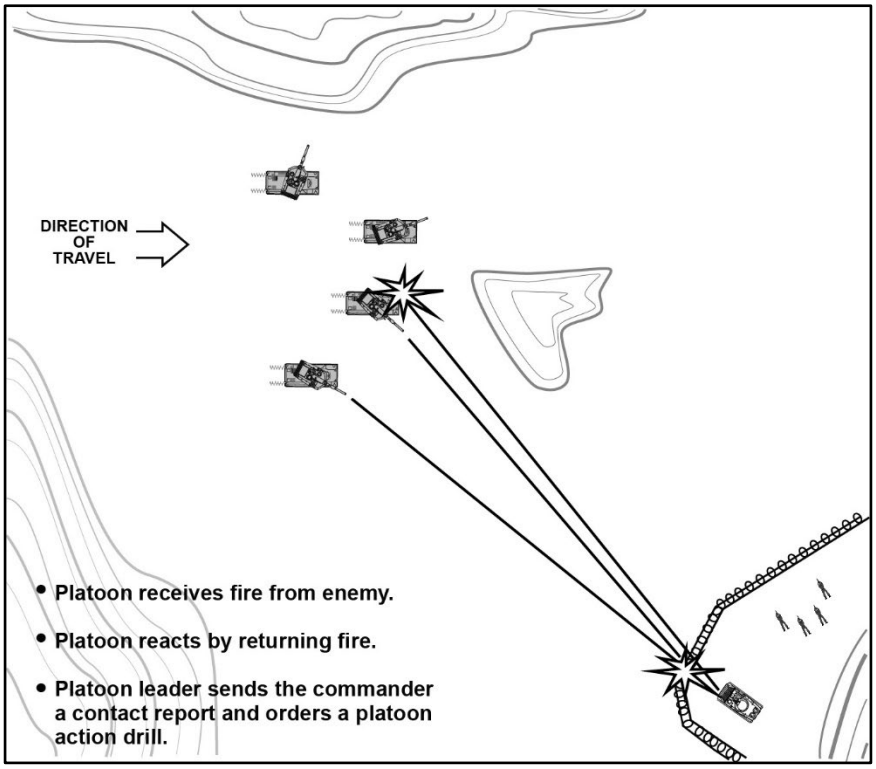


Figure 3-18. Platoon makes initial contact, reacts with an action drill and direct fire, and reports

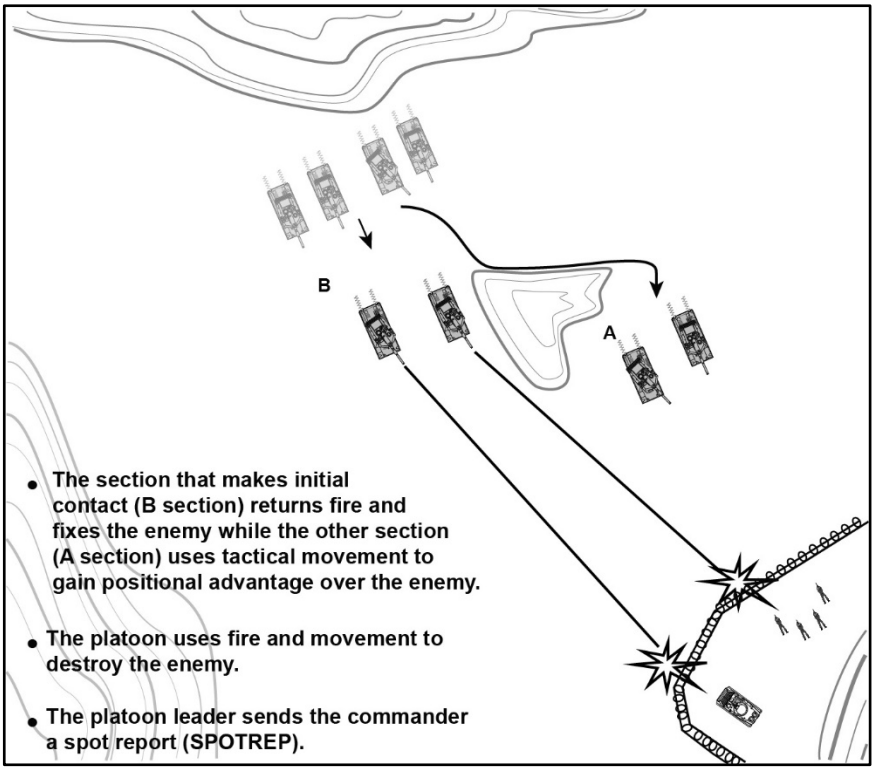


Figure 3-19. Platoon executes battle drill; destroys enemy, and reports

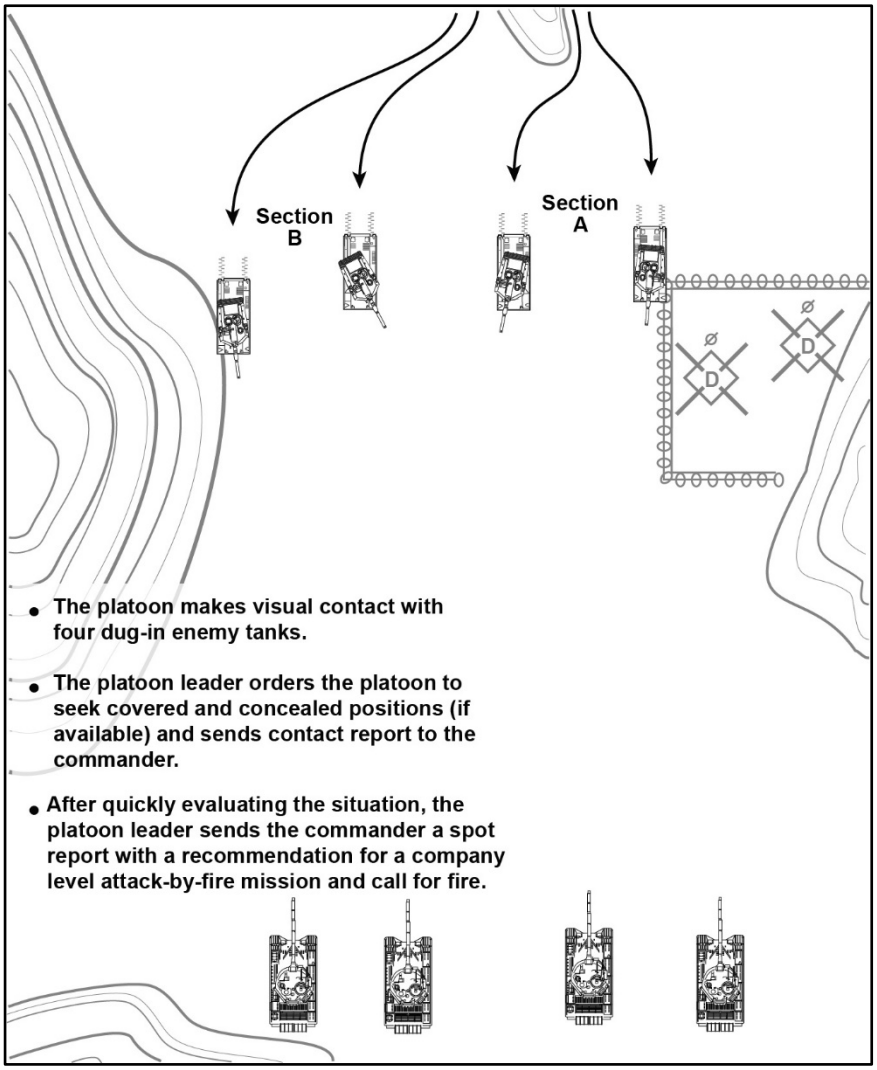


Figure 3-20. Platoon develops the situation and identifies superior enemy

MOVEMENT AND MANEUVER DRILLS

3-84. When the tank platoon makes contact with the enemy, the platoon leader usually initiates a drill. Drills can be initiated following reports or observation of enemy activity but are most ordered upon receipt of enemy fires.

3-85. Movement and maneuver drills provide virtually automatic responses to situations in which the immediate and as appropriate, violent execution of an action is vital to the platoon's safety or to its success in combat. They allow the platoon leader to protect the platoon from the effects of enemy fires, to mass the platoon's combat power quickly and fires, or to move the platoon to a position of advantage over the enemy. Platoon leaders are responsible for training the platoon to execute lethal fires in conjunction with these

drills and must plan and enforce DFCMs throughout an operation. They can be carried out under almost any type of battlefield conditions and from any formation or technique of movement, although execution can be affected by the factors of METT-TC (I).

Note. Platoon leaders should note that the use of movement and maneuver drills does not relieve them of the requirement for logical, timely decision making when critical situations arise on the battlefield.

3-86. The platoon can expect to execute any of the following standard drills: change of formation drill, contact drill, and action drill. Commanders and leaders at all levels must be ready to augment or adjust these three basic drills based on the threat, terrain, and ROE. In addition, they must ensure their platoons rehearse these drills until they are able to execute the drills perfectly no matter what command and control problems arise.

Note. In figures 3-21 through 3-27, pages 90 through 96, vehicle numbers illustrate the wingman concept. In the field, the location and sequence of vehicles during the drill is prescribed in the platoon SOP or the orders for the operation. The tactical situation also influences vehicle location.

CHANGE OF FORMATION DRILL (17-PLT-D9435)

3-87. This drill is executed to accomplish a rapid change of formation in response to a change in terrain or enemy situation. The platoon leader must ensure that each tank commander knows the new formation and the relative position of each tank in the new formation. The platoon leader uses visual signals or the radio to initiate the drill. Figure 3-21, page 90 illustrates the movement of individual tanks during a change of formation drill.

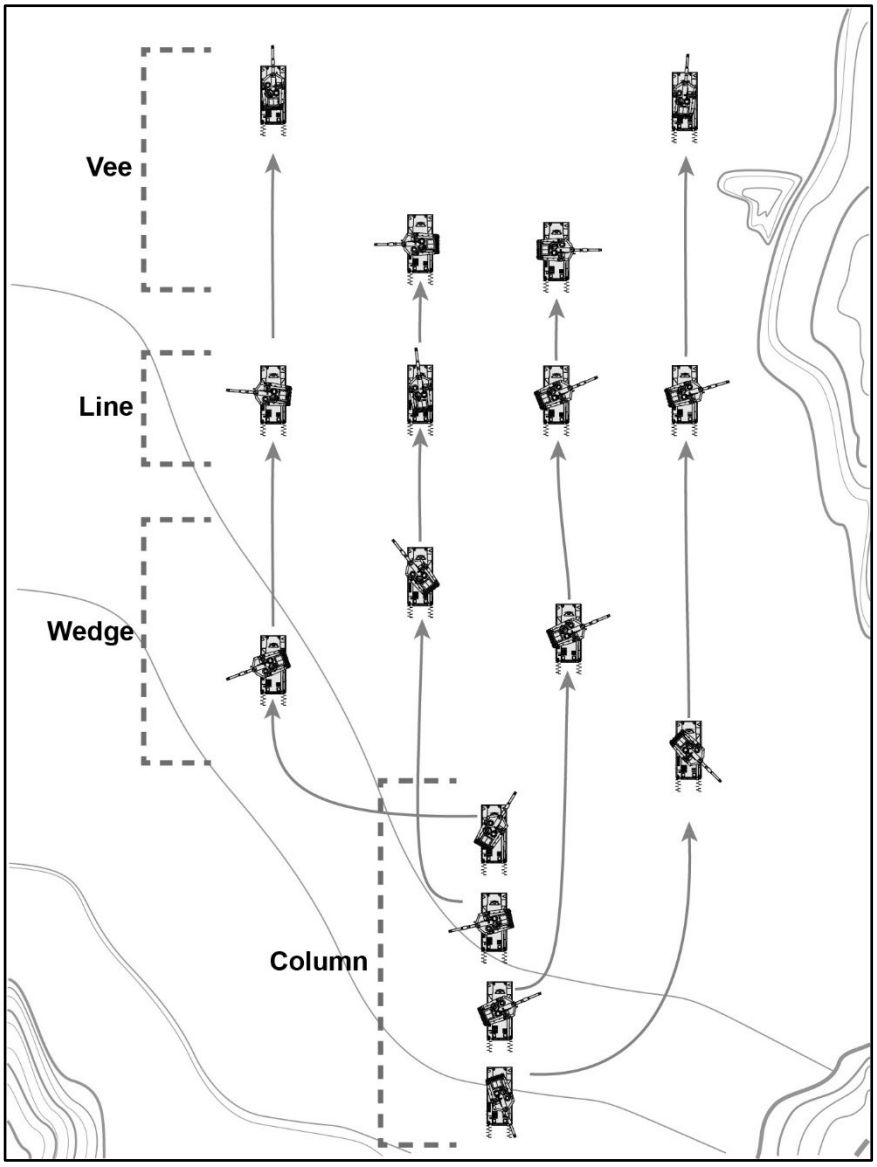


Figure 3-21. Change formation drill

CONTACT DRILL (17-PLT-D8005)

3-88. The contact drill enables the platoon to orient weapon systems and engage an enemy without changing its direction or speed of movement along the axis of advancement. This drill is used when contact is made with small arms fire or when the platoon sights the enemy without being engaged and does not want to stop or slow its movement. The platoon leader initiates the contact drill using visual signals or the radio. Over the radio, the platoon leader uses the contact report format and adds the execution

element FIRE as a platoon fire command. (Figure 3-22 illustrates a contact drill from a column formation.)

Note. If a tank's weapon systems are masked by another tank, the masked tank maintains weapons orientation and flank security as prescribed in the OPORD; this helps to prevent fratricide.

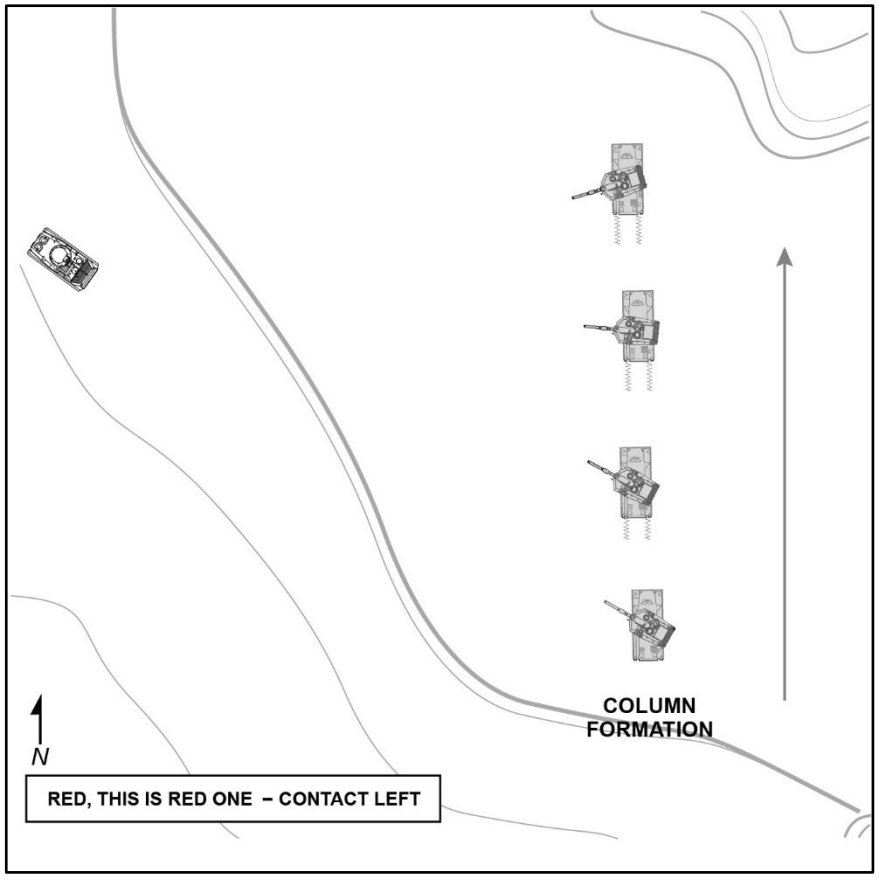


Figure 3-22. Contact drill

ACTION DRILL (17-PLT-D9437)

3-89. The action drill permits the entire platoon to change direction rapidly in response to terrain conditions, obstacles, FRAGORDs from the commander, or enemy contact. This may include action front, action left, action right, or action rear. The platoon immediately deploys into line formation oriented in the indicated direction, then rapidly maneuvers to the first available covered positions and, if directed, initiates direct fires. The platoon leader uses visual signals or the radio to order the action drill, which can be initiated with or without enemy contact.

Action Drill without Enemy Contact

3-90. The platoon leader can execute an action drill to avoid a danger area or obstacle or to respond to FRAGORDs from the commander. When the platoon leader initiates the action drill, tanks come online and continue to move in the prescribed direction unless the platoon leader directs a change of formation. The platoon leader then directs further movement, as required. (Figure 3-23 illustrates tanks' relative positions during various action drills without contact.)

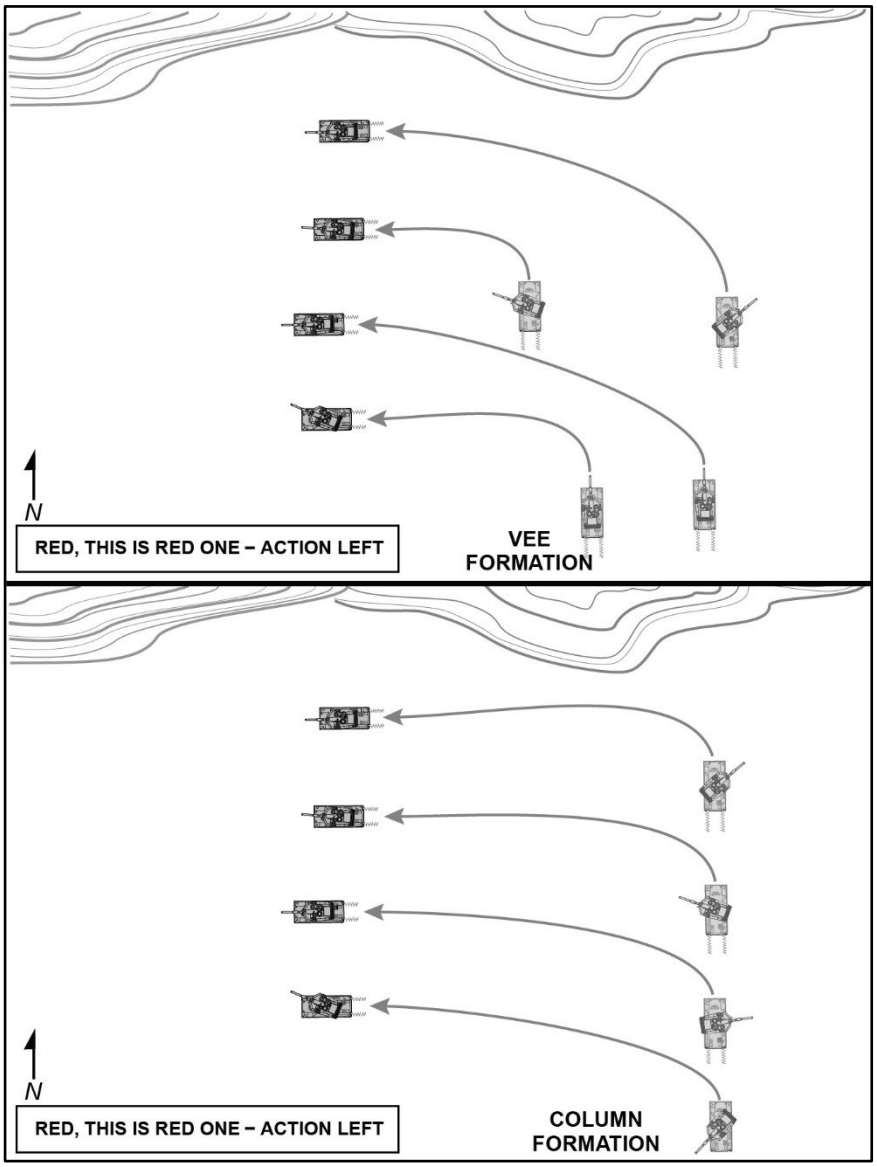


Figure 3-23. Action drill without enemy contact

Action Drill with Enemy Contact

3-91. Following a contact report alerting the platoon that enemy contact involves tanks or other AT weapon systems, the platoon leader can direct an action drill to orient the platoon's frontal armor toward the AT fire while moving to cover and concealment. If the platoon cannot reach a covered and concealed position or achieve weapon standoff, the platoon leader directs the platoon to assault the enemy. Figures 3-24 through 3-27, pages 93 through 96, illustrate examples of action drills in reaction to enemy contact.

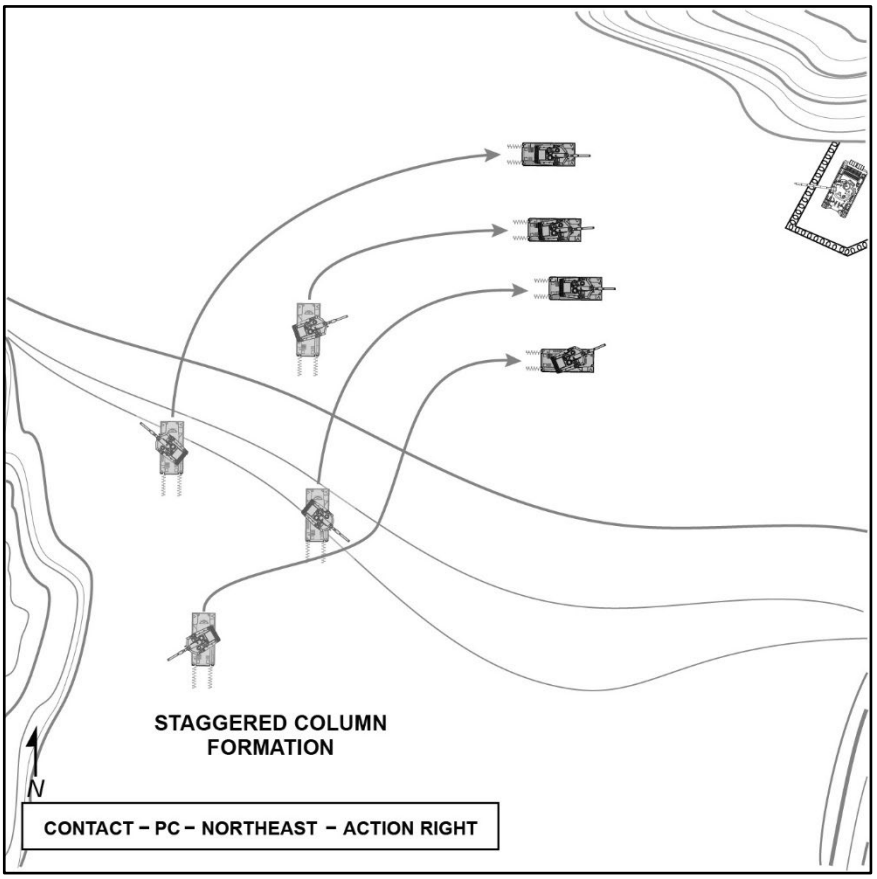


Figure 3-24. Action drill with enemy contact

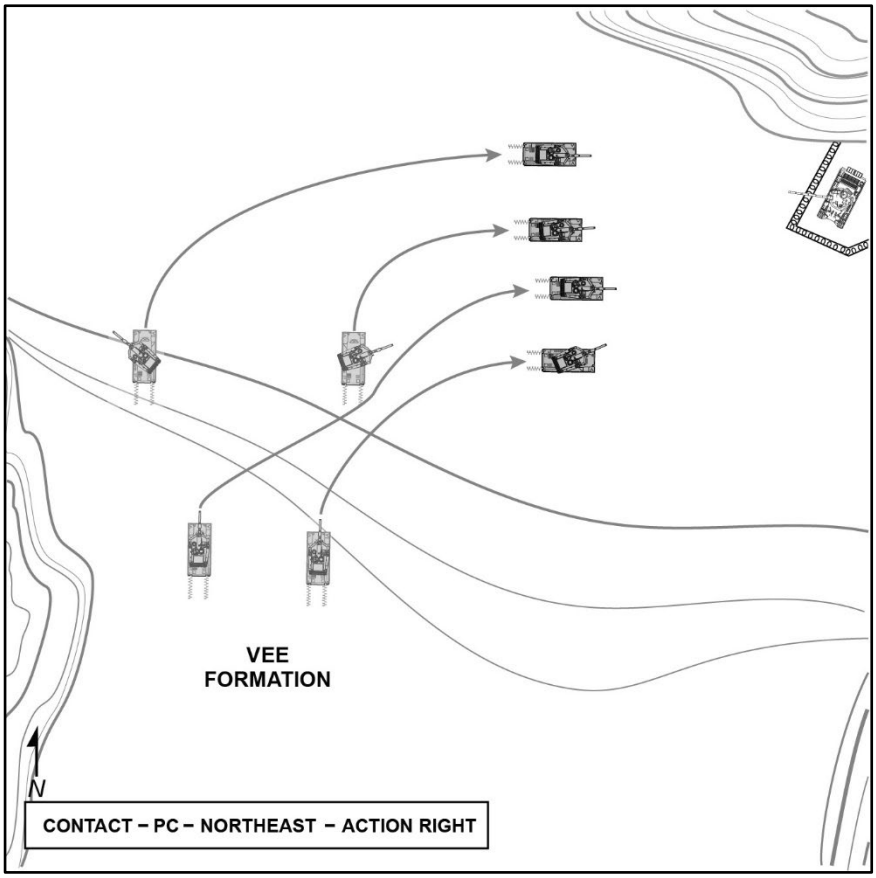


Figure 3-25. Action right from a vee in contact

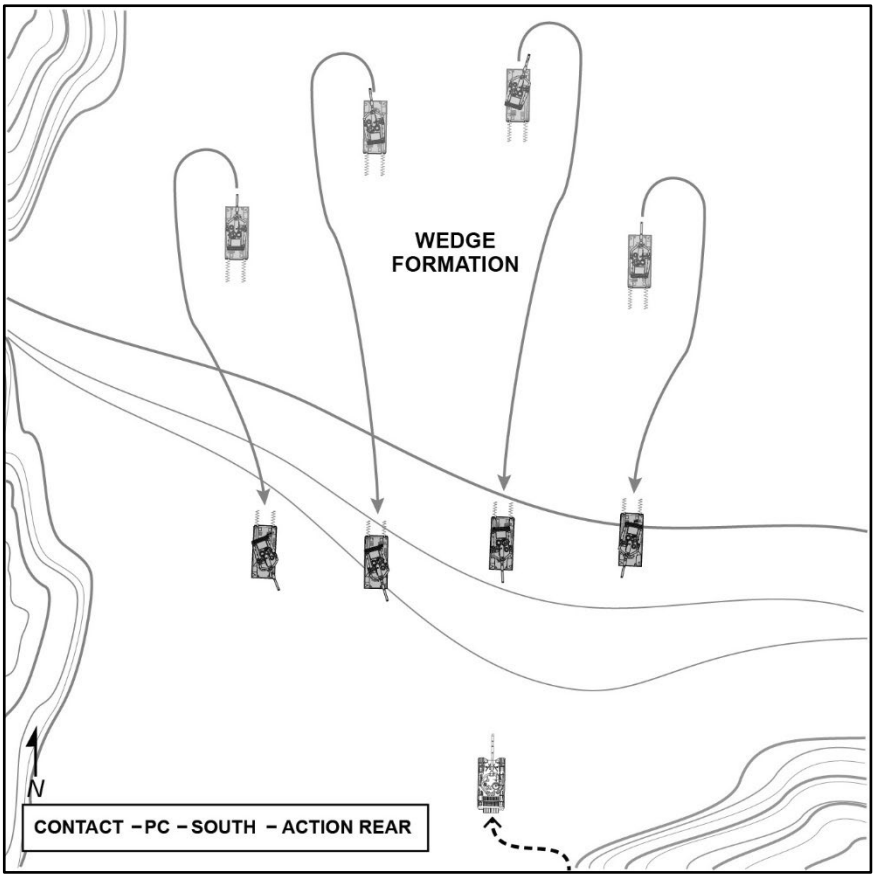


Figure 3-26. Action rear from a wedge in contact

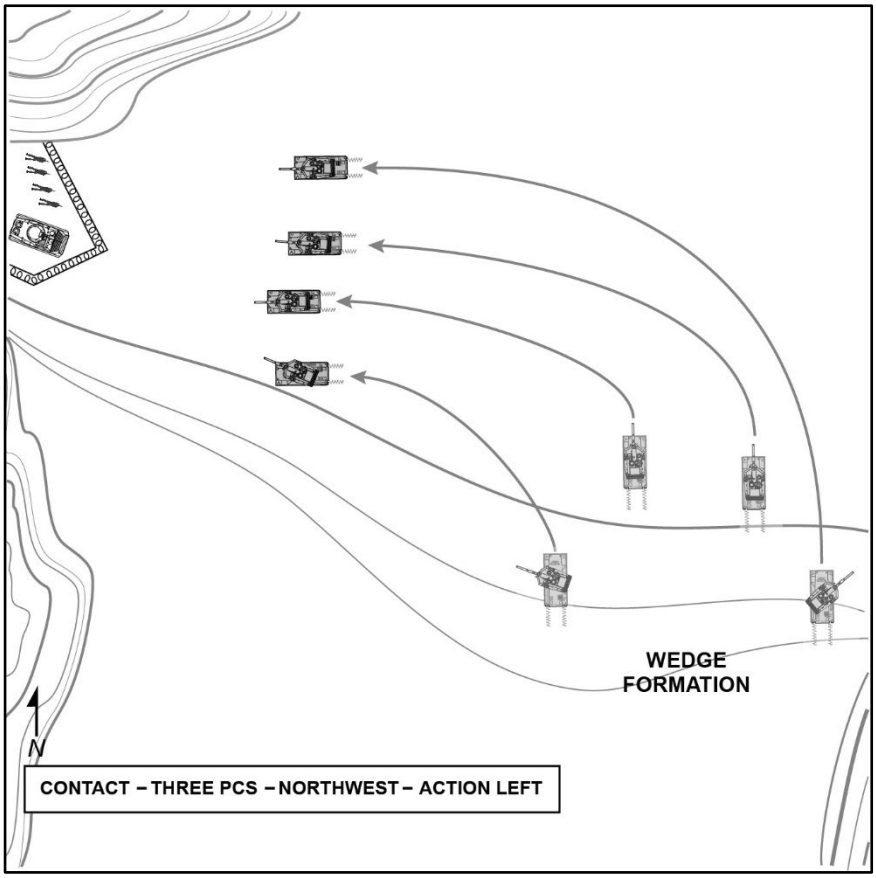


Figure 3-27. Action left from a wedge in contact

SECTION IV – MOVEMENT TO CONTACT

3-92. *Movement to contact* is a type of offensive operation designed to establish or regain contact to develop the situation (FM 3-90). The platoon may participate in an MTC in a variety of circumstances when the enemy situation is not clear. For instance, when attacking to straighten the front-line trace; when conducting operations within the enemy's security zone; when following an enemy force that has rapidly displaced or when restrictive terrain allows considerable concealment to threat forces. Units plan and conduct MTC to gain or regain contact with the enemy. It ends when they make enemy contact.

FORMS OF CONTACT

3-93. In offensive operations, contact occurs when a member of the company encounters a situation that requires a lethal or nonlethal response to the enemy. These situations may have one or more of the following forms of contact: direct, indirect, nonhostile, obstacles, CBRN, aerial, visual, electromagnetic, and influence. When planning and

executing an MTC, platoons may not encounter all the forms of contact but must plan and prepare for every contingency. Understanding the forms of contact may help guide the platoon leader in the MTC planning process. (See section II of this chapter for detailed descriptions of the forms of contact.)

ORGANIZATION OF FORCES

3-94. The tank platoon normally conducts MTC as part of a company within a BN; however, based on the mission variables of METT-TC (I) it can conduct the operation independently. Within the CAB or Infantry BN, an MTC is organized as a minimum with a forward security force, a main body, and reserve. Based on METT-TC (I), the CAB or Infantry BN commander may increase the unit's security by resourcing an offensive covering force and an advance guard for each column, as well as flank and rear security. A scout platoon is normally tasked with the mission to screen or conduct area security. The platoon would be organized into one of the following forces when conducting an MTC as part of a larger force.

FORWARD SECURITY FORCE

3-95. The forward security force generally comprises an advance guard, a covering force, or both. When the platoon serves as the forward security force the composition depends on mission variables. The forward security force moves as quickly and aggressively as possible but remains within supporting range of the main body's weapon systems. It is essential to provide early warning and reaction time for the main body. It destroys small enemy forces or causes the enemy to withdraw before they can disrupt the main body. Within a company team consisting of both Infantry and Armor platoons, a mechanized Infantry platoon normally serves as the forward security force.

ADVANCE GUARD

3-96. When the platoon serves as the advance guard, its purpose is to protect the main body from surprise attack and develop the situation to protect the deployment of the main body when it is committed to action. These responsibilities include the following:

- Providing security and early warning for the main body and facilitating its uninterrupted advance.
- Conducting reconnaissance to locate enemy forces within command directed boundaries and along the platoon's axis of advance.
- Conducting actions on contact to retain freedom of maneuver for the unit.
- Calling for indirect fires to impede or harass the enemy.
- Destroying enemy reconnaissance elements.
- Finding, fixing, defeating, destroying, or containing enemy security forces to retain freedom of maneuver for the unit.
- Bypassing and reporting obstacles or acting as the support force during breaching operations.

3-97. Composition of the advance guard depends upon METT-TC (I). In open terrain, it may move mounted; but in restricted, close, complex, or urban terrain, dismounted Infantry movement with vehicles in the overwatch may be a better choice. Engineers or mechanized Infantry platoons may be attached to the advance guard. The mortar platoon or a mortar section may support the advance guard.

3-98. The advance guard is the commander's main effort and should be designated as the priority for fires and all other forms of support. Once the main body is committed, priorities will shift to that element. In planning the MTC, each decision should be based on the actions of the advance guard.

MAIN BODY

3-99. The *main body* is the principal part of a tactical command or formation. It does not include detached elements of the command, such as advance guards, flank guards, and covering forces (FM 3-90). The combat elements of the main body are prepared to deploy and maneuver rapidly to a decisive point on the battlefield to destroy the enemy. The main body bases its movement on the advance guard. The main body, remaining attuned to the advance guard's situation, provides responsive support when the advance guard makes contact. The BN commander may designate a portion of the main body as the reserve.

3-100. Tasks the platoon can perform within the main body include the following:

- Find, fix, defeat, destroy, or contain the enemy's fixing force followed by the enemy assault force or site exploitation force, to retain freedom of maneuver for the remainder of the company.
- Maneuver to develop the situation and gain understanding of enemy capabilities and disposition.
- Execute a COA to defeat or destroy a designated enemy main body element.
- Execute standard formations and battle drills that allow the commander to shift combat power rapidly.
- Anticipate BN commander's decisions for commitment of the main body and plan accordingly (platoon leaders can anticipate this based on their knowledge of commander's intent and their own situational awareness).

RESERVE

3-101. A tank platoon may be identified as part of the reserve for a CAB or BN. The mission variables determine the size of the reserve, and the more unknown the enemy situation, the larger the size of the reserve. On contact with enemy forces, a reserve provides flexibility to react to unforeseen circumstances and allows a unit to resume its movement. When designated as the BN reserve, the platoon leader must understand the BN's planning priorities and release criteria for employing the reserve. The reserve must know how to locate and enter the radio net for every element in the BN.

TANK PLATOON CONDUCTING A MOVEMENT TO CONTACT

3-102. The tank platoon normally conducts MTC as part of a larger element. If tasked to conduct an MTC as an independent element, platoons employ appropriate movement techniques, standard formations, and battle drills that allow the platoon leader to shift combat power rapidly to a position of relative advantage. The platoon will execute a purposeful and aggressive movement, decentralized control, and hasty deployment of formations. Normally a platoon conducts an MTC by advancing within an assigned zone towards an objective or LOA. The platoon leader analyzes the situation and selects the proper tactics to conduct the mission. Platoons must be proficient in all forms of contact

and battle drills. The platoon leader reports all information rapidly and accurately and strives to gain and maintain contact with the enemy. The fundamentals of MTC are—

- Focus all efforts on finding the enemy.
- Make contact with the smallest element possible, either a tank or a section, and they should avoid becoming decisively engaged by the enemy's main body.
- Use movement techniques and formations and battle drills to deploy and attack rapidly in any possible direction.
- Keep wingmen and sections forces within appropriate supporting distances to facilitate gaining and maintaining contact.
- Maintain contact regardless of the COA adopted upon gaining contact.
- Orient on planned objectives and locations with probable enemy contact.

CONTROL MEASURES

3-103. A *control measure* is a means of regulating forces or warfighting functions (ADP 6-0). Execution of MTC usually starts from an LD at the time specified in the OPORD. The leader controls the MTC by using PLs, contact points, and checkpoints when necessary. A *contact point*, in land warfare, is a point on the terrain, easily identifiable, where two or more units are required to make contact (JP 3-50). The leader controls the depth of MTC by using an LOA or a forward boundary. The leader could designate one or more objectives to limit the extent of MTC and orient the force. However, these are often terrain-oriented and used primarily to guide movement.

3-104. Although MTC may result in seizing terrain, the primary focus should be on destroying the enemy force. If the leader has enough information to locate significant enemy forces, then the leader should plan some other type of offensive action.

3-105. Leaders use positive control over maneuver units, coupled with battle drills and formation discipline. Platoons are assigned a zone for MTC and not normally assigned their own AO.

3-106. The leader can designate a series of PLs successively becoming the new rear boundary of forward security elements as force advances. Each rear boundary becomes the forward boundary of the main body and shifts as the security force moves forward. The rear boundary of the main body designates the limit of responsibility of the rear security element. This line shifts as the main body moves forward.

SEQUENCE OF EVENTS, EXAMPLE

3-107. When executing an MTC the platoon follows a sequence of events like the example sequence addressed below, as part of a larger MTC. This sequence of events is used for discussion purposes and is not the only way to sequence an MTC. With any sequence, leaders understand events will vary depending on the mission variables of METT-TC (I) and to some degree, events will overlap. Events include the following:

- AA.
- Reconnaissance and surveillance.
- Movement to the LD.
- Movement after the LD.

- Transition to maneuver/bounding overwatch at the PLD or on contact with the enemy.
- Initial engagement (transition to a maneuver plan).

ASSEMBLY AREA

3-108. Once the AA is established, the platoon prepares for upcoming operations and leaders plan, direct, and supervise mission preparations. This time allows the platoon to conduct PCCs, PCIs, rehearsals, and sustainment activities. The platoon typically conducts these preparations within a company AA, as it rarely occupies its own AA.

RECONNAISSANCE AND SURVEILLANCE

3-109. Leaders should aggressively seek information about the terrain and enemy. The tank platoon primarily conducts map reconnaissance and relies upon the reconnaissance of adjacent units and intelligence disseminated from the BN to the company. When possible, the tank platoon conducts mounted reconnaissance of terrain in their zone, but this is often not an option due to time constraints and enemy presence. One example is reconnoitering and timing routes from the AA to the LD. Other forms of reconnaissance and surveillance provided to the platoon may include information from maps and terrain software/databases and UASs. Updates from reconnaissance and surveillance activities can occur at any time while the platoon are planning for, preparing for, or executing the mission. As a result, leaders must be prepared to adjust their plans.

MOVEMENT TO THE LINE OF DEPARTURE

3-110. The platoon typically moves from the AA to the LD as part of the company movement plan. This plan may direct the platoon to move to an attack position—the last position an attacking force occupies or passes through before crossing the LD and await orders to cross the LD. If possible, the platoon leader reconnoiters, times, and rehearses the route to the attack position. Tank commanders must know where they are located within the assigned attack position. The company commander may order all platoons to move within a company formation from the AA directly to the *point of departure*—the point where the unit crosses the line of departure and begins moving along a direction of attack (FM 3-90). If one point of departure (PD) is used, it is important the lead platoon and trail platoons reconnoiter, time, and rehearse the route to the point. This allows the company commander to maintain synchronization. To maintain flexibility and to maintain synchronization, a PD along the LD may be designated for each platoon. Movement to and across the LD may entail a forward passage of lines with another unit.

MOVEMENT AFTER THE LINE OF DEPARTURE

3-111. An MTC usually starts from an LD at the time specified in the OPORD or FRAGORD. The platoon leader controls the MTC of the platoon by using PLs, contact points, and checkpoints as required and controls the depth of the MTC by using an LOA or a forward boundary. March objectives (one or more), such as, attack position or assault position, may be used to limit the extent of the MTC and orient the force. This movement is often terrain oriented and used only to guide the force. Although an MTC may result in seizing a terrain objective, the primary focus should be on the enemy force. When the platoon leader has enough information to locate significant enemy forces, the leader should plan and recommend another type of offensive action.

3-112. Platoon leaders plan the approach for the MTC, ensuring synchronization, security, speed, and flexibility by selecting the platoon's routes, movement formation, and movement technique. Leaders must be prepared to make contact with the enemy. They must plan accordingly to reinforce the company commander's needs for synchronization, security, speed, and flexibility. During the MTC, the platoon leader may exercise disciplined initiative and alter the platoon's movement formation and movement technique or speed to maintain synchronization with the other platoons. This retains flexibility for the company commander.

3-113. The platoon leader should plan to transition the platoon from movement to maneuver at the PLD which in advance of probable line of contact with the enemy. It is the platoon leader's responsibility to ensure that the platoon is utilizing the best movement technique and movement formation for the given situation and METT-TC (I) considerations.

3-114. As a general planning factor, traveling is an acceptable movement technique prior to the LD and up to the PLD. Often platoons will employ a column or file formation to increase the rate of march while there is unlikely enemy presence. Once the platoon crosses the PLD, the platoon utilizes traveling overwatch and a movement formation, such as a wedge or vee, that orients sufficient firepower in the direction(s) of possible enemy forces. When the platoon crosses the probable line of contact, the platoon transitions to bounding overwatch as contact with the enemy is expected. If contact is imminent, the platoon leader selects the movement formation that affords the best concentration of direct fire in the direction of the enemy and allows the platoon the most freedom of maneuver given the terrain. A line formation provides superior frontal fires while both reducing the risk of fratricide and simplifying the bounding overwatch technique

INITIAL ENGAGEMENT

3-115. Within the platoon's MTC, the lead element, usually A section, will make the initial contact with the enemy. Upon making contact, the lead section reacts, develops the situation, chooses an action, and executes and reports. The lead section determines the size and activity of the enemy force and avoids being fixed or destroyed. When the enemy is moving, the lead element determines the direction of movement and the size and composition of the force. After developing the situation, the element leader chooses an action to use against the enemy. The element leader or attached forward observer (FO) can disrupt lead enemy forces by placing indirect fires on the enemy forces. The speed of selecting a COA and execution is critical when the enemy is moving. When the enemy is stationary, the lead element determines if the enemy is occupying prepared positions and is reinforced by obstacles and minefields. The lead element tries to identify any crew-served weapons or AT weapon positions, the enemy's flanks, and gaps in positions. The lead element passes this combat information and proposed COA to the platoon leader to assess the information and further develop the situation, if required. Developing the situation and achieving an understanding of the enemy force is critical to deciding how to continue the engagement.

3-116. When the tank platoon is committed as the advance guard, the platoon maneuvers to overpower and destroy an inferior force. Commitment against a larger force or an enemy strong point normally requires the deployment of the MTC's main body. (See

FM 3-90.) The advance guard protects the main body by fixing enemy forces, which allows the MTC's main body to retain its freedom to maneuver. In developing the situation, the advance guard platoon leader or company commander maintains pressure on the enemy by fire and movement. The advance guard probes and conducts a vigorous reconnaissance of the enemy's flanks to determine the enemy's exact location, composition, and disposition. Once contact is made with an enemy force, there are one of five planned options-attack, defend, bypass, delay, or withdraw.

PLAN

3-117. An MTC is one of the most difficult missions to plan. The goal is to prevent a meeting engagement with the enemy. A *meeting engagement* is a combat action that occurs when a moving force engages an enemy at an unexpected time and place (FM 3-90). Units plan and conduct MTC to gain or regain contact with the enemy. It ends when they make contact.

3-118. Planning begins by developing the concept of the operations with the ultimate focus on control of the objective and conducting a reverse planning sequence from the objective to the LD. This is accomplished by understanding the commander's intent and developing a simple concept of operations. The platoon leader receives guidance from the commander on the PIR and develops a plan to answer the commander's PIR. To plan the mission, the platoon leader must understand the breadth and depth of the axis of advance, whether there are any established bypass criteria, and the required effects to be achieved against all enemy forces in the zone.

3-119. The platoon leader must have a good indirect fire plan for their route to cover anticipated places of contact. They work with the company FSO and FOs to develop the platoon's fire plan. These targets are a product of the platoon leader's analysis of the factors of METT-TC (I) and must be incorporated into the company indirect fire plan. The platoon leader, PSG, or tank commanders may initiate the calls for fire.

3-120. When planning, the platoon leader identifies where the platoon will likely transition from movement to maneuver. This will allow the platoon leader to decide which movement formations will be most effective against the templated enemy forces. They plan to make enemy contact with the smallest friendly force possible preferably one tank from the lead section. This allows the platoon leader sufficient combat power to maneuver and develop the situation for the company commander. Platoon leaders move from one position of relative advance to the next while maintaining a supporting element during bounding.

3-121. Leaders conduct information collection to determine the enemy's location and intent while conducting security operations to protect the main body. This includes available manned and UAS assets, allowing the main body to focus on planning and preparation by conducting rehearsals on the conduct of hasty attack operations, bypass maneuvers, and hasty defenses. Platoon leaders use all available information and intelligence to identify the probable locations for meeting engagements. Identifies other forms of contact, by type and location, anticipates associated actions, and battle drills. The platoon leader should develop and nest the graphic control measures with the commander.

3-122. The platoon leader develops and conducts rehearsals of contingency plans in the case of meeting an unexpected enemy force or obstacle. They develop options during their planning. Contingency plans may consist of the following actions—

- Platoon makes contact with a small enemy force.
- Platoon makes contact with a larger force beyond its capabilities to defeat.
- Platoon makes contact with an obstacle unidentified by higher.
- Action to report and bypass an enemy force.
- Maneuver options and transitions.

PREPARE

3-123. Preparation actions are performed by the platoon to improve its ability to execute an operation. The platoon's success during missions depends as much on preparation as planning. Activities specific to preparation include the following:

- Revising and refining the plan.
- Rehearsals.
- Sustainment preparations (Classes I, III, V).
- Equipment maintenance and PMCS.
- Confirm boresight and test fire weapons.
- Troop movements.
- PCCs and PCIs.
- Subordinate confirmation briefs and backbriefs.

3-124. While preparing, the platoon leader must receive the most current intelligence updates from the commander and the BN's intelligence cell. The platoon leader plans troop movement, which is the movement of Soldiers and units from one place to another by any available means (see FM 3-90), in accordance with the company OPORD. They request any updated imagery from higher HQ to develop situational awareness and make any adjustments to the final plan. The platoon leader communicates any intelligence updates on the enemy situation to their subordinates and receives a backbrief to confirm their understanding.

REHEARSALS

3-125. The platoon uses rehearsals to help understand its roles in upcoming operations, practice complicated tasks, and ensure equipment and weapons function properly. Following the last company rehearsal, the platoon should conduct a final rehearsal of its own to incorporate adjustments to the company scheme of maneuver. The platoon rehearsal should cover the following subjects:

- Movement from current positions.
- Routes (to include passage points, contact points, checkpoints, and casualty collection points [CCPs]).
- Transition from traveling to bounding overwatch at the PLD.
- Actions on contact, based on where enemy contact is likely and expected.
- Actions on the objective.
- CASEVAC.
- Communications: primary, alternate, contingency, and emergency (PACE).
- Sustainment plan priority (Class III, Class V).

- Recovery plan.
- Consolidation and reorganization.

EXECUTION

3-126. The platoon synchronizes its actions with adjacent and supporting units, maintaining contact and coordination as prescribed in orders and unit SOP. The company commander synchronized an MTC utilizing graphic control measures. The platoon leader should nest the graphic control measures with the commander. The following paragraphs discuss executing MTC in a four-step sequence.

FIND THE ENEMY

3-127. The platoon leader uses all available sources of combat information to find the enemy's location and dispositions, which ensures that they can commit forces under optimal conditions. The optimal conditions could be making and maintaining contact with the smallest element possible. This allows the commander to develop the situation before committing the main body.

FIX THE ENEMY

3-128. *Fix* is a tactical mission task in which a unit prevents the enemy from moving from a specific location for a specific period (FM 3-90). Once contact is made, the platoon brings overwhelming fires onto the enemy to prevent them from conducting a spoiling attack or organizing a coherent defense. The security force maneuvers as quickly as possible to find gaps in the enemy's defenses.

3-129. The platoon conducts maneuvers at a high tempo the enemy cannot match so success depends upon the platoon's ability to rapidly suppress or immobilize enemy forces. The security force does not allow the enemy to maneuver against the main body. The organization, size, and combat power of the security force are major factors determining the size of the enemy force it can defeat without deploying the main body.

3-130. The techniques the leader employs to fix the enemy when both forces are moving are different than those employed when the enemy force is stationary during the meeting engagement. In both situations, when the security force cannot overrun the enemy by conducting a hasty frontal attack, a portion of the main body is deployed. When this occurs, the unit is no longer conducting MTC but an attack.

FINISH THE ENEMY

3-131. If the security force cannot overrun the enemy with a frontal attack, the main body leader quickly maneuvers the main body to conduct a penetration or envelopment that overwhelms the enemy force before it can react or reinforce. The commander will likely direct the security force to continue to fix by using support by fire or attack by fire. The leader attempts to defeat the enemy in detail while still maintaining the momentum of advancement. After an attack, the main body leader resumes the MTC. If the enemy is not defeated, three main options exist: bypass, transition to a more deliberate operation, or conduct some type of defense.

FOLLOW THROUGH

3-132. If the enemy is defeated, the platoon transitions back into MTC and continues to advance. The MTC terminates when the unit reaches the final objective or LOA, or transitions to a more deliberate operation, defense, or retrograde.

3-133. It is possible that sufficient intelligence on enemy composition and disposition will emerge during an MTC that gives the commander the choice to continue or change the plan. The friendly force commander has the option to shift from an MTC to a hasty attack prior to making contact with the enemy. If so, the operation would still follow this framework.

SECTION V – ATTACK

3-134. A tank platoon in the attack can generate massive direct firepower on an objective. Platoons normally conduct an attack as part of a company. A successful attack requires detailed planning, synchronization, and rehearsals. The company commander designates platoon objectives with a task and purpose for its assault, support, reserve, and if necessary, breach elements. To ensure synchronization, all leaders must know the location of their subordinates and adjacent units during the attack.

COMMON CONTROL MEASURES FOR THE ATTACK

3-135. The commander assigns the AO to units conducting offensive operations. If necessary, a commander can assign an area (zone or AO) or use axis of advance, direction of attack, routes, or additional PLs to further control maneuver forces. Within these assigned areas, units at a minimum, designate these control measures:

- A PL as the LD, which may also be the line of contact.
- The time to initiate the operation.
- The objective.

3-136. In the company OPORD, platoons will be given general control measures necessary to control an attack. Short of the LD, platoons may have pre-designated AAs and attack positions where they prepare for offensive actions or wait for established required conditions to initiate the attack. Beyond the LD, platoons may designate checkpoints, PLs, PLDs, assault positions, DFCMs, and indirect-fire support coordination measures. Between the PLD and the objective, units can use a final coordination line, assault positions, support by fire and attack by fire positions, and a time of assault to further control the final stage of their attacks. Beyond the objective, commanders can impose an LOA if they do not want their units to conduct exploitation or a pursuit or template where they want their forces to position after the completion of the attack such as a BP or blocking position.

3-137. Units increase control over the movement of all attacking elements in attacks during limited visibility conditions. Typically, they impose additional control measures beyond those used in daylight attacks. These additional measures may include using a PD and the direction of attack.

DELIBERATE AND HASTY OPERATIONS

3-138. Attacks are characterized as hasty or deliberate with the primary difference between them being the extent of planning and preparation. A *deliberate operation* is an operation in which the tactical situation allows the development and coordination of detailed plans, including multiple branches and sequels (ADP 3-90). A *hasty operation* is an operation in which a commander directs immediately available forces, using fragmentary orders, to perform tasks with minimal preparation, trading planning and preparation time for speed of execution (ADP 3-90). They include published, detailed orders with multiple branches and sequels, detailed knowledge of all aspects of enemy dispositions, a force that has been task organized specifically for the operation, and the conduct of extensive rehearsals. Attacks are either force- or terrain-oriented, and the enemy can be stationary or moving.

PLAN

3-139. The planning phase begins when the platoon receives the WARNORD or OPORD from the commander. During this phase, the platoon leader conducts TLPs as outlined in chapter 2. After they issue the WARNORD, the platoon leader directs the preparation of mission-essential equipment and initiates rehearsals of tactical movement and battle drills. These rehearsals allow the platoon to begin preparing for the mission. Once the platoon leader completes the plan, rehearsals are matched to the actual terrain and anticipated actions on contact with the enemy. The platoon leader directs the plan for PCCs, PCIs, time, location, and areas of emphasis for inspections.

3-140. In the plan for an attack, the platoon leader seeks to surprise the enemy by choosing an unexpected direction, time, type, or strength for attacking. Surprise delays enemy reactions, overloads and confuses enemy mission command, and reduces the coherence of the enemy's defensive operations. The leader can achieve tactical surprise by attacking in bad weather and over unexpected terrain, conducting feints and demonstrations. Platoons do this while maintaining a high tempo, destroying enemy forces.

3-141. In attack planning, the platoon leader must understand and plan how and where to mass the platoon's direct fires. In developing this plan, the platoon leader should consider where to employ tank sections, and how to array the platoon to achieve massed fires on the enemy. The platoon leader should understand the principles of direct fire planning and the appropriate fire commands and DFCMs necessary to initiate, focus, distribute, and shift the platoon's direct fires. The platoon leader should understand where planned fires will occur and where potential contact may occur, requiring action or contact drills or other means of directing the platoon's fires. Critical to the plan is understanding how to integrate the fires of the tanks with the available indirect fires. The platoon leader must be deliberate and detailed in the planning of DFCMs for the tanks and indirect fire control measures for any assets available.

3-142. The platoon leader or the company FSO often will find themselves as the observer and executor of company-level fires. Understanding the concept of echelon fires is critical for indirect-fire plan to be synchronized with the maneuver plan. The purpose of echeloning fires is to maintain constant fires on a target while using the optimum delivery system up to the point of its risk estimate distance in combat

operations or minimum safe distance in training. Echeloning fires provides protection for friendly forces as they move to and assault an objective, allowing them to close with minimal casualties. It prevents the enemy from observing and engaging the assault by forcing the enemy to take cover, allowing the friendly force to continue the advance unimpeded.

3-143. In planning, the leaders must focus on routes, formations, and navigational aids they will use to traverse the ground from the LD or PD to the objective. Some terrain locations may require the attacking unit to change its combat formation, direction of movement, or movement technique when it reaches those locations. The unit can post guides at these critical locations to ensure maintaining control over the movement.

PREPARE

3-144. Attacks are best organized and coordinated in AAs. Leaders should continue TLPs and priorities of work to the extent the situation and mission allow before moving to attack positions. These preparations include but are not limited to—

- Protecting the force.
- Conducting AA procedures.
- Conducting TLPs and sustainment activities.
- Performing reconnaissance.
- Refining the plan.
- Issuing OPORD or FRAGORD.
- Conducting boresight and test fire of all weapons systems.
- Conducting rehearsals to include movement and actions on the objective.
- Conducting PCCs and PCIs.
- Conducting meal and rest plan as necessary.

3-145. The platoon leader and subordinate leaders exercise and refine the maneuver and fire plans during rehearsals, which are an important part of ensuring the plan's coordination and synchronization. As part of the rehearsal process, the platoon leader reviews the anticipated actions with leaders to ensure all understand the plan, the relationship between fire and movement, and the synchronization of critical events. These critical events include the following:

- Moving from the AA to the LD.
- Uncoiling from the AA.
- Moving from the LD to the PLD.
- Maneuvering from the PLD to occupying support by fire positions.
- Occupying support by fire positions.
- Executing actions on contact: planned or unplanned.
- Executing the platoon's direct-fire plan.
- Conducting the breach.
- Assaulting the objective.
- Consolidating on the objective.
- Exploiting success or pursuing a withdrawing enemy.
- Executing actions of echelon reserves.
- Transitioning to a follow-on posture or subsequent mission.

3-146. The platoon should conduct rehearsals under as many types of adverse conditions as possible with time and other restraints to identify and prepare to cope with problems. At the platoon, the rehearsal includes battle drills, such as creating lanes through minefields.

3-147. As part of TLPs, leaders should conduct a personal reconnaissance of the actual terrain when it will not compromise operations security (OPSEC) or result in excessive risk to leaders. Modern information systems and maps can enable leaders to conduct a reconnaissance when a physical reconnaissance is not practical. If a limited-visibility attack is planned, they should reconnoiter the terrain at night.

EXECUTE

3-148. The platoon conducts tactical movement as part of the company plan under supporting fires using a combination of traveling, traveling overwatch, and/or bounding overwatch movement techniques. The platoon leader transitions the platoon from movement to maneuver at a point either identified by the company commander during their TLPs, or when the platoon makes contact with the enemy, to reach its objective to support the company attack. During the movement or maneuver, the company commander may designate support by fire positions to protect friendly forces with direct fires. As the company maneuvers, it employs both direct and indirect fires to destroy, suppress, neutralize, or obscure the enemy positions. If detected early, the platoon concentrates direct and indirect fires, establishing a base-of-fire, and maneuvers to develop the situation and regain the initiative.

3-149. The LD is normally a PL where elements of the attacking force transition to movement techniques in preparation for contact with the enemy. Before leaving the AA, the platoon leader should receive updated information on enemy forces, friendly forces, and the terrain. The platoon leader then disseminates this to the section leaders and tank commanders to keep them abreast of the situation.

3-150. The platoon moves forward from the AA to the LD, usually as part of a company formation, along a planned, timed, and rehearsed route. The platoon leader must ensure that it crosses the LD at the designated PD. They time the move from the AA beforehand, so the lead section crosses the PD at the time of attack. The company commander will direct if the platoon is to halt in an attack position. If the platoon leader must halt in an attack position, they place the platoon in a coil or herringbone formation, weapons are in weapons safety posture RED (see appendix A for more information on weapons safety posture) and weapons hold status until the platoon crosses the LD unless otherwise directed by the commander. (See DFCMs for weapons safety postures.)

FIND THE ENEMY

3-151. Gaining and maintaining contact with the enemy (when the enemy is determined to hide, deny, or break contact) is vital to the success of an attack. As platoons move from the LD and cross the PLD towards the objective and as current intelligence and relevant combat information on the enemy is updated, the enemy situation generally becomes clearer. Platoon leaders and subordinate leaders, through actions on contact, rapidly develop the situation in accordance with the company commander’s plan and intent for the attack.

Line of Departure to the Assault Position

3-152. The platoon leader directs the movement of the platoon through checkpoints along the route. During movement, they ensure the platoon navigates from checkpoint to checkpoint or PL by using basic mounted land navigation skills. The platoon leader ensures their platoon is employing the correct formation and technique for the movement. During movement, the platoon uses cover and concealment (when necessary) and, if detected, smoke and supporting fires. The platoon communicates primarily by frequency modulation (FM) radio but should employ other methods in the PACE plan as appropriate.

3-153. The platoon leader plans to transition the platoon from movement to maneuver at the PLD. The platoon leader is responsible for designating the most effective movement technique and movement formation for the given situation and METT-TC (I) considerations.

Assault Position to the Objective

3-154. The assault position is the last covered and concealed position before reaching the objective. The platoon may move through the assault position at a PLD to begin the assault. The platoon leader may stop in the assault position and designate a PLD between the assault position and the objective. The PLD between the assault position and the objective is where the assault, support, and security elements move to their respective positions.

FIX THE ENEMY

3-155. By fixing enemies in each platoon's zone, the objective is cumulatively isolated which denies enemy freedom of maneuver. This prevents an enemy withdrawal from the objective and enemy reinforcement to the objective. Platoons further isolate the objective area by using both indirect and direct fires to suppress enemy forces and enable friendly forces to close with the enemy and finish them. The platoon leader develops a plan for time of suppression on the objective to conserve ammunition and ensure they effectively isolate the objective.

3-156. A tank platoon will either be a support element or an assault element within a company attack. Within a larger BN-level attack, a tank platoon and their company would likely be a part of the support element, or breach force if necessary, and a mechanized Infantry company would be utilized as the assault force seizing the objective. A tank platoon and its respective Armor company have limited assets to completely isolate an objective and must instead rely upon adjacent units such as Cavalry troops or mechanized Infantry companies to complete isolation with dismounts. (See appendix G for more information.)

FINISH THE ENEMY

3-157. During the assault, the attacking force maneuvers to gain positional advantage to seize, retain, and exploit the initiative while avoiding the enemy's defensive strength. The attacker employs tactics defeating the enemy by attacking through a point of relative weakness, such as a flank or the rear. The keys to success are, first, maintaining a sufficient volume of suppression to enable continued maneuver through the objective,

and then to strike hard and fast, overwhelm a portion of the enemy force, and quickly transition to the next objective or phase, thus maintaining the momentum of attack without reducing the pressure.

ASSAULTING AN OBJECTIVE AS A PLATOON

3-158. When conducting the assault of a platoon objective, a technique is to designate the B section as the support element and to designate the A section as the assault element which advances to and across the objective. When the assault element is set, the support element conducts a support by fire, placing suppressive fires on the objective and monitors the assault element's maneuver. The support element shifts, lifts, or ceases fire according to the plan and the situation to prevent fratricide.

3-159. When conducting a company attack or platoon assault, direct fire and indirect fires need to be synchronized and allow the closest possible integration of weapons systems outside of the SDZ. This is achieved by using markings, established TRPs, signals, and cross talk. DFCMs enable the assaulting section and the supporting section to sustain an overwhelming volume and rate of fire to suppress and destroy the enemy on the objective. Furthermore, when assaulting section moves across the objective, the supporting section must be able to identify the assault element while it maneuvers across the objective. When SDZs permit, the supporting section shifts their fires to another portion of the objective that is safe to engage.

3-160. The support element monitors the forward progress of the assault element and keeps shifting suppressive direct fire at a safe distance in front of them. When possible, the FSO echelons indirect-fire weapons systems to a smaller system and shifts or lifts accordingly. Once the assault element has seized the initial foothold on the objective, the breach element may then move to the objective to reinforce the assault element. The assault element conducts fire and movement across the objective until it clears the objective or reaches the LOA. (See appendix G for more information.)

3-161. As this occurs, the supporting section closely observes the progress of the assault elements to ensure no loss in momentum and that assault and breach elements do not cross in front of the support by fire unless that position has appropriately shifted, lifted, or ceased fire. As the assaulting section approaches the SDZ of the direct fires of the support element, the platoon leader has the support element shift, lift, or cease fire, or orders the supporting section to displace to a position where they can continue support by fire.

3-162. All communications between the support and assault elements are by FM radio or visual signals. If any tank commander observes problems, they report them to the platoon leader. The platoon leader uses this information in conjunction with what they see on the objective to control the assault. (See appendix G for more information.)

FOLLOW THROUGH

3-163. Once an enemy is neutralized or destroyed, actions by the platoon are not complete. To prevent a successful enemy withdrawal or counterattack, the platoon establishes security and maintains constant pressure on any enemy forces within the platoon's zone, capitalizing on successful assault. Before starting to consolidate and reorganize, platoons are vulnerable to enemy counterattack and indirect fire. Platoons must immediately establish a hasty defense and prepare for a possible enemy assault.

When applicable, the tank platoon conducts a battle handover to an adjacent unit to clear the objective or surrounding terrain.

SECTION VI – OPERATIONS DURING LIMITED VISIBILITY

3-164. Units conduct limited visibility operations for various reasons, such as to achieve surprise against the enemy or gain a position of advantage by means of stealth. Darkness may partially limit the ability of tank crews to see the battlefield. There are, however, other conditions that restrict visibility, and the most common are the following:

- Dust, smoke, and other obscuration factors caused by weapon firing and movement of platoons and equipment.
- Weather conditions, including rain, snow, fog, and blowing sand and dust.

3-165. The tank platoon must train to fight effectively in all types of visibility conditions by using its technology and basic combat skills to sustain continuous operations and destroy the enemy.

EQUIPMENT

3-166. The tank platoon is equipped with several types of equipment for use in limited visibility conditions. The following paragraphs describe this equipment.

DRIVER'S NIGHT-VISION VIEWER

3-167. This sight is either passive (the vehicle visualization system 2/driver's vision enhancer) or thermal (the driver's thermal viewer). It enhances the driver's ability to move the tank and enables the driver to help with target acquisition and to observe rounds in darkness or other limited visibility conditions.

NIGHT VISION DEVICES

3-168. This passive-vision device enables the tank commander to observe from the opened hatch to control movement and provide close in security. There are normally two night-vision devices per tank.

PAS-13

3-169. The AN/PAS-13 Thermal Weapon Sight can either be mounted on a .50 caliber machine gun or used as a standalone observation device. It provides a capability that increases surveillance and target acquisition range and penetrates obscurants either day or night.

GUNNER'S PRIMARY SIGHT AND COMMANDER'S EXTENSION

3-170. This integrated thermal sight gives the gunner and tank commander the capability to see and engage targets under almost any visibility condition.

COMMANDER'S INDEPENDENT THERMAL VIEWER

3-171. The commander's independent thermal viewer (CITV) is a fully integrated, full target engagement sight on the M1 tank. It provides the tank commander with a redundant target acquisition and surveillance capability equivalent to that of the gunner's primary sight with the thermal imaging system. The CITV extends the tank

commander's field of view, giving the tank commander observation capability independent of the gunner's primary sight.

COMMON REMOTELY OPERATED WEAPON STATION

3-172. The Common Remotely Operated Weapon Station (CROWS) is designed for remote operation of .50 caliber and M240B machine guns. It mounts on an M1 tank. Operators inside the tank can observe, select, and engage moving and static targets with high precision during night and day, either while stationary or while on the move.

VEHICLE IDENTIFICATION

3-173. The problem of vehicle identification is compounded in limited visibility conditions. Tank commanders must be able to distinguish vehicles of their platoon and company and of other friendly elements from those of the enemy. Most unit SOPs cover vehicle marking and identification procedures. Leaders must consider METT-TC (I) when determining these techniques. In addition, the platoon can use the following techniques to enhance command and control and to help prevent fratricide:

- Attach color-coded lights, chemical lights, or IR chemical lights to the rear of the turret or the hull.
- Use combat vehicle identification panels.
- Use range flags.
- Replace the brake light cover with color-coded plastic.
- Use luminous or thermal tape to outline vehicles or to make battle boards.
- Use radio and digital systems to provide the platoon with frequent updates of friendly and enemy unit locations.

TACTICAL MOVEMENT

3-174. The fundamentals for executing tactical movement and attacks discussed elsewhere in this publication 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

3-175. During the planning phase, the platoon leader must pay particular attention to routes, formations, and navigational aids. The platoon leader must conduct a thorough reconnaissance to identify locations where the platoon could become disoriented. The reconnaissance must also focus on finding rough or restricted terrain that is even more difficult to negotiate with limited visibility. Whenever possible, elements conducting reconnaissance should mark important points or areas so that follow-on forces can recognize them under conditions of limited visibility. Such terrain may require a change in formation, movement technique, or employment of dismounted ground guides.

PREPARATION

3-176. In the preparation phase, the platoon leader conducts rehearsals in as many types of adverse conditions as possible to prepare the platoon for potential command and control problems. The platoon leader must stress light discipline. During PCCs and PCIs, the platoon leader or PSG views each tank using passive sight to ensure that

sources of light have been dimmed or covered so they are not visible to the enemy. During confirmation briefs and rehearsals, the platoon leader must ensure that all personnel understand the platoon's projected actions during each phase of the operation. One technique is to designate waypoints or PLs as trigger points for platoon actions.

EXECUTION

3-177. During the execution phase, tank commanders use the night vision devices and the CITV and drivers vision enhancer to help their drivers with navigation and to enhance situational understanding. The platoon leader must assume that the enemy possesses the same limited visibility observation capabilities as friendly units. 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 platoon vehicles is reduced to allow vehicles to observe each other and to decrease the time necessary to react to enemy contact.

3-178. When the platoon 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 platoon. The platoon must adhere strictly to applicable control measures, especially those covering the employment of direct fires and maintain strict situational understanding of friendly force locations.

SECTION VII – BATTLEFIELD OBSCURATION

3-179. Obscuration mission planning and execution, which is planned with the company FSO, can occur during the offense and the defense and can be very effective. Firing smoke on enemy positions can degrade the vision of gunners and known or suspected OPs, preventing them from seeing or tracking targets and, thereby, reducing their effectiveness. When employed against an attacking force, white phosphorous (WP) can cause confusion and disorientation by degrading the enemy's command and control capabilities, while friendly units retain the ability to engage the enemy using thermal sights and Standard Range Cards. Enemy vehicles become silhouetted as they emerge from the smoke. If smoke employment is planned and executed correctly, this occurs as the enemy reaches the trigger line.

PLANNING CONSIDERATIONS

3-180. Obscuration missions are important functions for mortars. Smoke missions must be planned well in advance so that the mortar carriers are loaded with a sufficient number of smoke rounds.

3-181. Atmospheric stability, wind velocity, and wind direction are the most important factors when planning target effects for smoke and WP mortar rounds. The effects of atmospheric stability can determine whether mortar smoke is effective at all or, if effective, how much ammunition is needed.

3-182. The terrain in the target area affects smoke and WP rounds. If the terrain in the target area is swampy, rain-soaked, or snow-covered, then burning smoke rounds may not be effective. These rounds produce smoke by ejecting felt wedges soaked in phosphorous. These wedges then burn on the ground, producing a dense, long-lasting cloud. If the wedges fall into mud, water, or snow, they can extinguish. Shallow water

can reduce the smoke produced by these rounds by as much as 50 percent. The terrain in the target area affects bursting WP rounds little, except that deep snow and cold temperatures can reduce the smoke cloud by about 25 percent.

EMPLOYMENT CONSIDERATIONS

3-183. Tanks have two independent smoke producing systems: smoke grenade launcher systems and smoke generating systems. These systems allow the tank platoon to produce local obscuration without the reliance of others.

3-184. The vehicle smoke grenade launchers can provide screening, incendiary, marking, and casualty-producing effect. They are often used while retrograding from a BP while in enemy contact. It produces a localized, instantaneous smoke cloud by scattering burning WP particles.

3-185. The smoke generating system is incorporated into the exhaust system. Fuel is sprayed into the rear section of exhaust duct and vaporized. When exhausted to air, fuel condenses and creates a smoke cloud. (See TM 9-2350-388-10-1 for more details.)

Note. If using JP8, smoke will not be produced by the smoke generator.

3-186. The 120-mm heavy mortar and 81-mm medium mortar WP and red phosphorous rounds produce a long-lasting and wide area smoke screen and can be used for incendiary effects, marking, obscuring, screening, and casualty producing. The 60-mm lightweight company mortar WP round can be used as a screening, signaling, and incendiary agent. All mortar smoke rounds can be used as an aid in target location and navigation.

SECTION VIII – TRANSITIONS

3-187. During the planning of offensive operations, the platoon leader must discern from the company OPORD the potential follow-on missions and begin to plan how to achieve them. When planning for future operations, the platoon leader must be forward thinking and determine the possible timeline, type of operation, and location of follow-on missions. Platoons conduct consolidation, reorganization, and transitions which best facilitate future operations and provide adequate protection. Tank platoons halt an offensive operation when they accomplish the mission or receive a change in mission from higher HQ. The platoon conducts consolidation and reorganization to ensure that it is prepared to destroy an enemy counterattack or is prepared to resume the attack as soon as possible.

CONSOLIDATE AND REORGANIZE

3-188. Once enemy resistance on the objective has ceased, the platoon quickly consolidates to defend against a possible counterattack and prepares for follow-on missions. The platoon leader assesses and reports the status of the platoon in accordance with company SOP.

3-189. *Consolidate* is to organize and strengthen a captured position to use it against the enemy (FM 3-90). During consolidation, the platoon leader determines if their sections

and tanks are positioned according to the original plan or to changes in the factors of METT-TC (I). Once the platoon is positioned to defend against an enemy counterattack, tank commanders create sector sketches and submit them to the platoon leader. This information allows the platoon leader to verify the location and orientation of elements when the situation does not allow them to walk the entire security perimeter. As a minimum, tank commanders provide the platoon leader with the location and sectors of their key weapons. The platoon leader must use the TLPs to plan and prepare. The platoon leader ensures the platoon—

- Eliminates enemy resistance on the objective.
- Establishes security beyond the objective by securing areas that may be the source of direct enemy fires or enemy artillery observation.
- Brings the tanks forward into designated positions.
- Establishes additional security measures, such as OPs and patrols.
- Prepares for and assists with the passage of follow-on forces (if required).
- Continues to improve security by conducting other necessary defensive actions.
- Adjusts final protective fires (FPFs).
- Secures detained personnel.

3-190. *Reorganization* are all measures taken by the commander to maintain unit combat effectiveness or return it to a specified level of combat capability (ATP 3-94.4). Reorganization is normally conducted concurrently with consolidation and comprises actions taken to prepare for follow-on operations. During reorganization, leaders identify and report losses. Tank commanders update their status reports. Tank commanders provide information on their fuel status. The PSG consolidates the reports, updates all platoon status reports, and sends a consolidated platoon report to the company commander and the 1SG. Based on the information in this consolidated status report, the platoon reorganizes personnel and redistributes ammunition, equipment, and other mission-essential items. As with consolidation, the platoon leader must plan and prepare for reorganization as they conduct their TLPs. They ensure the platoon is prepared to—

- Reestablish a chain of command.
- Provide essential medical treatment and evacuate casualties, as needed.
- Cross-level personnel and adjust task organization when necessary.
- Defend against an enemy counterattack.
- Conduct resupply operations, to include rearming and refueling.
- Redistribute ammunition.
- Conduct required maintenance and recovery.
- Prepare for follow-on missions.

CONTINUING OPERATIONS

3-191. At the conclusion of an engagement, the platoon may occupy a hasty or deliberate defense, or if ordered, transition to another offensive operation. The platoon leader considers the higher commander's concept of operations, friendly capabilities, and enemy situation when making this decision. All missions should include plans for exploiting success or assuming a defensive posture. The platoon should assume that the enemy will continue to engage in known friendly positions with indirect fires even if their attack has culminated.

3-192. The company commander may order the platoon to conduct a hasty operation (for example, a raid, spoiling attack, or retrograde) or participate in an MTC. Platoon leaders remain flexible and prepared for follow-on mission or plan to execute contingency plans in the commander's order. For all offensive operations, tank platoons must plan to exploit success. However, at the conclusion of an engagement, the unit may be forced to defend. For short defenses, units make use of existing terrain to enhance their survivability. If a longer defense is envisioned, engineer assets should immediately refocus their efforts on providing survivability support (BPs and similar activities). Engineer assets should do this even as they sustain mobility and integrate countermobility into the planned defensive mission. The platoon leader considers the higher commander's concept of the operation, friendly capabilities, and enemy situation when making the decision to defend or continue the offense.

Chapter 4
Defense

The immediate purpose of any defensive operation is to defeat an enemy attack. Maneuver units defend until they gain sufficient strength to attack. Additionally, units may undertake defensive operations to gain time, retain key or decisive terrain, attrit the enemy, economize forces, and develop conditions favorable for offensive operations. (See FM 3-90 for more information.) Normally, the defense alone cannot achieve a decision. However, it can set conditions for a counteroffensive or counterattack that enables Army forces to regain the initiative. This chapter covers basics of defense, common defensive planning considerations, forms of defense, EA development, and transitions.

SECTION I – BASICS OF THE DEFENSE

4-1. To ensure the success of the defense, the platoon leader must understand the characteristics of the defense and apply TLPs appropriately. The characteristics of the defense, from paragraphs 4-2 to 4-12, constitute the planning fundamentals for the tank platoon.

CHARACTERISTICS

4-2. Successful defenses employ the characteristics of disruption, flexibility, maneuver, mass and concentration, depth, preparation, and security. Defenders subvert an attacker's tempo, formations, and synchronization by countering their initiative and preventing them from massing overwhelming combat power. (See ADP 3-90 for more information.)

DISRUPTION

4-3. The tank platoon disrupts attackers' tempo and synchronization by preventing them from massing combat power. Disruptive actions attempt to unhinge the enemy's preparations and, ultimately, their attacks. Methods include defeating or misdirecting enemy reconnaissance forces, breaking up their formations, isolating their units, and impeding an enemy force's ability to synchronize its combined arms. Disruption attacks the enemy's will to fight and their means of effective command and control.

FLEXIBILITY

4-4. Defensive operations require flexible plans and adaptable units. Planning focuses on preparation in depth, and the ability to anticipate and react to changes on the battlefield. The platoon leader adds flexibility by designating alternate, supplementary, and subsequent positions, and integrating a counterattack plan. Thorough rehearsals of the plan and all likely contingencies are critical to an effective, flexible defense.

MANEUVER

4-5. Maneuver also allows the tank platoon to take full advantage of the AO and to mass and concentrate where and when desirable. Maneuver allows the platoon to achieve a position of advantage over the enemy to accomplish the mission.

MASSING AND CONCENTRATION

4-6. Platoons achieve mass and concentration by maximizing the number of tanks that can fire into an EA or that can move from primary positions to alternate and supplementary positions to concentrate fires on the enemy. To obtain an advantage at decisive points, defenders economize and accept risk in some areas, maneuvering to gain local superiority at the decisive point. Employment of obstacles, security, and fires can help in reducing risk.

OPERATIONS IN DEPTH

4-7. Simultaneous application of combat power throughout the defensive sector improves the chances for success while minimizing friendly casualties. Quick, violent, and simultaneous action throughout the depth of the company's defensive sector can hurt, confuse, and even paralyze an enemy force when they are most exposed and vulnerable. Such actions weaken the enemy's will and do not allow any early successes to build confidence. Operations in-depth prevent the enemy from gaining momentum in the attack. Synchronization of main and supporting operations facilitates mission success. The platoon leader uses varying weapons ranges and the positioning of tanks in primary, alternate, and subsequent BPs to create opportunities for depth.

PREPARATIONS

4-8. The ability to set conditions on the battlefield prior to enemy contact is an inherent strength of the defense. Preparation for defensive operations includes in-depth and continuous activities such as EA development. The platoon leader must conduct reconnaissance of the assigned area and select positions of advantage that allow the massing of fires on likely avenues of approach. The platoon uses available time to combine natural and man-made obstacles to canalize attacking forces into an EA. The platoon leader uses the time available to coordinate and rehearse actions on the ground, gaining intimate familiarity with the terrain, emplacing tanks, and integrating available indirect-fire systems. The platoon will continue defensive preparations in-depth, even as the close engagement begins.

4-9. During the preparation of the defense, time management is a critical task. Actions the platoon leader can make effective use of the time available include the following:

- Immediately prepare and issue WARNORDs upon receipt of higher WARNORD or OPORD.
- Issue early guidance for rehearsals and PCIs.
- Conduct reconnaissance of assigned positions prior to preparing the platoon OPORD.
- Start work immediately on known requirements such as command-directed obstacles.
- Closely manage the digging of BPs by engineering assets.
- Manage the rest plan to maximize usage of limited visibility hours.

- Issue clear guidance for priorities of work, tied to the published timeline, and ensure subordinate leaders execute them.
- Delegate requirements to subordinate leaders.
- Ensure continuous improvement of defensive positions for the duration of the operation.

4-10. The company commander must define what tasks subordinate units must accomplish before they can occupy the defense. The commander determines when units must occupy the defense to have enough time to complete the preparation priority of work before the defend time. Based on the time assigned by the company commander, the platoon leader and PSG establish priorities of work for their platoon.

SECURITY

4-11. *Security* is measures taken by a military unit, activity, or installation to protect itself against all acts designed to, or which may, impair its effectiveness (JP 3-10). Security includes a wide range of activities such as preventing unauthorized access into secure areas or establishing perimeter security around an operating base. Security is inherent in all operations and is always the first priority of work. Furthermore, security is the responsibility of every Soldier and unit whereas security operations are distinct missions.

4-12. Security prevents enemy intelligence, surveillance, and reconnaissance assets from determining the company's locations, strengths, and weaknesses. These measures also provide early warning and continuously disrupt enemy attacks. Security efforts preserve combat power.

4-13. The company or higher may direct security operations, for instance a screen or counterreconnaissance operation. Regardless of external security operations, the platoon leader is responsible for directing appropriate security measures within the platoon's defensive sector, to identify and target enemy forces, deny them freedom of movement, and provide early warning for friendly forces.

TYPES OF DEFENSIVE OPERATIONS

4-14. There are three basic defensive operations: area defense, mobile defense, and retrograde. Each operation contains similarities, and can have both static and dynamic aspects, but they are distinct concepts with unique problem sets. (See FM 3-90 for more information.)

4-15. Tank platoons serve as the primary maneuver element for the Armor company. As part of a defense, the tank platoon can defend, delay, withdraw, counterattack, and perform security operations. As part of the company's defense in the main battle area, the tank platoon usually defends to—

- Gain time.
- Retain essential terrain.
- Support other operations.
- Preoccupy the enemy in one area while friendly forces attack another.
- Attrit enemy forces at a rapid rate while reinforcing friendly operations.

AREA DEFENSE

4-16. An *area defense* is a type of defensive operation that concentrates on denying enemy forces access to designated terrain for a specific time rather than destroying the enemy outright (ADP 3-90). In an area defense, the tank platoon concentrates on denying enemy forces access to designated terrain for a specific time, limiting their freedom of maneuver, and channeling them into EAs. The platoon retains terrain that the attacker must control to advance. The enemy force is drawn into a series of EAs where it is attacked from mutually supporting positions and destroyed, largely by fires.

METHODS OF AN AREA DEFENSE

4-17. Two methods of defensive maneuver within an area defense are defense in-depth and forward defense. The tank platoon is expected to do both as part of larger organization. Commanders usually select the method of area defense to use, and the higher commander often defines the general defensive scheme for the Armor company. The specific mission may impose constraints such as time, security, and retention of certain areas that are significant factors in determining how the company and platoon will defend.

VARIATIONS OF AREA DEFENSE

4-18. The platoon executes the defense using one or a combination of the following forms:

- Defend a linear obstacle.
- Conduct a perimeter defense.
- Conduct a reverse-slope defense.

DEFEND A LINEAR OBSTACLE

4-19. The main purpose of the defense of linear obstacles, as with any defense, is to force or deceive the enemy into attacking under unfavorable circumstances. The platoon can conduct either an area or perimeter defense along or behind a linear obstacle. An area defense is preferred because it accepts less risk by not allowing the enemy to cross the obstacle. Linear obstacles such as mountain ranges or rivers generally favor forward defense. The key to success in a defense of a linear obstacle is maintaining the integrity of the defense by preventing the enemy from securing a foothold on the friendly side of the obstacle. Defending units integrate additional obstacles to stop enemy forces, channel them into planned EAs, and to further enable the integrity of the linear obstacle. The defense of a linear obstacle usually forces the enemy to deploy, concentrate forces, and conduct breaching operations. (See figure 4-1.) (See ATP 3-21.71 for more information.)

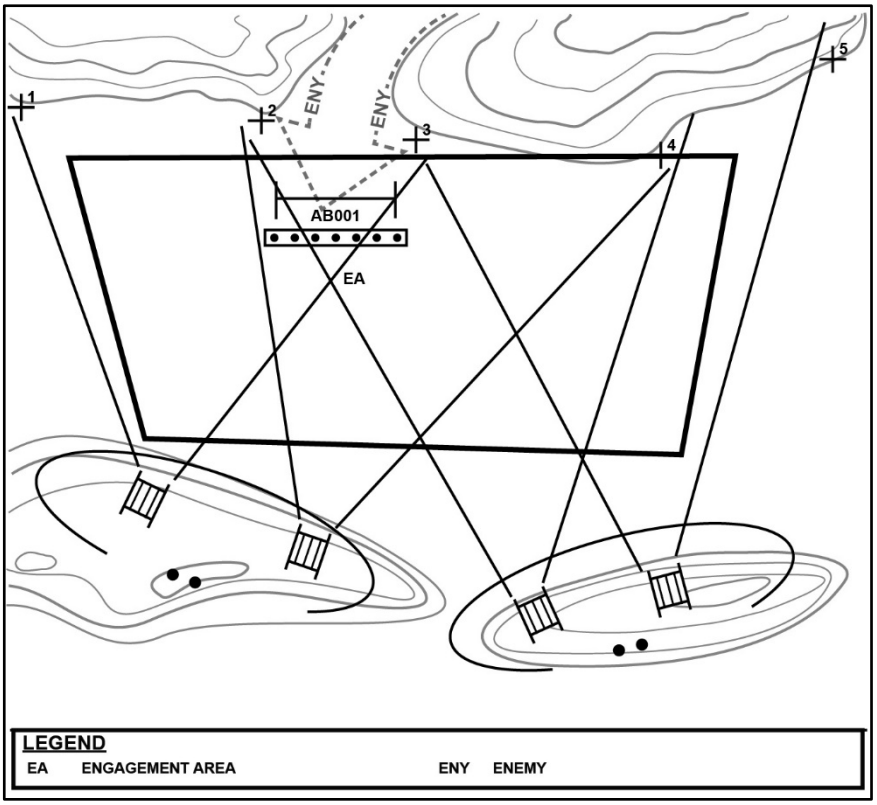


Figure 4-1. Defend a linear obstacle

CONDUCT A PERIMETER DEFENSE

4-20. A perimeter defense is oriented in all directions. (See figure 4-2, page 122.) The platoon can employ the perimeter defense as an option when conducting an area defense. The prerequisites for a successful perimeter defense are aggressive patrolling and security operations outside the perimeter. The platoon leader in a perimeter defense designates the trace of the perimeter, BPs, contact points, and lateral and forward boundaries. When the platoon leader determines the most probable direction of an enemy attack, that part of the perimeter covering that approach may be reinforced with additional resources. The platoon leader increases the effectiveness of the perimeter by tying it into a natural or man-made obstacles, which allows the defending unit to concentrate its combat power in more threatened areas.

4-21. The perimeter defense is a relatively uncommon mission for a tank platoon because it allows only limited maneuver and limited depth. The platoon may be called on to conduct a perimeter defense under a variety of conditions, such as—

- Holding critical terrain in areas where the defense is not tied in with adjacent units.
- Defending in place when it has been bypassed and isolated by the enemy.
- Conducting occupation of an independent AA or reserve position.

- Concentrating fires in two or more adjacent avenues of approach.
- Defending support or sustainment assets.
- Occupying an AA when mounted.

4-22. A perimeter defense differs from other defenses in that—

- The trace of the platoon is circular or triangular rather than contiguous.
- Unoccupied areas between tanks are smaller.
- The bulk of combat power is on the perimeter.

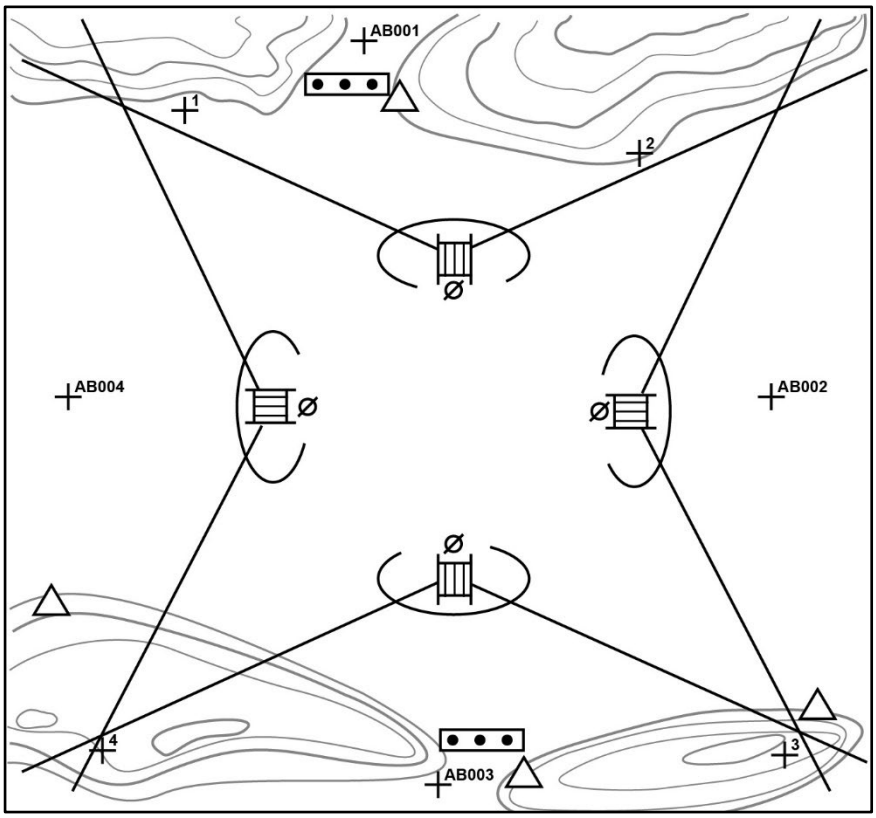


Figure 4-2. Perimeter defense

CONDUCT A REVERSE SLOPE DEFENSE

4-23. The platoon leader organizes a reverse-slope defense on the portion of a terrain feature or slope with a topographical crest that masks the main defensive positions from enemy observation and direct fire. (See figure 4-3.) The platoon leader gives up their long-range fires to take advantage of the cover provided by the terrain. Although some units and weapons might be positioned on the forward slope, the crest, or the counter slope (a forward slope of a hill to the rear of a reverse slope), most forces are on the reverse slope. The key to this defense is control of the crest by direct fire.

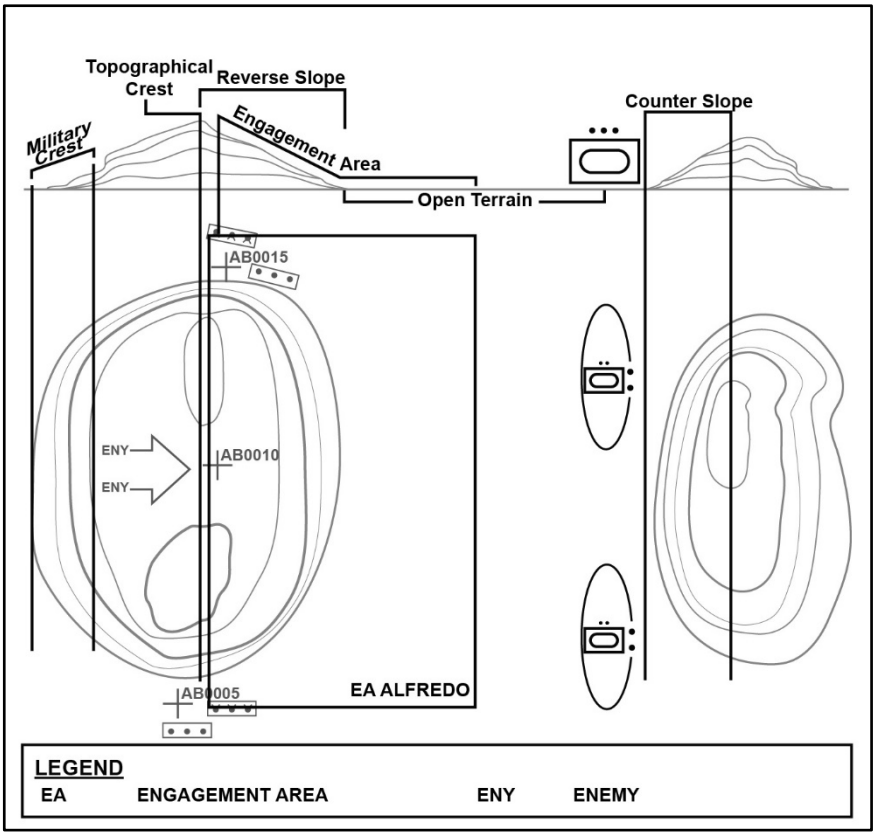


Figure 4-3. Reverse slope defense

4-24. The tank platoon leader can execute a reverse slope defense when—

- Enemy fire makes the crest and front slope untenable.
- Lack of cover and concealment on the crest and front slope makes it untenable.
- The front slope has been lost or not yet been gained.
- The front slope is exposed to enemy direct-fire weapons fired from beyond the effective range of the defender's weapons.
- Moving to the reverse slope removes the attacker's standoff advantage.
- The terrain on the reverse slope provides better fields of fire than the forward slope.
- Surprising and deceiving the enemy as to the true location of the platoon's defensive positions is essential.
- Enemy weapons systems have overmatch in range and lethality.

4-25. When executing a reverse slope defense, the leader places special emphasis on a direct and indirect-fire support plan to prevent the enemy's occupation of the crest of the hill, and OPs or reconnaissance elements on the forward slope to provide observation across the entire front and security to the main BPs.

4-26. These are some special considerations when defending a reverse slope to include the following:

- Observation of the enemy is more difficult.
- Platoon in BPs cannot see forward of the crest making it harder to determine where the enemy is as they advance without using Ops or other reconnaissance assets.
- OPs must be placed forward of the topographic crest for early warning and long-range observation.
- OPs may not have the capability to push much further than the topographical crest if their communication equipment cannot reach the force on the reverse slope.
- Movement from primary positions to alternate, supplementary, or subsequent positions may be more difficult.
- Displacement from the position might be more difficult.
- Fields of fire are usually short.
- If the enemy gains the crest, they can assault downhill, which may give the enemy a psychological advantage.
- If OPs are insufficient or improperly placed, the defenders might have to fight an enemy who suddenly appears in strength at close range.
- The defender ideally engages first.

TECHNIQUES OF CONDUCTING AN AREA DEFENSE

4-27. The tank platoon can conduct an area defense using one of three basic techniques: defend a BP, defend a sector, and defend a strong point. Paragraphs 4-28 to 4-35 describe each technique.

DEFEND A BATTLE POSITION

4-28. A BP is a general location and orientation of forces on the ground, from which units defend. The techniques allow units to concentrate fires or place units in an advantageous position for a counterattack. (See BPs for definitions.) The purposes for defending a BP are to—

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

4-29. The tank platoon can maneuver in and outside of the BP as necessary to adjust fires or to seize opportunities for offensive operations within the commander's intent. When the platoon leader maneuvers outside of the BP, the company commander must be notified.

Battle Positions

4-30. A *battle position* is a defensive location oriented on a likely enemy avenue of approach (ADP 3-90). A BP is generally only used during defensive operations. BP is a symbol that depicts the location and general orientation of most of the defending forces. A platoon leaders use of a BP does not direct the position of the subordinate's entire

force within its bounds since it is not an assigned area. There are five kinds of BP: primary, alternate, supplementary, subsequent, and strong point. When assigning BPs, the platoon leader designates the primary BP. The section leaders designate and prepare alternate, supplementary, and subsequent positions as time and other resources permit and if the terrain or situation requires them. (Figure 4-4 depicts the five kinds of BPs.)

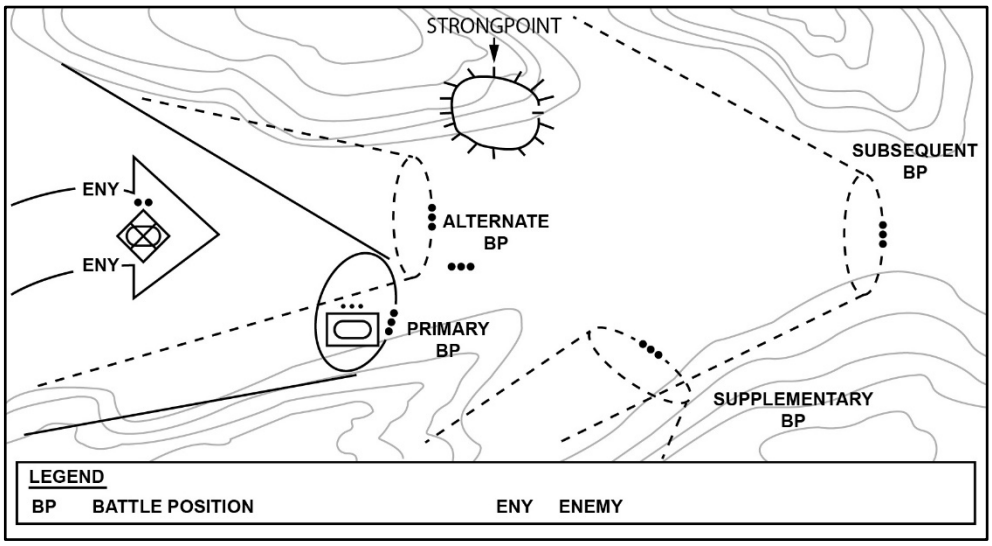


Figure 4-4. Five kinds of battle positions

Primary Position

4-31. The *primary position* is the position that covers the enemy's most likely avenue of approach into the assigned area (FM 3-90). The primary BP covers the enemy's most likely avenue of approach into the assigned area. It is the best position to accomplish the mission, such as cover an EA. The platoon leader assigns the primary BP to their sections.

Alternate Position

4-32. The *alternate position* is a defensive position that the commander assigns to a unit or weapon system for occupation when the primary position becomes untenable or unsuitable for carrying out the assigned task (FM 3-90). The alternate BP covers the same area as the primary BP but is occupied when the primary position becomes untenable or unsuitable for the section to carry out their assigned task. For example, a section occupies its alternate BPs when its primary BP becomes suppressed by enemy fire.

Supplementary Position

4-33. A *supplementary position* is a defensive position located within a unit's assigned area that provides the best sectors of fire and defensive terrain along an avenue of approach that is not the primary avenue where the enemy is expected to attack

(FM 3-90). For example, a section supplementary BP would cover an avenue approach on the flank of their position.

Subsequent Position

4-34. A *subsequent position* is a position that a unit expects to move to during the course of battle (FM 3-90). A planned and, to some extent, prepared location for a defense or delay that is behind the primary positions initially occupied for a defense. A defending unit may have a series of subsequent positions. Subsequent positions can be further organized into primary, alternate, and supplementary positions.

Strong Point

4-35. A *strong point* is a heavily fortified battle position tied to a natural or reinforcing obstacle to create an anchor for the defense or to deny the enemy decisive or key terrain (ADP 3-90). The mission to create and defend a strong point implies retention of terrain to stop or redirect enemy formations. A strong point requires extensive time, engineer support, and Class IV resources to construct.

DEFEND A SECTOR

4-36. A defensive sector is an area designated by boundaries that define where units operate and the terrain for which it is responsible. A sector is an operational area assigned to a unit in the defense that has rear and lateral boundaries and interlocking fires. (See ADP 3-0.) This technique allows the unit to maintain flank contact, security, and ensures unity of effort within the scheme of maneuver. *Unity of effort* is the coordination and cooperation toward common objectives, even if the participants are not necessarily part of the same command or organization that is the product of successful unified action (JP 1, Volume 2). Sector boundaries never split an avenue of approach. Sectors are oriented on avenues of approach and are used when the commander wishes to allow maximum freedom of action. Platoons will start in their primary BPs and displace them to supplementary or subsequent BPs in accordance with established displacement criteria. Critical to a defense in sector is that defending units ensure they stay tied in with adjacent units when they displace to prevent gaps from emerging.

DEFEND A STRONG POINT

4-37. Defending a strong point implies retention of terrain with the purpose of stopping or redirecting enemy formations. Defense of a strong point is an uncommon mission for the tank platoon. Strong points sacrifice the mobility of the unit's organic weapon systems.

4-38. Defending strong points requires extensive engineer support to create obstacles and increase survivability efforts. This includes providing all assets overhead protection, trenches, and other protective construction using both natural and man-made terrain. The company prepares a strong point for all-around defense and incorporates the tank platoon into the defensive operation.

MOBILE DEFENSE

4-39. A *mobile defense* is a type of defensive operation that concentrates on the destruction or defeat of the enemy through a decisive attack by a striking force (ADP 3-90). In a mobile defense, the defender withholds a large portion of available forces for use as a striking force in a counterattack. The *striking force* is a dedicated counterattack force in a mobile defense constituted with the bulk of available combat power (ADP 3-90). Mobile defenses require enough depth to let enemy forces advance into a position that exposes their flanks and support area to counterattack by the striking force. The defense separates attacking forces from their support and disrupts the enemy's mission command. As enemy forces extend themselves in the defended area, lose momentum and organization, the striking force surprise and overwhelm the enemy with a powerful counterattack. Larger formations, such as divisions, normally execute mobile defenses and the Armor company can be task organized as part of either the striking force or fixing force based on the brigade and BN missions.

4-40. As part of the fixing force, a tank platoon will defend within their sector, which might be larger than usual. As part of the striking force, the tank platoon plans, rehearses, and executes offensive operations. Platoons use the term 'striking force' rather than the term 'reserve' because 'reserve' indicates an uncommitted force. The striking force is a committed force that has the resources to conduct a decisive counterattack as part of the mobile defense.

RETROGRADE

4-41. A *retrograde* is a type of defensive operation that involves organized movement away from the enemy (ADP 3-90). The enemy may force a retrograde or the leader may execute it voluntarily. In either case, the higher commander of the force executing the operation must approve the retrograde.

4-42. Retrogrades are conducted to improve a tactical situation or prevent one from deteriorating. Retrograde operations gain time, preserve forces, place the enemy in unfavorable positions, or avoid combat under undesirable conditions. Platoons usually conduct retrogrades as part of a larger force but may conduct independent retrogrades as required. The three forms of retrograde are—

- Delay.
- Withdrawal.
- Retirement.

DELAY

4-43. A *delay* is when a force under pressure trades space for time by slowing down the enemy's momentum and inflicting maximum damage on enemy forces without becoming decisively engaged (ADP 3-90). The ability of a force to trade space for time requires depth in the sector assigned to the delaying force. The amount of depth required depends on several factors, including the—

- Amount of time to be gained.
- Relative combat power of friendly and enemy forces.
- Relative mobility of forces.
- Nature of the terrain.

- Ability to shape the sector with obstacles and fires.
- Degree of acceptable risk.

4-44. Delays succeed by forcing the enemy to concentrate forces to fight through a series of defensive positions. Delaying forces yield ground to gain time, displacing to subsequent positions before the enemy concentrates sufficient resources to decisively engage and defeat them.

4-45. Parameters of the delay are specified in the OPORD. First, leaders direct one of two alternatives: delay in the sector or delay forward of a specified PL or terrain feature for a specified time. The second parameter in the order must specify acceptable risk. The order must specify whether the delaying force may use the entire sector or must delay from specific BPs. A delay in using the entire sector is preferable, but a delay from specific positions may be required to coordinate between two or more units. Leaders use obstacles, fires, and maneuver to delay enemy forces throughout the depth of the sector.

4-46. If the leader plans the delay to only last a short time or the sector's depth is limited, delaying units may be forced to fight from a single set of BPs. If the leader expects the delay to last for a longer period, or if sufficient depth is available, the delaying unit may delay using either an alternating or subsequent bounding technique to execute the delay. With both alternating and subsequent bounding techniques, delaying forces should reconnoiter primary, alternate, supplementary, and subsequent positions before occupying them, BPs, and rehearse movement between them. Regardless of the depth of the delay operation and the space available in the sector, it is critical that the delaying force maintains contact with the enemy between BPs. (See figures 4-5 and 4-6, page 130 for examples of the delay.)

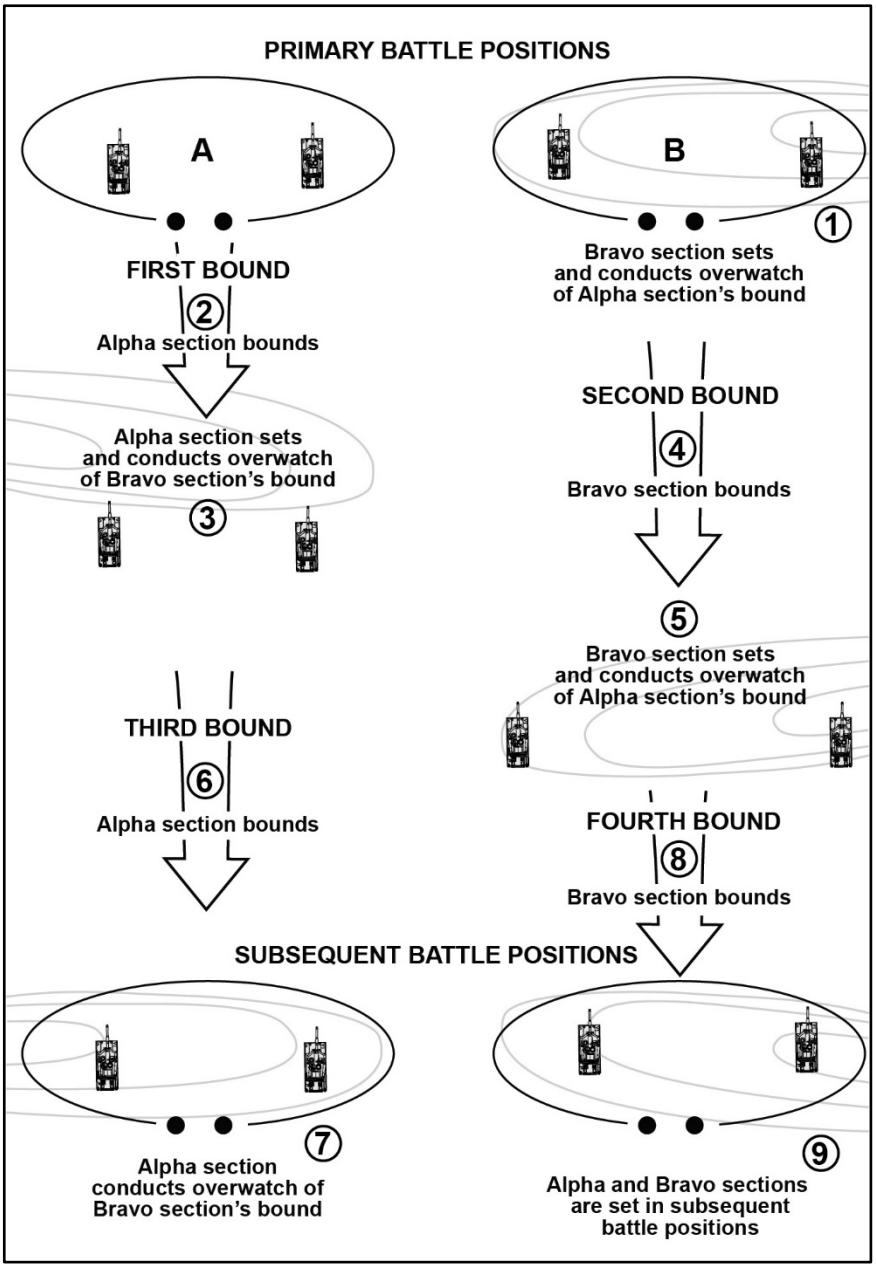


Figure 4-5. Delay with alternate bounding

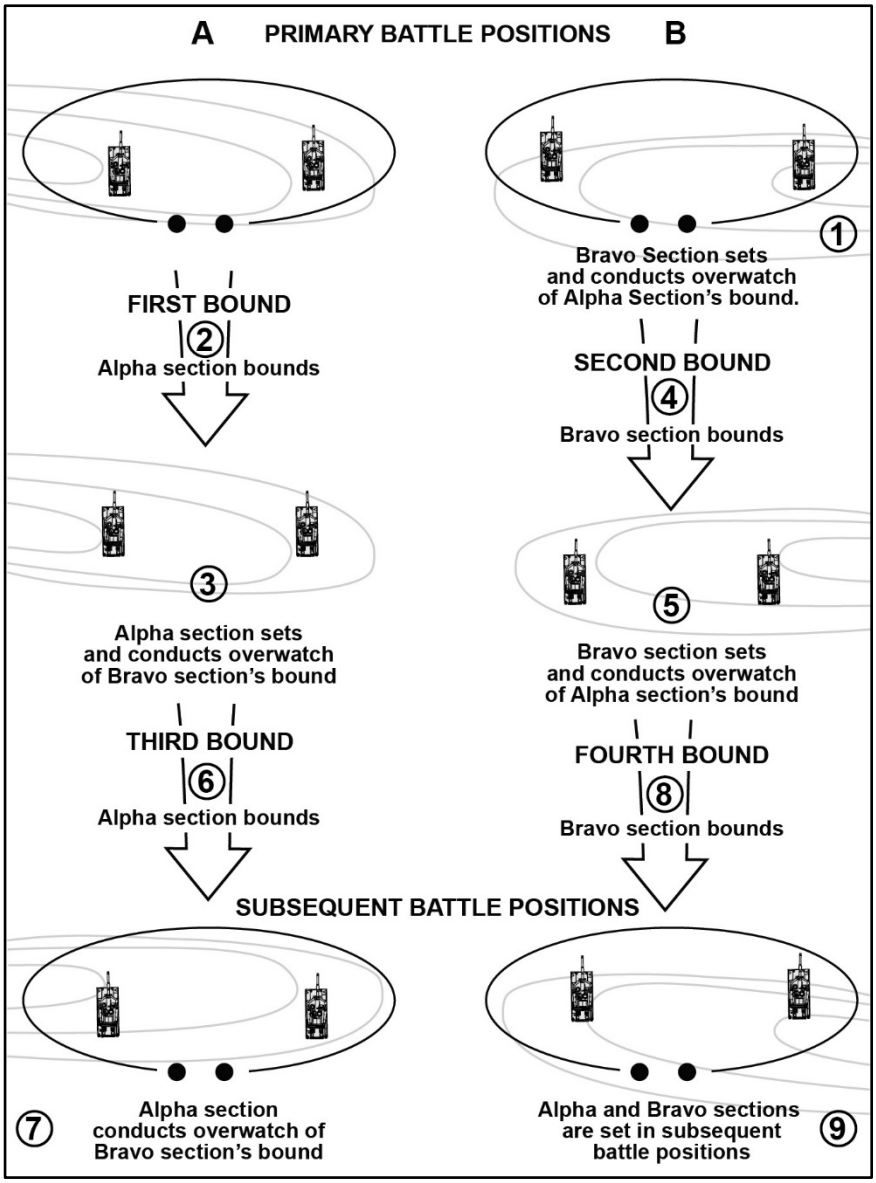


Figure 4-6. Delay with subsequent bounding

WITHDRAWAL

4-47. *Withdraw* is to disengage from an enemy force and move in a direction away from the enemy (ADP 3-90). Withdrawing units, whether all or part of a committed force, voluntarily disengage from an enemy force to preserve the withdrawing force or release it for a new mission. Units may or may not conduct a withdrawal under enemy pressure. Although the commander avoids withdrawing from action under enemy pressure, it is

not always possible. A commander may choose to conduct a withdrawal when the situation requires rapid action to save the unit from disaster.

4-48. Withdrawals are inherently dangerous because they involve moving units to the rear and away from an enemy force. The heavier the fighting and the closer the enemy is relative to the platoon, the more difficult the withdrawal. Units usually confine rearward movement to times and conditions when the advancing enemy forces cannot observe the activity or easily detect the operation. OPSEC is extremely important, especially during the initial stages of a withdrawal when most of the functional and sustainment forces are displaced.

4-49. The leader plans and coordinates a withdrawal in a similar manner to a delay. However, the leader applies the analysis of METT-TC (I) differently because the inherent purpose of a withdrawal is to avoid contact with enemy forces. A withdrawal begins under the threat of enemy interference and is executed out of necessity. Because the force is most vulnerable when the enemy attacks, the leader plans for a withdrawal under pressure. The leader then develops contingencies for a withdrawal without pressure. In both cases, the leader's main considerations are to—

- Plan a deliberate disengagement from enemy contact.
- Retain freedom of maneuver.
- Displace the main body rapidly.
- Maintain sufficient combat power, support, and sustainment capabilities throughout the operation.

4-50. Withdrawals may be assisted or unassisted. Leaders prefer to conduct a withdrawal while not under enemy pressure and without assistance, but at times assistance is necessary. During an assisted withdrawal, the assisting force occupies positions to the rear of the withdrawing unit and prepares to accept control of the contested sector. The withdrawing unit should conduct a rearward passage of lines through the assisting unit to minimize fratricide and ensure there is a successful battle handover. (See chapter 5, section VII for more information.) Both forces must closely coordinate the withdrawal. A withdrawing force can receive assistance from another force as—

- Additional security for the area through which the withdrawing force will pass.
- Information concerning withdrawal routes (reconnaissance and maintenance).
- Additional forces to secure choke points or key terrain along withdrawal routes.
- Elements to help in movement control, such as traffic control post.
- Additional forces to maneuver, direct-fire support and sustainment, which can involve conducting a counterattack to help the withdrawing unit in disengaging from the enemy.

4-51. During an unassisted withdrawal, the withdrawing unit establishes routes and develops plans for the withdrawal. In an unassisted platoon withdrawal, the platoon leader may designate one section as the detachment left in contact while the other section withdraws. As the platoon withdraws, the detachment left in contact disengages from the enemy and follows the previously displaced section to its final destination. (Figure 4-7, page 132 shows an example of an unassisted withdrawal.)

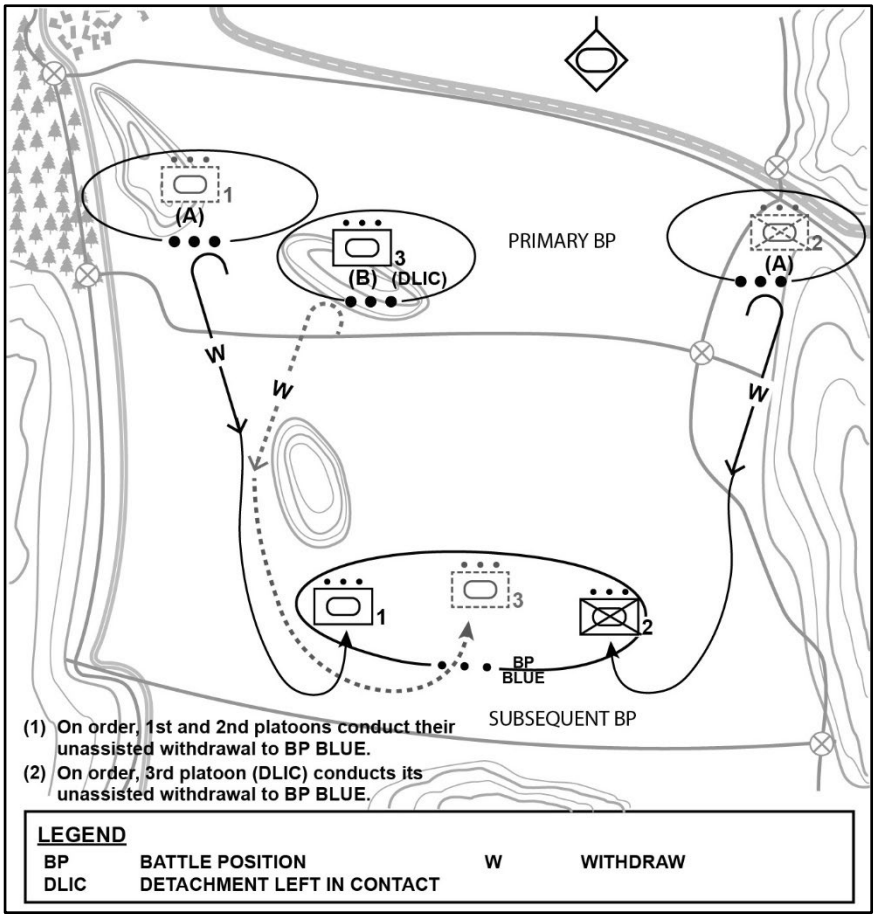


Figure 4-7. Platoon unassisted withdrawal

RETIREMENT

4-52. *Retirement* is a form of retrograde in which a force out of contact moves away from the enemy (ADP 3-90). A retiring unit organizes combat operations but does not anticipate interference by enemy ground forces. Typically, another unit provides security to cover the retiring unit's movement. However, mobile enemy forces, unconventional forces, air strikes, air assaults, or long-range fires may attempt to interdict the retiring unit. The leader still plans for enemy actions and organizes the unit to fight in self-defense. The leader usually conducts retirement to reposition the forces for future operations or to accommodate changes to the current concept of the operation. Units may conduct retirements such as tactical road marches where security and speed are the most important considerations.

TACTICAL FRAMEWORK OF THE DEFENSE

4-53. As part of a larger element, the tank platoon conducts defensive operations within several integrated and overlapping activities. The tank platoon provides the company commander with flexibility to integrate mounted and dismounted assets into the defense. The company may conduct a perimeter defense operation along with offensive and patrolling operations as in the offense, defensive operations are typically executed in the same four-step tactical framework as in the offense. The framework is for discussion purposes only and is not the only way of executing defensive operations. Normally the first two steps are supporting efforts, while the finish step is the main effort. Follow through is usually a sequel or branch to the plan based upon the situation. These steps may not occur sequentially; they may occur simultaneously. These steps are—

- Find the enemy.
- Fix the enemy.
- Finish the enemy.
- Follow through.

FIND THE ENEMY

4-54. Intelligence drives fires and maneuver. Gain and maintain contact. This may occur in the higher echelon's security area by forces external to the platoon, or it may occur when the platoon's own security elements first identify enemy forces with UAS, optics, or other long-range sensors.

FIX THE ENEMY

4-55. Prevent repositioning or reinforcement making them easier to destroy. The platoon uses natural or reinforcing obstacles, and/or direct and indirect fires to fix enemy forces in a position that provides relative advantage to the defending force.

FINISH THE ENEMY

4-56. Mass available combat power in the main battle area to accomplish the mission. Once enemy forces are fixed in positions within planned EAs, the platoon masses the effects of direct and indirect fires to destroy enemy forces. As necessary, the platoon displaces to additional BPs for survivability or in response to continued enemy maneuver.

FOLLOW THROUGH

4-57. Defeat in detail, consolidate, reorganize, and transition. The platoon plans to complete the destruction of enemy forces through fires or a counterattack. As necessary, the platoon consolidates and reorganizes within defensive positions and transitions to a follow-on mission.

SECTION II – COMMON DEFENSIVE PLANNING CONSIDERATIONS

4-58. Planning a defensive task is a complex effort requiring detailed analysis and extensive coordination. In defense, synchronizing the effects of the tank platoons and supporting systems enables the platoon leader to apply overwhelming combat power

against selected advancing enemy forces. As an operation evolves, the platoon leader knows a shift to main and supporting efforts is a probability to press the fight and keep the enemy off balance. Warfighting functions provide leaders with a means and structure for planning, preparing, and executing the defense. This section discusses the synchronization and coordination of activities within each warfighting function critical to the success of the tank platoon.

COMMAND AND CONTROL

4-59. The first step is the expression of the leader's vision of anticipated enemy actions. The platoon leader must understand the company or troop plan and triggers; the platoon leader develops the plan based on these factors as well as the commander's intent. The commander normally determines operational considerations such as OPSEC, occupation of fighting positions, initiation of direct fires, primary and supplementary platoon sectors of fire, and disengagement criteria; however, the commander may allow the platoon leader to make decisions covering some, or all, of these areas.

MOVEMENT AND MANEUVER

4-60. The platoon leader completes the reconnaissance, and the platoon occupies its positions. Occupation usually includes the platoon moving from a tactical AA to the defensive positions identified during the reconnaissance. The platoon leader initiates priorities of work that include EA development and BP preparation.

4-61. Maneuver entails the employment of direct-fire weapons on the battlefield. In the defense, vehicle positioning is critical to the platoon's success. Vehicle positioning enables the platoon to mass fires at critical points on the battlefield and shift fires, as necessary. The platoon leader exploits the strengths of the weapons systems while minimizing the platoon's exposure to enemy observation and fires.

4-62. If the platoon is designated in a reserve role, positioning the reserve in a location where it can react to several contingency plans is vital to success. The platoon leader considers terrain, trafficability of roads, potential EA, probable points of enemy penetrations, and commitment time. The reserve should be positioned in a covered and concealed position. Information concerning the reserve should be considered an essential element of friendly information and protected from enemy reconnaissance. The commander might choose to position the reserve forward initially to deceive the enemy, or to move the reserve occasionally to prevent it from being targeted by enemy indirect fires.

DEPTH AND DISPERSION

4-63. The platoon leader should disperse defensive positions laterally and in-depth. This protects the platoon from enemy observation and fires. The platoon BPs must allow sufficient maneuver space between each firing position for placement of tank weapons systems and Infantry if assigned.

4-64. Dispersing positions laterally and in-depth helps to protect the force from enemy observation and fires. EAs are established to provide for the massing of fires at critical points on the battlefield. Sectors of fire are established to distribute and shift fires throughout the extent of the EA. Once the direct-fire plan is determined, fighting positions are constructed in a manner to support the fire plan.

DISENGAGEMENT CRITERIA

4-65. Disengagement criteria are protocols that specify those circumstances where a friendly force must break contact with enemy direct fire and observed indirect fire to prevent decisive engagement. For a tank platoon, this will dictate the circumstances in which they will displace to alternate, supplementary, or subsequent positions, or conduct a battle handover with another unit. The criteria are threat-focused or tied to an enemy action or situation. A common criterion is known as a disengagement line. A *disengagement line* is a phase line located on identifiable terrain that, when crossed by the enemy, signals to defending elements that it is time to displace to their next position (ADP 3-90). Although displacement criteria are threat-focused, leaders must consider the friendly situation in relation to the enemy. For example, the criteria might depend on when and where artillery or an overwatch element can engage the enemy. Unique disengagement criteria are developed during the planning process for each specific situation.

DISPLACEMENT PLANNING

4-66. Displacement allows the platoon to retain flexibility and tactical agility in the defense. The ultimate goal of disengagement and displacement are to enable the platoon to avoid being fixed or decisively engaged by the enemy. The overarching factor in a displacement is to maintain a mobility advantage over the enemy. The platoon leader must consider several important factors in displacement planning. These factors include the following:

- The enemy situation.
- Disengagement criteria.
- Availability of direct-fire suppression that can support disengagement by suppressing or disrupting the enemy.
- Availability of cover and concealment, indirect fires, and obscurants to help disengagements.
- Obstacle integration, including situational obstacles.
- Position of forces on terrain provides an advantage to the disengaging elements such as linear obstacles.
- Identification of displacement routes and times when disengagement or displacement will occur. Routes and times are rehearsed.
- The size of the friendly force that must be available to engage the enemy to support the displacing unit.

4-67. 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 platoon leader thoroughly plans for it and rehearses displacement before conducting the defense. The platoon leader then carefully evaluates the situation when displacement in contact becomes necessary to ensure it is feasible and does not result in unacceptable personnel or equipment losses.

DIRECT-FIRE SUPPRESSION

4-68. The attacking enemy force must not be allowed to bring direct and indirect fires to bear on a disengaging friendly force. Direct fires from the support by fire element,

employed to suppress or disrupt the enemy, are the most effective method to facilitate disengagement. The platoon may receive direct-fire support from another element in the company, but in most cases, the platoon establishes its own support by fire element. Having an internal support by fire requires the platoon leader to sequence the displacement of the sections.

COVER AND CONCEALMENT

4-69. The platoon uses covered and concealed routes when moving to alternate, supplementary, or subsequent positions. Regardless of the degree of protection the route offers, the platoon should rehearse the movement before they make contact. Rehearsals increase the speed at which they can conduct the movement and provide an added measure of security. The platoon leader makes a concerted effort to allocate available time to rehearse movement in limited visibility and degraded conditions.

INDIRECT FIRE AND OBSCURANTS

4-70. Artillery or mortar fires help the platoon during disengagement. Suppressive fires slow the enemy and cause them to seek cover. Smoke obscures the enemy's vision, slows their movement, or conceals the defender's movement out of the BP or along their displacement route.

OBSTACLE INTEGRATION

4-71. Obstacles are integrated with direct and indirect fires. 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. The location of obstacles in support of disengagement depends on METT-TC (I). Ideally, an obstacle should be positioned far enough away from the defender that enemy elements could be engaged on the far side of the obstacle while keeping the defender out of range of the enemy's massed direct fires.

MOBILITY

4-72. Mobility tasks in the defense assure the ability to reposition forces, delay, and counterattack. Initially during defensive preparations, mobility tasks focus on the ability to resupply, reposition, and conduct rearward and forward passage of forces, materiel, and equipment. Once defensive preparations are complete, the focus normally shifts to supporting local counterattacks and reserve. Priorities set by the company may specify routes for improvement to support such missions. Normally, most engineer assets go to survivability and countermobility. At a set time or trigger, engineers disengage from obstacle and survivability position construction and start preparing for focused mobility missions. The platoon leader analyzes the scheme of maneuver, obstacle plan, and terrain to determine mobility requirements. Critical considerations may include the following:

- Lanes and gaps in the obstacle plan.
- Lane closure plan and unit responsibility.
- Route reconnaissance, improvement, and maintenance.

COUNTERMOBILITY

4-73. To succeed in the defense, the platoon leader integrates platoon obstacles into direct and indirect-fire plans, considering the intent for each obstacle group. (See ATP 3-90.8 for more information on countermobility in the defense.) Obstacles are normally constructed by engineers with help from the platoon. In the defense, the platoon uses obstacles to—

- Disrupt the enemy's advance to give the platoon more time to mass fires on the enemy.
- Protect defending units.
- Canalize the enemy into places where they can easily be engaged.
- Separate the enemy's tanks from their infantry.
- Strengthen areas that are lightly defended.

4-74. Obstacle intent includes the target and desired effect (clear task and purpose) and the relative location of the obstacle group. The purpose influences many aspects of the operation, from selecting and designing obstacle sites to conducting the defense. Normally, the company commander designates the purpose of an obstacle group. When employing obstacles, the leader considers several the following principles, including supporting the tactical plan, tie in with existing obstacles, covering by observation and fire, constructing obstacles in-depth, and surprise.

Support the Tactical Plan

4-75. Obstacles supplement combat power, decrease the mobility of the enemy, and provide security for the platoon. While considering enemy avenues of approach, the leader also considers their own movement requirements, such as routes for resupply, withdrawal, counterattacks, patrols, and OPs.

Tie In

4-76. The leader ties in the reinforcing obstacles with existing obstacles. The leader must also tie in the obstacle plan with the fires plan.

Covered by Observation and Fire

4-77. The leader ensures that all obstacles are covered by observation and fire. This reduces the enemy's ability to breach the obstacles and increases the possibilities of placing fire on the enemy when they encounter the obstacle.

Constructed In-depth

4-78. The leader emplaces obstacles so that each new obstacle encountered by the enemy causes a desired reaction and allows friendly forces to attrit them through fires. Proper use of obstacles in-depth wears the enemy down and significantly increases the overall effect.

Employed for Surprise

4-79. An obvious pattern of obstacles would divulge locations of units and weapons. Friendly forces must avoid readily discernable, repetitive patterns.

TACTICAL OBSTACLES

4-80. The company commander assigns obstacle groups, tells the platoon leaders and engineers what the task and purpose of each obstacle group is, and then the company commander resources the groups accordingly. Obstacle intent includes three elements: target, effect, and location.

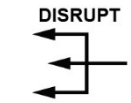
4-81. The target is the enemy force that the commander wants to affect with fires and tactical obstacles. The commander identifies the target's size, type, echelon, avenues of approach, or any combination of these.

4-82. The obstacle effect describes how the commander wants to attack enemy maneuver with obstacles and fires. Tactical obstacles block, turn, fix, or disrupt. Leaders should integrate the obstacle effect with direct and indirect fires to achieve a tactical task.

4-83. The location is where the commander wants the obstacle effect to occur against the targeted enemy force. The commander initiates the obstacle integration process after identifying where on the terrain the obstacle will most decisively affect the enemy.

4-84. Scatterable minefield systems are a common means of constructing tactical obstacles. Scatterable mines, with their self- and command-destruct capabilities, are flexible, and they aid in rapid transitions between offensive and defensive operations. These systems can be used in conjunction with other obstacle types for a more deliberate, long-term defense. In those cases, the company and platoons are usually augmented with assets from an engineer unit. (Table 4-1 depicts the symbols for each obstacle effect, and it describes the purpose and characteristics of each.)

Table 4-1. Obstacle effects

OBSTACLE EFFECT	*PURPOSE*	*FIRES AND OBSTACLES MUST:*	*OBSTACLE CHARACTERISTICS*
	- Break up enemy formations. -Interrupt enemy's timetable and C2. -Cause premature commitment of enemy breach assets. -Cause the enemy to piecemeal their attack.	-Cause the enemy to deploy early. -Slow part of their formation while allowing part to advance unimpeded.	-Do not require extensive resources. -Ensure obstacles are difficult to detect at long range.
	-Slow an attacker within a sector so they can be destroyed. -Generate the time necessary for the friendly force to disengage.	-Cause the enemy to deploy into attack formation before encountering obstacles. -Allow the enemy to advance slowly into an EA or sector. -Make the enemy fight in multiple directions once they are in the EA or sector.	-Array obstacles in depth. -Span the entire width of the avenues of approach. -Avoid making the terrain appear impenetrable.
	-Force the enemy to move in the direction desired by the friendly commander.	-Prevent the enemy from bypassing or breaching the obstacle belt. -Maintain pressure on the enemy force throughout the turn. -Mass direct and indirect fires at the anchor point of the turn.	-Tie into impassable terrain at the anchor point. -Use obstacles in depth. -Provide a subtle orientation relative to the enemy's approach.
	-Stop an attacker along a specific avenue of approach. -Prevent an attacker from passing through an EA or sector. -Stop the enemy from using an avenue of approach and force them to use another avenue of approach.	-Prevent the enemy from bypassing or penetrating through the belt. -Stop the enemy's advance. -Destroy all enemy breach efforts.	-Tie into impassable terrain. -Use complex obstacles. -Defeat the enemy's mounted and dismounted breaching effort.

Legend: C2—command and control; EA—engagement area

PROTECTIVE OBSTACLES

4-85. In planning protective obstacles, the platoon leader evaluates the potential threat to the platoon's position and then employs the best system for that threat. Protective obstacles are usually located beyond hand grenade distance (40 to 100 meters) from the fighting position and may extend out 300 to 500 meters to tie into tactical obstacles and existing restricted terrain. Protective obstacles are a key component of survivability. As with tactical obstacles, the platoon leader should plan protective obstacles in-depth and try to maximize the range of the weapons.

INTELLIGENCE

4-86. The platoon leader never has all the information needed about the enemy. Therefore, the platoon leader obtains the best possible intelligence preparation of the operational environment products, conducts continuous reconnaissance, and integrates new and updated intelligence throughout the operation. The platoon leader may need to request information from the company commander or BN S-2 staff to answer platoon information requirements.

FIRES

4-87. The platoon leader posts targets on the overlays (in handwritten and digital format). The fires planning is done by the company FSO and fire support sergeant. The platoon leader can provide the fire support team (FIST) with adjustments to these preplanned targets or with nominations for additional targets for inclusion in the company fires plan. As these targets are approved, the platoon leader plots them on the overlays. If a target is disapproved, the platoon leader notes its grid coordinates so, if needed, a speedy call for fire using the grid method can be submitted. (See appendix B for more information.)

4-88. The platoon leader primarily integrates into the fire support plan as an observer. They must know planned targets in their area and be prepared to observe and execute those targets. The FSO plans and executes fires in a manner which achieves the intended task and purpose of each target to support the company commander's intent. Indirect fire serves a variety of purposes in the defense, including the following:

- Slow and disrupt enemy movement.
- Prevent the enemy from executing breaching operations.
- Destroy or delay enemy forces at obstacles using massed fires or precision munitions.
- Disrupt enemy support by fire elements.
- Defeat attacks along avenues of approach with the use of FPFs.
- Disrupt the enemy to enable friendly elements to disengage or conduct counterattacks.
- Obscure enemy observation or conceal friendly movement during disengagement and counterattacks.
- Provide obscurants to separate enemy echelons or to silhouette enemy formations to facilitate direct-fire engagement.

- Provide illumination as necessary.
- Execute suppression of enemy air defense missions to support aviation operations.

4-89. Each artillery target should have a trigger line overwatched by at least a crew or section. The enemy crossing a trigger line initiates the observer's call for fire on a target to ensure that the impact of the rounds coincides with the enemy's arrival. The location of the trigger line is based on the enemy's expected rate of advance over the terrain, the time of flight of the rounds, and the priority of fires. The company FIST should help in determining all trigger points. In addition to map and terrain association, the platoon's laser range finders or target designation capabilities (on digitally equipped tanks) enhance its effectiveness in requesting accurate artillery fires.

4-90. If available, the platoon leader should plan and coordinate mortar targets on dismounted avenues of approach. Given priority of fires, mortars are generally more responsive than indirect-fire support delivered by field artillery (FA), and the platoon leader may be able to gain a tactical advantage by employing mortar support in certain situations.

SUSTAINMENT

4-91. Resupply methods and procedures are discussed in detail in chapter 6 of this publication. If the commander authorizes pre-positioning, the platoon leader determines the amount and type of prestock (normally ammunition) that is required for the operation. For example, to calculate ammunition requirements, the platoon leader evaluates the number and type of enemy vehicles the platoon expects to engage and how much time is available to conduct resupply between engagements. The platoon leader then consults with the PSG to select and prepare the prestock location and coordinate the delivery of the prestock supplies.

4-92. Prestock resupply can be accomplished in virtually any location where supplies can be hidden and protected, such as in or behind the primary fighting position, along the displacement route, or in the firing positions of a subsequent BP. Preparation of the site includes providing cover, concealment, and protection for platoon and delivery personnel and vehicles during the transfer process. The site must also protect the supply materials from enemy observation and minimize the effects of indirect fires and weather.

4-93. Once the supplies are delivered, the prestock site should be concealed. The platoon should conduct periodic security checks or keep the site under constant surveillance to ensure safekeeping of the prestock.

PROTECTION

4-94. The platoon leader must consider protection during the planning phase of the defense. Survivability construction includes fighting positions, protective positions, and hardening. These are prepared to protect vehicles, personnel, and weapons systems. Vehicle fighting positions should be constructed with hull and turret defilade observation positions.

4-95. The platoon must maximize the use of camouflage, concealment, and cover for primary, alternate, and subsequent fighting positions. This is protection from enemy observation. The shape and outline of the tank can be disguised by using a camouflage

net, brush, or tree branches. Camouflage must appear natural and may require regular replacement. Reflective surfaces and conspicuous colors can be camouflaged in several ways. Paint can be dulled with mud. Window glass, plastic map covers, optical instruments, and food boxes must be concealed. Faces and hands may give away a well-hidden position and should be concealed or shaded whenever possible.

4-96. Because engineer assets are at a premium during defensive preparations, they should never be allowed to remain idle for any reason other than required maintenance checks and services. Either the platoon leader or a designated tank commander must physically link up with the engineers as directed in the platoon OPORD and escort them to each fighting position. The escort provides local security and instructions to the engineers.

4-97. To reduce the electronic signature, the platoon can consider using low power on all radios, implement communication windows, and restrict the use of digital systems. When facing a technologically sophisticated enemy with space, cyber, electronic, and electromagnetic threat capabilities, the platoon can also employ the use of runners, wire communications, or hand and arm signals (see TC 3-21.60) between tanks to reduce detectable emissions.

4-98. Air and missile defense support to the platoon may be limited or non-existent. Units should expect to use their organic weapons systems for self-defense against enemy air threats. (See chapter 5, section X.) Plan for CBRN reconnaissance at locations where CBRN hazards are expected. (See appendix C.)

4-99. The platoon leader should plan for and use obscurants and indirect fires to support disengagement or movement of forces. The platoon leader should prescribe multiple DFCMs and assign clear sectors of fire to prevent fratricide and mitigate unnecessary risk.

Active and Passive Air Defense

4-100. In the face of an enemy air threat, the platoon usually has only active and passive (with its organic weapons) air defenses. Air defense units are usually not assigned below the brigade combat team (BCT) level. However, air defense assets may be located near the platoon and may provide area coverage. The platoon leader and subordinate leaders must understand that in most cases they are required to provide their own air defense. Leaders must ensure all active and passive air defense measures are well planned and implemented, to include air defense warnings, air guards, camouflage of vehicles and positions, reducing vehicle signatures, and scanning for any hostile small unmanned aircraft systems (SUASs). The platoon leader also plans for C-UAS actions and reduces the platoon's electromagnetic signature. (See chapter 5 for more information.)

Chemical, Biological, Radiological, or Nuclear Protection

4-101. Operationally, CBRN defense enables the unit to continue military operations in a CBRN environment while minimizing the vulnerability of the force to the degrading effects of CBRN threats and hazards. CBRN protection measures are taken to keep CBRN threats and hazards from having an adverse effect on Soldiers, equipment, and facilities. (See chapter 5 for more information.) Tasks that enable CBRN protection include the following:

- Employing individual protective equipment and other CBRN protective equipment.
- Establishing CBRN alarm conditions.
- Utilizing shielding or protective cover.
- Establishing deliberate decontamination plans.

PLATOON AS THE RESERVE

4-102. The *reserve* is that portion of a body of troops that is withheld from action at the beginning of an engagement to be available for a decisive movement (ADP 3-90). If assigned as the company reserve, the tank platoon is usually positioned to the rear of the other platoons. The reserve adds depth to the defense. The company commander gives the reserve platoon a primary and several supplementary positions. The reconnoitering, occupation, and preparation of the reserve position are the same as a defensive position. Besides conducting a defense, the reserve platoon may have one of the following missions:

- Block penetrations.
- Secure the company flanks and rear.
- Plan and conduct a counterattack.
- Provide BN reserve.

4-103. When designated as the BN reserve, the platoon leader must understand the BN's planning priorities and release criteria for employing the reserve. The reserve must know how to locate and enter the radio net for every element in the BN. The reserve position is a lucrative enemy artillery target and must be concealed.

SECTION III – ENGAGEMENT AREA DEVELOPMENT

4-104. At the platoon level, EA development is a complex function demanding parallel planning and coordinated preparation. Despite this complexity, EA development resembles a drill, and the platoon leader and the subordinate tank commanders use an orderly, standard set of procedures. The steps of EA development are not a rigid, sequential process. Steps 1 through 3 should be conducted in sequence, while steps 4 through 6 are conducted simultaneously or as METT-TC (I) allows. Rehearsals (step 7) can be conducted throughout EA development. (See FM 3-90 for more information.)

4-105. Beginning with evaluation of METT-TC (I), the EA development process is as follows:

- Step 1-Identify all likely enemy avenues of approach.
- Step 2-Identify the most likely enemy COA.
- Step 3-Determine where to kill the enemy.
- Step 4-Position subordinate forces and weapon systems (direct fire).
- Step 5-Plan and integrate obstacles.
- Step 6-Plan and integrate indirect fires.
- Step 7-Rehearse the execution of operations in the EA.

Note. Figures 4-8 through 4-13, pages 144 through 150, build on one another to demonstrate the EA development process.

IDENTIFY LIKELY ENEMY AVENUES OF APPROACH

4-106. The platoon leader conducts an initial reconnaissance of the terrain using OAKOC. If possible, the platoon leader does this from the enemy's perspective along each avenue of approach into the sector of fire or the proposed EA. The platoon leader looks for existing obstacles and potential locations to emplace obstacles. The platoon leader tries to determine how the enemy will use the terrain to their advantage and uses this to develop the defensive plan.

4-107. The platoon leader should identify key and decisive terrain. This includes locations that offer positions of advantage over the enemy, and natural obstacles and choke points that restrict forward movement. The platoon leader determines which avenues provide cover and concealment for the enemy while allowing them to maintain their tempo. Additionally, command and control systems can graphically depict line of sight data which enable the commander and platoon leader to better identify decisive terrain. The platoon leader should determine which terrain the enemy is likely to use to support each avenue and evaluate lateral routes connecting each avenue of approach.

Figure 4-8. Likely enemy avenues of approach

IDENTIFY MOST LIKELY ENEMY COURSE OF ACTION

4-108. The platoon leader will gain an initial understanding of the enemy's COA from the company commander's order and will continue to refine their understanding through their own reconnaissance and analysis. The following questions must be considered to ascertain the enemy scheme of maneuver:

- Where does the enemy want to go?
- Where will the enemy go based on terrain?
- What is the enemy's mission (or anticipated mission)?
- What are the enemy's objectives?
- How will the enemy structure their attack?
- How will the enemy employ their reconnaissance assets?
- What are the enemy's expected rates of movement?
- How will the enemy respond to friendly actions?
- Where is the dead space?
- What terrain will the enemy use to support their attack?
- What are the natural obstacles in the defensive sector?

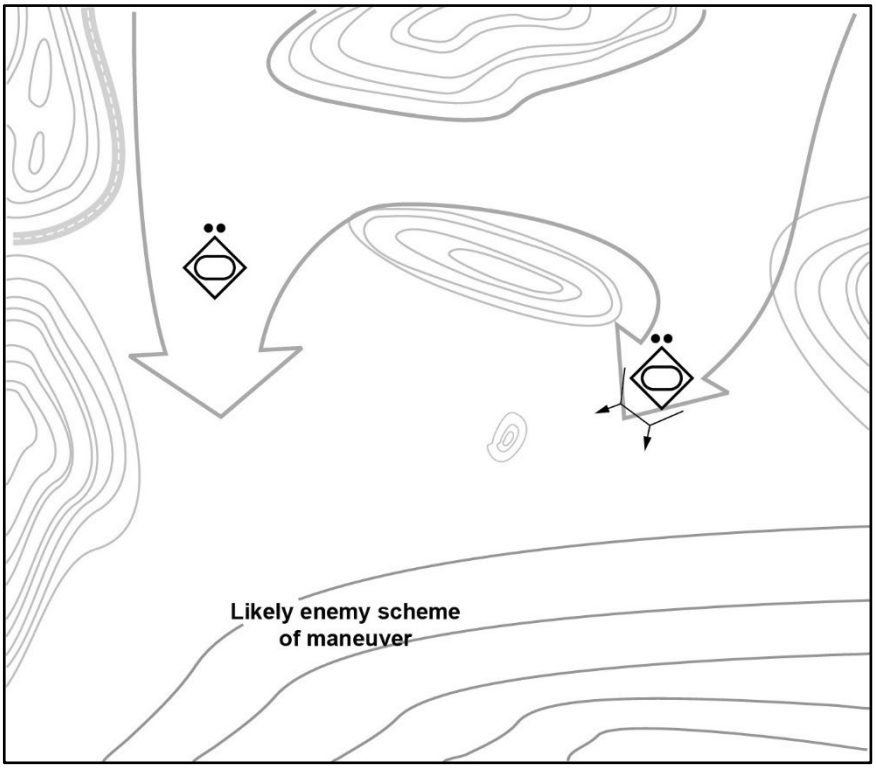


Figure 4-9. Example of an enemy scheme of maneuver

DETERMINE WHERE TO KILL THE ENEMY

4-109. The following steps apply in identifying and marking where the enemy engagement (see figure 4-10) is to occur:

- Identify TRP matching the enemy's scheme of maneuver allowing the platoon to identify where it will engage enemy forces through the depth of the sector.
- Identify and record the exact location of each TRP.
- In marking TRP, use thermal sights to ensure visibility at the appropriate range under varying conditions, including daylight and limited visibility (darkness, smoke, dust, or other obscurants).
- Determine how many weapon systems will focus fires on each TRP to achieve the desired end state.
- Determine which element will mass fires on each TRP.
- Establish EAs around TRP.
- Develop the direct-fire planning measures necessary to focus fires at each TRP.

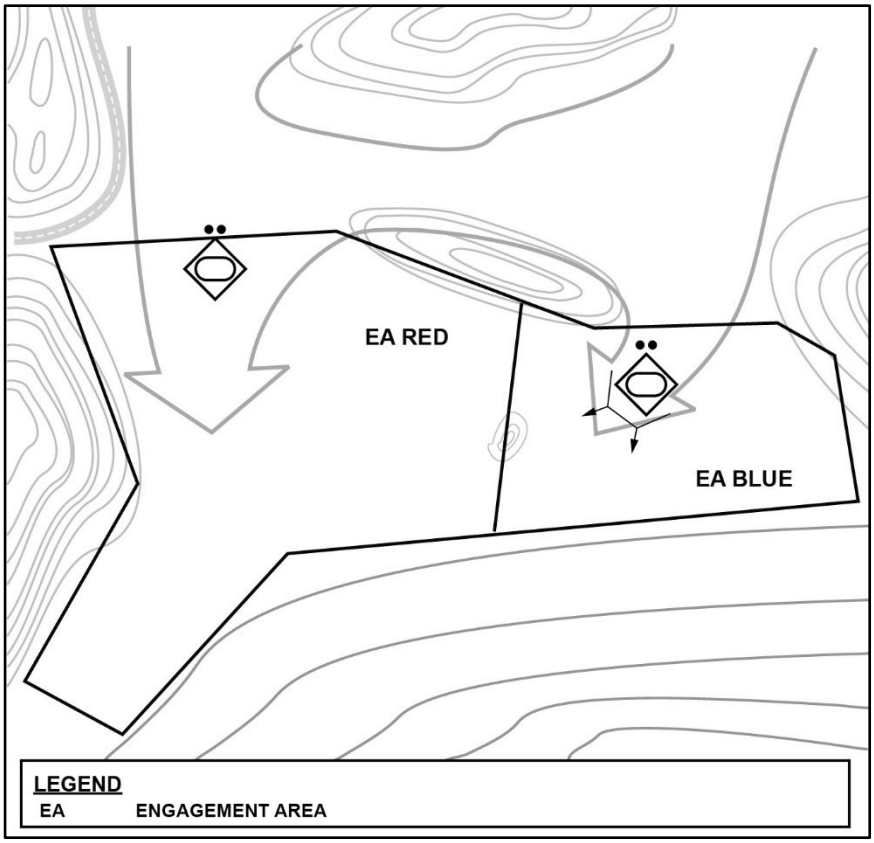


Figure 4-10. Locations to kill enemy

POSITION SUBORDINATE FORCES AND WEAPONS SYSTEMS

4-110. Once the platoon leader understands where they intend to kill the enemy, the next step is to position tanks in a place where they can identify the TRPs and engage enemy forces around them. (See figure 4-11, page 148.) To position vehicles effectively, leaders must know the capabilities and limitations of the tank and its weapons as well as the effects of terrain and the tactics used by the enemy. Platoon leaders should position tanks where they have protection, where they can avoid detection, and where they can surprise the enemy with accurate, lethal fires. The platoon leader must know where they want to destroy the enemy and what effect they want the weapon to achieve. The platoon leader must ensure that tanks have a clear line of sight from the tentative location and can observe the associated TRPs. For dug-in positions, this requires confirming line of sight from a prone position. Additional considerations are as follows:

- Select tentative platoon BPs.
- Conduct a leader's reconnaissance of the tentative BPs.
- Drive the EA to confirm that the selected positions are tactically advantageous.

Note. If possible, select BPs while moving in the EA. Using the enemy's perspective enables the leader to assess survivability of positions.

- Confirm and mark the selected BPs.
- Ensure the BPs do not conflict with those of adjacent units and are effectively tied in with adjacent positions.
- Select primary, alternate, and supplementary fighting positions to achieve the desired effect for each TRP.
- Determine where to prestock ammunition where it can survive the enemy's preparatory fires and support the platoon's defense.
- Ensure vehicle commanders (VCs) position systems so each TRP can be observed.
- Ensure positions allow tank commanders, loaders, and gunners to observe the EA; these positions should allow tanks engage enemy forces from the hull down position with the .50 caliber and loader's M240 machine gun.
- Stake vehicle positions according to unit SOPs so engineers can dig in the positions while vehicle crews perform other tasks.
- Confirm all vehicle positions.

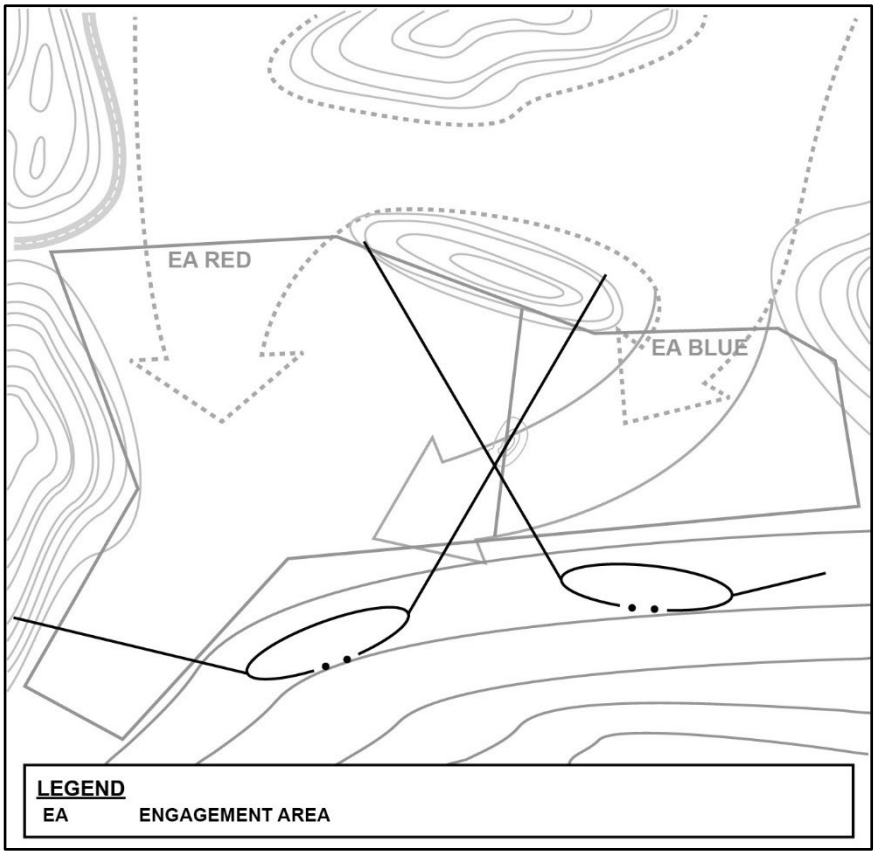


Figure 4-11. Emplacement of weapons systems

4-111. The platoon leader ensures overlapping sectors of fire and mitigates risk of dead space. This is accomplished through preplanned targets, repositioning fighting positions, or coordination with higher or adjacent units.

PLAN AND INTEGRATE OBSTACLES

4-112. The following steps apply in planning and integrating obstacles (see figure 4-12) during defensive missions:

- If not specified, determine the obstacle group's tactical purpose and location with the company commander and engineer platoon leader.
- In conjunction with the engineer platoon leader, identify location, dimension, and mark the obstacles within the obstacle group and ensure intent supports the task force scheme of maneuver.
- Integrate protective obstacle types and locations within the tank platoon's defensive perimeter.
- Ensure coverage of all obstacles with direct fires and/or indirect fires.
- Assign responsibility to guides and lane closure as required.

- According to METT-TC (I), help the engineer platoon in emplacing obstacles, securing Class IV/V (construction materials/ammunition) point, and securing obstacle work sites.
- Coordinate engineer disengagement criteria, actions on contact, and security requirements with the engineer platoon leader at the obstacle work site.

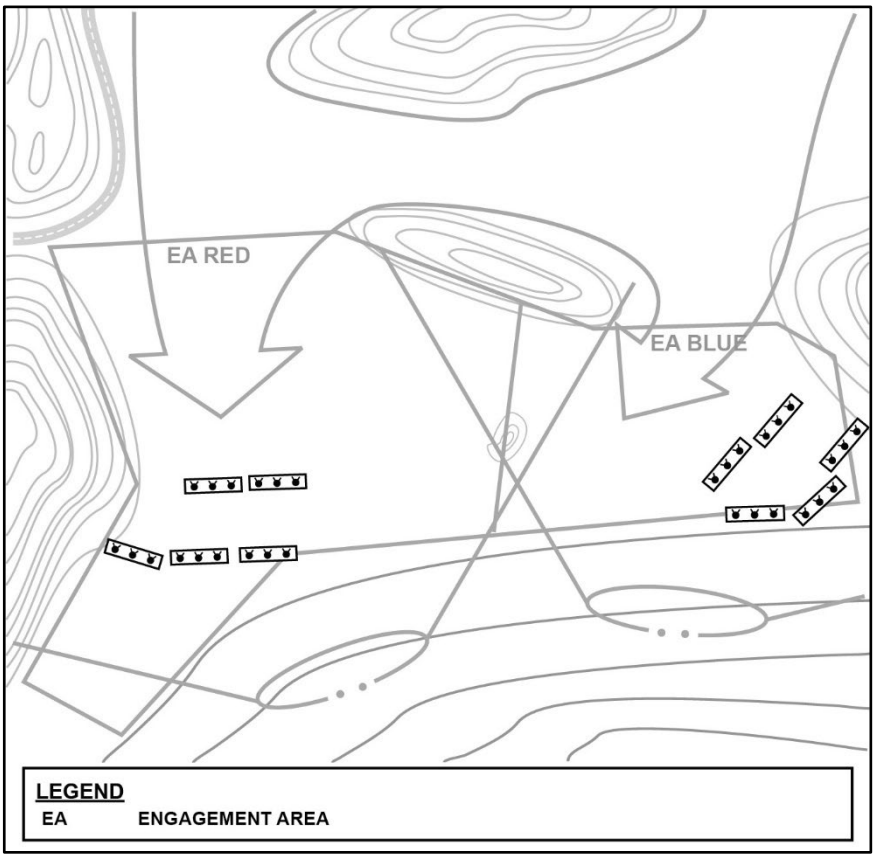


Figure 4-12. Plans for and integration of obstacles

PLAN AND INTEGRATE FIRES

4-113. The following steps apply in planning and integrating indirect fires (see figure 4-13, page 150):

- Determine the purpose of fires.
- Determine where effects will best be achieved.
- Establish the observation plan that includes—
  - Redundancy for each target.
  - Observers who will include the FIST, as well as members of the platoon with direct fire support execution responsibilities.
  - Establish triggers based on enemy movement rates.

- Obtain accurate target locations using organic target location devices or survey/navigational equipment.
- Refine target locations to ensure coverage of obstacles.
- Plan FPFs; coordinate through the company commander or FSO.
- Request critical friendly zone for protection of maneuver elements and no-fire areas for protection of OPs and forward positions.

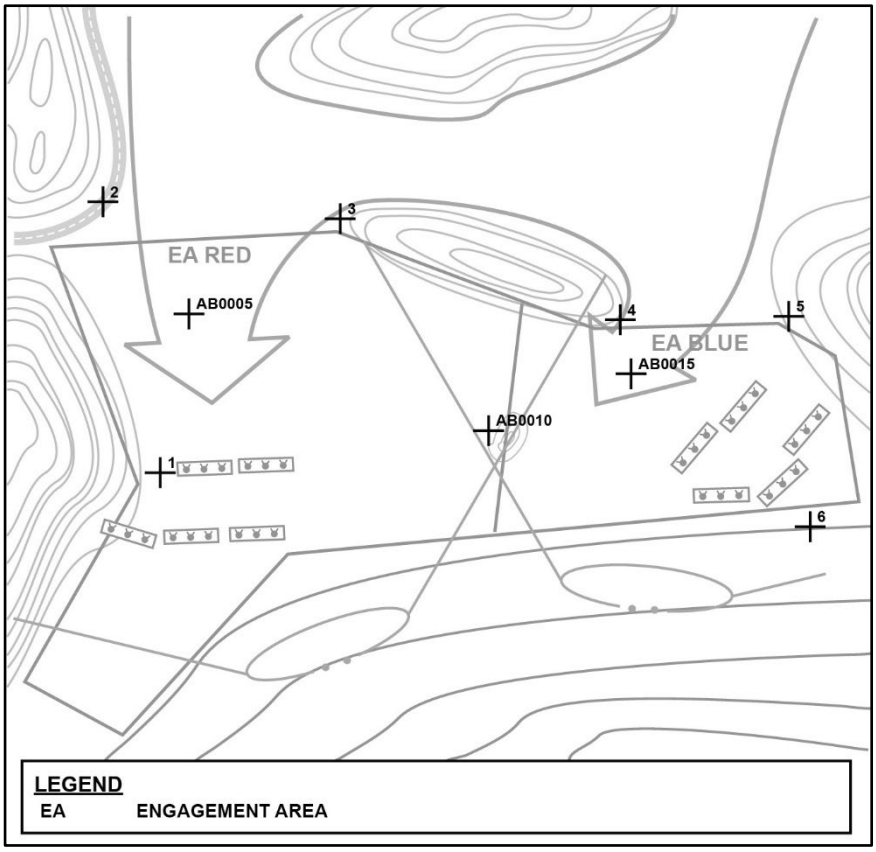


Figure 4-13. Integration of direct and indirect fires

REHEARSE THE EXECUTION OF OPERATIONS IN THE ENGAGEMENT AREA

4-114. The purpose of rehearsals is to ensure every leader and crewmember understands the plan and the platoon is prepared to defend their sector with direct and indirect fires. The rehearsal should cover—

- Rearward passage of reconnaissance and security forces (as required).
- Closure of lanes (as required).
- Movement from the hide position to the BP.
- Use of fire commands, triggers, and maximum engagement lines to initiate direct and indirect fires.

- Shifting of fires to refocus and redistribute fire effects.
- Disengagement and displacement criteria.
- Identification of displacement routes and times.
- Preparation and transmission of critical reports using radio and digital systems, as applicable.
- Assessment of the effects of enemy weapon systems.
- Displacement to alternate, supplementary, or subsequent BPs.
- Cross-leveling or resupply of Class V.
- Evacuation of casualties.
- Succession of command.

4-115. The platoon leader should coordinate rehearsals with company HQ to ensure there are no conflicts with other units. Coordination leads to efficient use of planning and preparation time for all units involved with the operation. It also reduces the risk of misidentifying friendly forces in the rehearsal area, which could result in fratricide.

4-116. Platoons must weigh the benefit of full force rehearsals in areas that may be under enemy overwatch. Vehicles should remain hidden if possible.

SECTION IV – ORDER OF EVENTS AND OCCUPATION ACTIVITIES

4-117. To use time efficiently, the platoon leader follows an order of events with tasks to be accomplished in defensive preparations. Paragraphs 4-118 to 4-125 describe a brief order of events for the conduct of the defense. The platoon leader then conducts required occupation activities such as priorities of work, adjacent unit coordination, internal coordination, tank fighting positions, and security. These activities can be accomplished concurrently.

ORDER OF EVENTS

4-118. Usually, as part of a larger element, the tank platoon conducts the defense performing several integrated and overlapping activities. As the platoon leader plans the defense, this order of events is generally followed:

- Reconnaissance and security operations.
- EA development.
- Occupation and preparation.
- Approach of the enemy's main attack.
- Enemy assault.
- Counterattack.
- Consolidation and reorganization.

RECONNAISSANCE AND SECURITY

4-119. Designated reconnaissance and security forces must protect friendly main battle area forces to allow them to prepare their defense. These security forces work in conjunction with and complement company and BN security operations. The enemy will attempt to discover the defensive scheme of maneuver and disrupt defensive

preparations using reconnaissance elements. Enemy reconnaissance units will also attempt to identify and then bypass or breach the platoon's tactical obstacles.

4-120. The security force often includes friendly reconnaissance elements, such as Cavalry troops and scout platoons, but a tank platoon may be tasked to augment the security force. The security force's goals normally include providing early warning, destroying enemy reconnaissance units, and impeding and harassing enemy assault elements. The security force continues its mission until directed to displace. The commander also may use security forces in the deception effort to give the illusion of strength in one area while establishing the main defense in another.

ENGAGEMENT AREA DEVELOPMENT

4-121. The *engagement area* is an area where the commander masses effects to contain and destroy an enemy force (FM 3-90). Leaders combine natural and man-made obstacles to canalize the attacking force into EAs. The success of engagements depends on how the leader can integrate the obstacle plan, indirect-fire plan, and direct-fire plan within the EA to achieve the tank platoon's tactical purpose.

OCCUPATION AND PREPARATION

4-122. While the company order, map reconnaissance, and mounted reconnaissance may provide a broad understanding of an assigned area, a thorough leader's reconnaissance of the sector is critical for a successful defense. Accurate and detailed information allows the platoon leader the ability to plan more effective use of terrain and enables the platoon to maneuver within the sector more rapidly. This aids initial occupation, priorities of work during planning and preparation, as well as the conduct of the defense itself.

4-123. During the leader's reconnaissance, the platoon leader, tank commanders, and a security element (usually the loaders from the wingman tanks) dismount and move to the BP. If possible, platoon vehicles provide overwatch for the reconnaissance group; otherwise, the platoon leader positions dismounted OPs, as necessary. The goals are, but are not limited to, identification of enemy avenues of approach, EA, sectors of fire, the tentative obstacle plan, indirect-fire plan, OP, and rally point and CP locations.

4-124. Members of the reconnaissance party should use marking materials for both daylight and limited visibility recognition to indicate key locations. They should record the eight-digit grid coordinates for these locations manually on their maps, and, if available, by electronic means such as a GPS or POSNAV on the tanks. OPSEC is critical during the occupation to ensure the platoon avoids detection and maintains combat power for the actual defense. Each tank crew 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

4-125. The platoon engages the enemy at a time and place where direct and indirect fire systems are maximized to achieve success within the designated sector. If available, friendly forces may initiate close air support (CAS) as the enemy's assault force approaches the EA. Friendly forces occupy their actual defensive positions based on pre-established triggers, such as the enemy reaching a PL tied to specific terrain or

maneuvering into direct-fire range. The technique triggers for BP occupation are important because it can preserve friendly combat power during enemy preparatory bombardments.

ENEMY ATTACK

4-126. During an attack, the enemy maneuvers to achieve concentration at a designated point, normally employing assault and support forces. The assault will leave the enemy vulnerable to the combined effects of friendly direct and indirect fires and integrated obstacles. The enemy may employ additional forces to fix friendly defensive elements and prevent their repositioning. Friendly counterattack forces might be committed against the enemy flank or rear, while other friendly forces may displace to alternate, supplementary, or subsequent positions to support the commander's scheme of maneuver. The enemy is likely to use artillery, CAS, and CBRN weapons to set the conditions for the attack.

4-127. The platoon engages the enemy. Tank commanders control their direct fires by using fire commands. (See appendix A.) Destroyed vital positions are reoccupied. Tanks move to alternate positions if the primary positions become untenable or if ordered to do so. Under limited visibility conditions, mortar and FA units may fire IR illumination if the enemy has not yet identified the defenders' positions. Once the platoon engages the enemy from its primary positions, regular illumination is used.

4-128. When required, FPFs are initiated. This is a preplanned barrier of direct and indirect fires designed to impede enemy movement across defensive lines or areas. The commander generally initiates final protective FA and heavy mortar fires, which suppress the enemy final assault until ordered to cease-fire or having exhausted their ammunition.

COUNTERATTACK

4-129. As the enemy's momentum slows or stops, friendly forces may conduct a counterattack. The counterattack might be for offensive purposes to seize the initiative from the enemy. When conducting counterattack, the platoon must have an accurate understanding of obstacles within the EA. In some cases, the purpose of the counterattack is mainly defensive such as reestablishing a position or restoring control of the sector.

CONSOLIDATION AND REORGANIZATION

4-130. The platoon secures its defensive area by repositioning forces, destroying remaining enemy elements, and reestablishing obstacles. The platoon conducts all necessary sustainment functions as it prepares to continue the defense or transition to the offense. Even when enemy forces are not actively engaging in it, the platoon always maintains awareness of the tactical situation and local security. The platoon prepares itself for follow-on missions.

PRIORITIES OF WORK

4-131. Priorities of work are a method of organizing and controlling the preparation and execution of a defensive operation. Tactical SOPs should describe priorities of work, including individual duties. The platoon leader changes priorities based on the situation.

All leaders in the platoon should have a specific priority of work for their duty position. The platoon leader manages the defensive preparation and division of work based on the no later than defend time. Priorities of work include, but are not limited to, the following:

- Maintain platoon OPSEC and surveillance of the EA.
- Verify each vehicle's location, orientation, and sector of fire.
- Supervise any allocated engineer assets.
- Provide security for the engineer assets.
- Conduct reconnaissance and mark supplementary EAs and subsequent BPs as time permits.
- Conduct rehearsals.
- Oversee vehicle maintenance and prepare-to-fire checks.
- Improve the position by emplacing M8/M22 alarms and by upgrading camouflage.

ADJACENT UNIT COORDINATION

4-132. The ultimate goal of adjacent unit coordination is to ensure unity of effort in accomplishment of the mission. Items adjacent units coordinate includes the following:

- Unit positions, including locations of vital leaders' call signs and frequencies.
- Locations of OPs and patrols.
- Overlapping fires (to ensure direct fire responsibility is clearly defined).
- TRP.
- Alternate, supplementary, and subsequent BPs.
- Indirect-fire information.
- Obstacles (location and type).
- Air defense considerations, if applicable.
- Routes to be used during occupation and repositioning.
- Sustainment considerations.

PLATOON COORDINATION

4-133. Effective platoon coordination enhances the situational awareness of tank crews and alerts them to the actions needed to prepare the defense. One method of ensuring coordination within the platoon is dissemination of enemy and friendly information with periodic intelligence updates. In addition, sector sketches and the platoon fire plan allow coordination of fires before the fight begins. However, when time is extremely limited, digital coordination may be the only means of sending and receiving this information. At a minimum, the platoon leader should send and receive the following information using the radio or mission command system before conducting additional coordination:

- Location of leaders.
- Location of fighting positions.
- Location of observations posts and withdrawal routes.
- Location and types of obstacles.
- Location, activities, and passage plan for scouts and other units forward of the platoon's position.
- Platoon's digital sector sketch.
- Location of all Service members and units operating in and around the platoon's AO.

4-134. Current techniques for coordination hold true for units that are digitally equipped. If a digitized and a nondigitized unit are conducting adjacent unit coordination, face-to-face is the preferred method. The leader of the digitized unit has the option to enter pertinent information about the nondigitized unit into mission command systems for later reference. The digitally equipped platoon leader should show the adjacent unit leader the digital sector sketch. If face to face coordination is not possible, leaders share pertinent information by radio.

SECURITY

4-135. Security in the defense includes all active and passive measures taken to avoid detection by the enemy, deceive the enemy, and deny enemy reconnaissance elements accurate information on friendly positions. In planning for the security in the defense, the platoon leader considers the military aspects of terrain OAKOC. The platoon leader uses the map to identify terrain that will protect the platoon from enemy observation and fires, while providing observation and fires into the EA. The platoon leader uses available intelligence updates to increase situational understanding, reducing the possibility of the enemy striking at a time or in a place for which the platoon is unprepared.

TANK FIGHTING POSITIONS

4-136. The defensive plan normally requires building tank fighting positions. The primary concern in selecting fighting positions is the platoon's ability to concentrate and mass lethal fires into its sectors of fire. Whenever possible, primary and alternate fighting positions should allow engagement of the enemy in the flank and from two directions. Supplementary fighting positions are planned to allow the platoon to defend against enemy forces that penetrate adjacent platoon positions or that move along additional avenues of approach for which the commander has assumed risk. (See figure 4-14, page 156.) Dispersion among fighting positions reduces vulnerability of platoon vehicles to enemy fires, however, dispersion increases the demands for local security in the area between vehicles.

4-137. Ideally, the platoon will occupy hull-down fighting positions as the enemy crosses the direct-fire trigger line. The trigger line should optimize weapon standoff and efficacy, while the fighting position placement and the designated firing pattern should be selected to create the opportunity for flank engagements.

4-138. Each tank commander is responsible for the improvement of their designated fighting position. The tank commander must make sure that the location, orientation, and depth of the hole are correct before the engineer assets depart for the next fighting position. The tank commander should also know the importance of selecting a site with a background that will break up the silhouette of the vehicle; this helps to prevent sky lining. Initially, vehicles use natural cover and concealment in hide positions to increase survivability. As time, assets, and situations permit, positions are prepared using organic excavation equipment or engineer support.

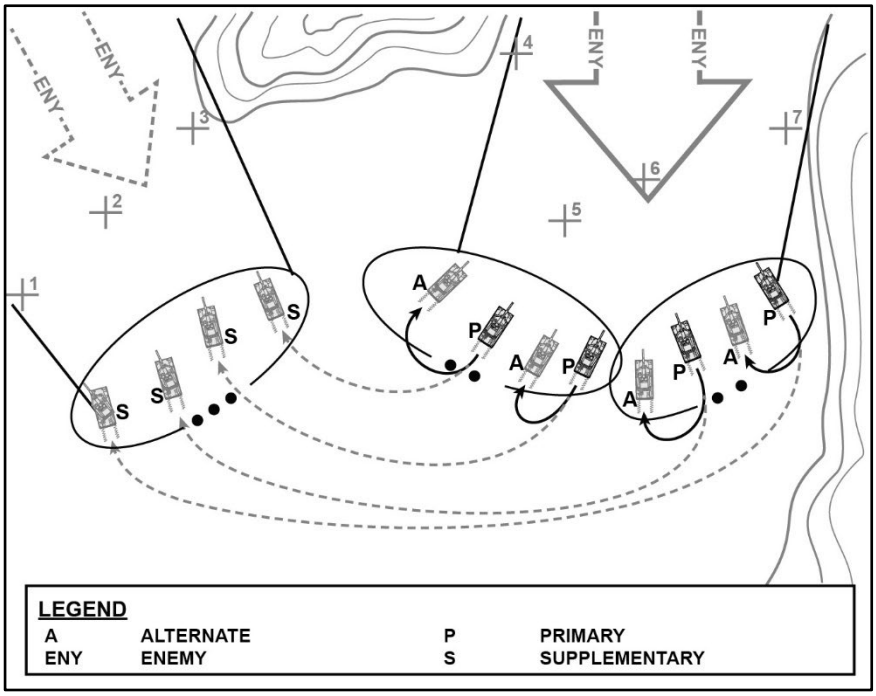


Figure 4-14. Fighting position

OCCUPATION PROCEDURES

4-139. After completing the reconnaissance and coordination, the platoon leader and tank commanders move back to their vehicles. The tank commanders remount, start vehicles simultaneously (short count procedure), and move to hide positions behind their primary fighting positions. On order, the platoon moves simultaneously into turret down firing positions. These positions allow the tanks to fire only their .50 caliber or loader's M240 machine gun. These positions also allow for scanning and observation using the gunner's primary sight, CITV, or binoculars.

HASTY FIGHTING POSITIONS

4-140. Hasty fighting positions for combat vehicles, including armored personnel carriers and mortar carriers, take advantage of natural terrain features. These positions are initially prepared with minimal to no construction effort. As the tactical situation permits, hasty positions are improved into deliberate fighting positions.

4-141. Tank platoons conduct a hasty occupation under a variety of circumstances. During an MTC, the platoon may prepare to destroy a moving enemy force by conducting a hasty occupation of BPs or attack by fire positions in defensible terrain. During defensive operations, hasty occupation may occur during counterattack missions, after disengagement and movement to subsequent or supplementary BPs, or in response to FRAGORDs reflecting a change of mission.

4-142. A hasty occupation usually occurs in response to a prearranged signal or a FRAGORD. Often, only a minimum of planning time and information is available before execution, although in some situations, such as after disengagement, the platoon may occupy prepared positions it has previously reconnoitered.

HIDE POSITIONS

4-143. The platoon's hide positions are located behind its primary BPs. The platoon occupies hide positions in one of two ways: either as a unit, or with individual vehicles occupying hide positions behind their primary fighting positions. The platoon leader should rehearse occupation of the BP from the hide position and record the travel time.

4-144. While in the hide position, the platoon employs all applicable OPSEC measures to limit aerial, thermal, electronic, and visual detection. It deploys OPs to provide surveillance of its sectors of fire and early warning for vehicles in the hide position. It also maintains the REDCON status prescribed in the OPORD. The hide position should not be located on or near obvious artillery targets.

4-145. The platoon leader checks with the OPs to ensure that the enemy situation has not changed, then orders platoon vehicles to occupy their primary hull-down fighting positions. Tank crews orient on the EA and complete their Standard Range Cards. Each crew sends its completed Standard Range Card to the platoon leader, either by messenger or by digital transmission. The crew also retains a copy of the Standard Range Card for its own reference.

DELIBERATE FIGHTING POSITIONS

4-146. Deliberate fighting positions must protect a vehicle from direct-fire weapon systems. The position is constructed in three parts: hide location, turret defilade, and hull defilade. (See figure 4-15 and figure 4-16, pages 158 to 159.)

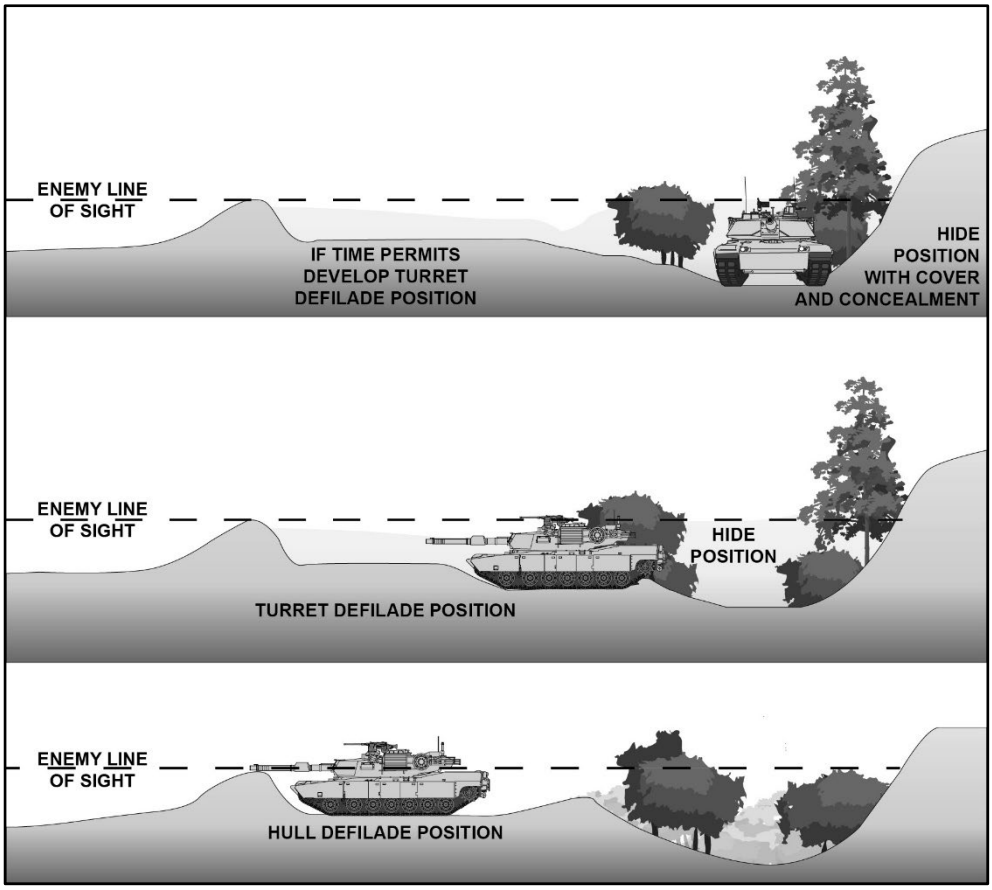


Figure 4-15. Developing deliberate fighting positions

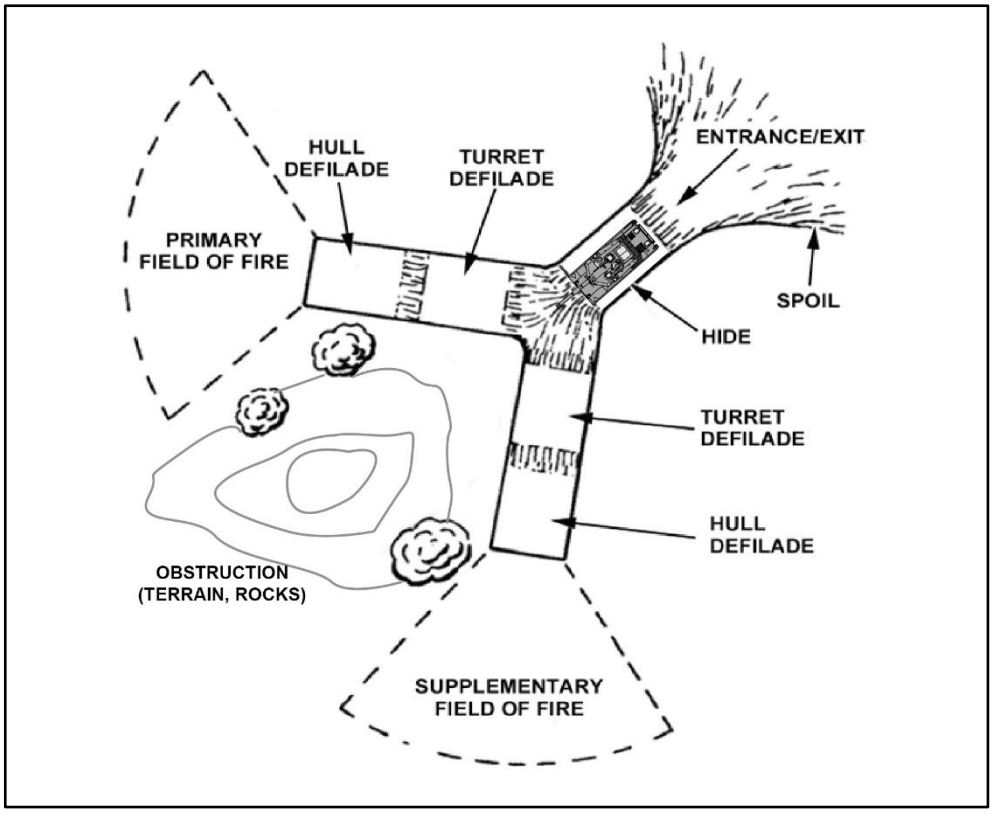


Figure 4-16. Top view of Y-shaped fighting position

4-147. The deliberate occupation of a fighting position includes the use of engineer assets to dig tank fighting positions. Tank crews must be experts at the construction of their fighting position. Engineers are the tools by which tanks can facilitate defilade positions. The tank crew must supervise the construction of the tank defilade. (See table 4-2, page 160 for dimensions.) The tank crew and tank must be present during the construction to proof the work, ensure the fighting position is oriented in the proper direction towards the enemy, and has adequate flank protection. Handoff of the engineering effort between BPs and platoons is important for maximizing the effort of the engineers during the critical allotted timeline for dig assets. (See ATP 3-34.10 for more information.)

4-148. Positions formed by natural terrain are usually best because they are easy to modify. If preparation is necessary, extensive engineering support is required. Each position is camouflaged with either natural vegetation or a camouflage net, and the spoil is flattened out or hauled away.

4-149. All fighting positions for tanks are planned as deliberate positions. Since the lack of time usually does not allow full construction of a deliberate position, only some parts of the position are prepared. For example, the complete fighting position for a tank requires the construction of a hull defilade, turret defilade, and hide location all within

the same position. The maneuver team commander uses organic and engineer earthmoving assets and usually constructs part of the fighting position. If time permits, the commander expands the fighting position to all three parts. This location can be marked with engineer tape and a chemical light, so the driver knows when to stop.

Table 4-2. Dimensions for M1 Tank Position

M1 Tank								
HIDE POSITION (feet[1])			***HULL DEFILADE (feet)***			***TURRET DEFILADE (feet)***		
L	W	D[2]	L	W	D[2]	L	W	D[2]
32	18	10.35	32	18	5.5	32	18	9

[1] Position dimensions provide an approximate 3-foot clearance around the vehicle for movement and maintenance and do not include access ramps.
[2] Total depth includes berm height. Depths are approximate and need adjustment for surrounding terrain and fields of fire.

STAKE THE POSITION

4-150. Once the fighting position is verified, it should be staked for marking. (See figure 4-17.) One stake is placed in front of the vehicle and driven firmly into the ground, centered on the driver's station, and just touching the hull. It should be long enough for the driver to see when in position and can be marked with engineer tape or luminous tape for better visibility. The other stake is placed parallel to the left or right side of the tank and lined up with the hub on the front road wheels. The stakes should be placed close to the vehicle with only enough clearance to move the tank into position. Stakes must be marked so that they are visible in day, night, and under conditions of limited visibility. A rock is placed at each of the front two corners of the vehicle to help in reoccupation if the stakes are lost. If the stakes are lost and the position is not otherwise marked, the vehicle is moved to the approximate location.

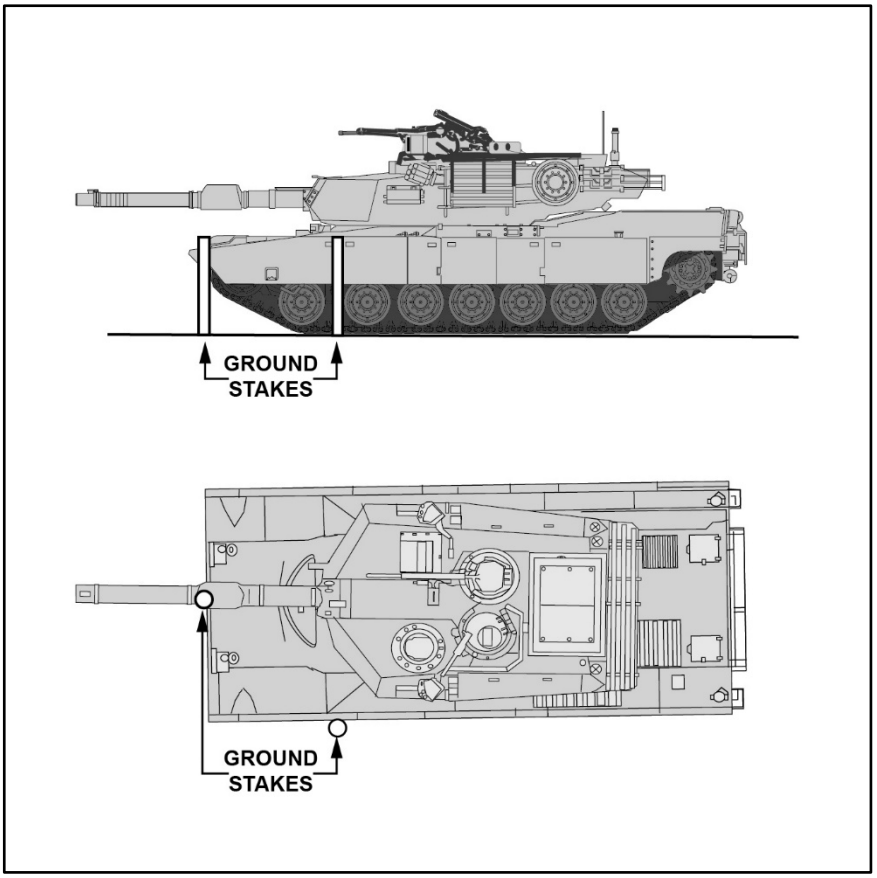


Figure 4-17. Stake the position

4-151. Staking the position allows the vehicle to assume the fighting position quickly as the driver aligns the tank to the two stakes. This should be rehearsed by tank commanders with their crews. Once in position, the gunner should index the range and azimuth for one of the TRPs on the Standard Range Card. If the sight is aligned on the TRP, the vehicle is correctly positioned. If the sight is not aligned on the TRP, the gunner should tell the driver which way to move the vehicle to align the sight to the target. Only minor adjustments should be necessary. The tank commander or gunner can use a compass while dismounted to find the left and right limits.

SECTION V – DA FORM 5517 (STANDARD RANGE CARDS) AND SECTOR SKETCHES

4-152. A Standard Range Card is used to create a sketch of the assigned area for a direct fire weapon system on a given sector of fire. A Standard Range Card aids in planning and controlling fires and aids the tank crews in acquiring targets during limited visibility. The tank gunner prepares two copies of the Standard Range Card. If alternate and

supplementary firing positions are assigned, two copies are required for these as well. A copy is kept with the vehicle and the other is given to the platoon leader for the sector sketch.

DA FORM 5517 (STANDARD RANGE CARD)

4-153. A Standard Range Card is a sketch of the assigned area for a direct-fire weapon system on a given sector of fire. (See ATP 3-21.8 for more information.) A Standard Range Card aids the platoon leader in planning and controlling fires and aids the crews and gunners in acquiring targets during limited visibility. Standard Range Cards show possible target areas and terrain features plotted with a firing position. The process of walking and sketching the terrain to create a Standard Range Card allows the crew or gunner to become more familiar with their sector. They should continually assess their assigned area and, if necessary, update the Standard Range Card.

TARGET AREAS AND TERRAIN FEATURES

4-154. Standard Range Cards show possible target areas and terrain features plotted with a firing position. The process of walking and sketching the terrain to create a Standard Range Card allows the tank gunner to become more familiar with their sector of fire, and familiar with the terrain in their sector. Gunners should continually assess the area and, if necessary, update the Standard Range Card. The Standard Range Card is an aid for replacement personnel or platoons to move into the position and orient on their sector of fire. To prepare a Standard Range Card, the tank gunner must know the following information:

- Sector of fire is a piece of the battlefield for which a gunner is responsible.
- TRPs.
- Leaders designate natural or man-made features as reference points that are used for target acquisition and range determination.
- Dead space is an area that cannot be observed or covered by direct-fire systems within the sector of fire.
- Maximum engagement line is the depth of the area and is normally limited to the maximum effective engagement range of the weapons systems.
- Weapons reference point is an easily recognizable terrain feature on the map used to assist leaders in plotting the vehicle position.

PREPARATION PROCEDURES

4-155. The gunner or crew prepares two copies of the Standard Range Card. If alternate and supplementary firing positions are assigned, two copies are required for these as well. A copy is kept with the vehicle position, and the other given to the platoon leader for the sketch. The gunner and crew prepare the Standard Range Card according to ATP 3-21.8. (Figure 4-18, page 164 shows an example Standard Range Card for a tank.)

MAXIMUM ENGAGEMENT LINE

4-156. Although the maximum engagement line is typically limited to the maximum effective engagement range of the weapons systems, it can be less if objects prevent the Soldier from engaging targets at maximum effective ranges of their assigned weapon. Use the two-thirds rule or two-thirds of the maximum range of the weapons system when planning the maximum engagement line. This technique increases the probability hit/kill

ratio. The tank's Standard Range Card includes three different weapons and their maximum engagement line: the 120-mm, the .50 caliber, and the 7.62-mm coaxial machine gun.

DATA SECTION

4-157. The gunner completes the position identification, date, weapon, and circle value according to ATP 3-21.8.

NUMBER

4-158. Numbers will start with left and right limits, then list TRPs and reference points in numerical order.

DIRECTION AND DEFLECTION

4-159. The direction is in degrees and taken from a compass.

4-160. The most accurate technique is to have the gunner aim at the terrain feature, and to have the driver dismount and align themselves with the gun barrel and the terrain feature to measure the azimuth.

ELEVATION

4-161. The gun elevation reading must be shown in tens or hundreds of mils. The smallest increment of measure on the elevation scale is tens of mils—

- Any number other than "0" is preceded by a plus or minus symbol to show whether the gun needs to be elevated or depressed.
- Ammunition and range must be indexed to have an accurate elevation reading.

RANGE

4-162. Range is the distance, in meters, from vehicle position to left (L) and right (R) limits and TRPs and reference points.

AMMUNITION

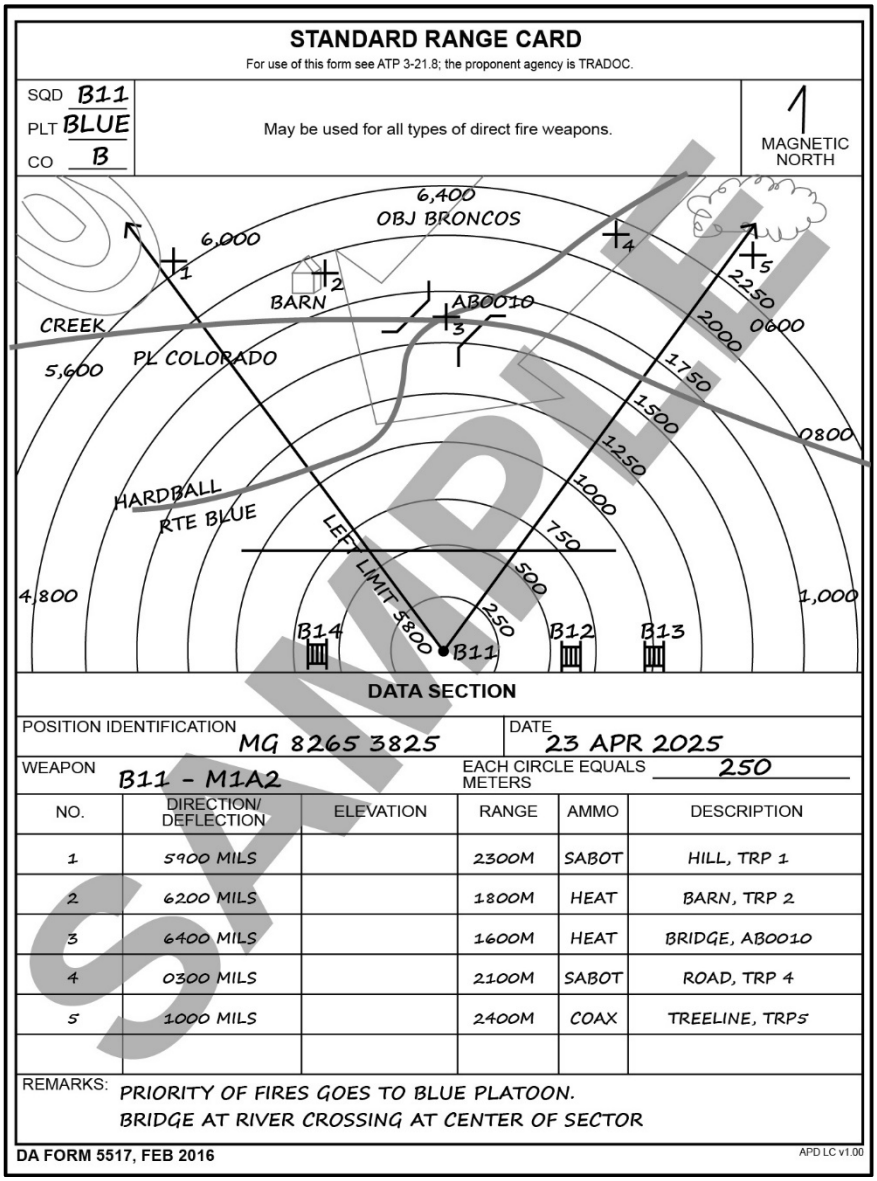
4-163. List all types of ammunition.

DESCRIPTION

4-164. The names of the objects must be listed.

REMARKS

4-165. In the remarks block enter the weapons reference point data. As a minimum, weapons reference point data includes a description of the weapons reference point, and a six-digit or eight-digit grid coordinate of the weapons reference point, the magnetic azimuth, and the distance from the weapons reference point to the vehicle position.



STANDARD RANGE CARD

For use of this form see ATP 3-21.8; the proponent agency is TRADOC.

SQD B11
PLT BLUE
CO B

May be used for all types of direct fire weapons.

MAGNETIC NORTH

6,400
OBJ BRONCOS
6,000
BARN
AB0010
CREEK
PL COLORADO
5,600
HARDBALL
RTE BLUE
LEFT LIMIT 5800
4,800
1,000
0800
0600
2250
2000
1750
1500
1250
1000
750
500
250
B14
B12
B13
B11

DATA SECTION

POSITION IDENTIFICATION: MG 8265 3825
DATE: 23 APR 2025
WEAPON: B11 - M1A2
EACH CIRCLE EQUALS METERS: 250

NO.	DIRECTION/ DEFLECTION	ELEVATION	RANGE	AMMO	DESCRIPTION
1	5900 MILS		2300M	SABOT	HILL, TRP 1
2	6200 MILS		1800M	HEAT	BARN, TRP 2
3	6400 MILS		1600M	HEAT	BRIDGE, AB0010
4	0300 MILS		2100M	SABOT	ROAD, TRP 4
5	1000 MILS		2400M	COAX	TREELINE, TRP5

REMARKS: PRIORITY OF FIRES GOES TO BLUE PLATOON.
BRIDGE AT RIVER CROSSING AT CENTER OF SECTOR

DA FORM 5517, FEB 2016

APD LC v1.00

Figure 4-18. Example of a completed DA Form 5517 (Standard Range Card)

4-166. When the tank is moved into position, before engineer assets are released from the position, the crew will ensure the target areas and obstacles within their assigned sector of fire can be fired on. They will also confirm TRPs, as a TRP that could be engaged before the fighting position was prepared, may be masked when the tank is dug in.

4-167. Time permitting, the platoon leader or the PSG verifies the Standard Range Cards by mounting each tank to view its respective sector through the gunner's primary sight extension or CITV.

SECTOR SKETCHES

4-168. Tank gunners prepare Standard Range Card. Section leaders prepare sector sketches. Section leaders may have to prepare separate sector sketches only if they are assigned separate positions from the platoon. The platoon leader reviews section's sector sketches and ensures the sketches are accurate and meet standard requirements. If the platoon leader finds gaps or other flaws, the platoon leader adjusts weapons locations within the sector. The platoon leader or PSG physically prepares the platoon sector sketch. Once the platoon leader approves the section sector sketches, the platoon leader prepares a consolidated platoon sector sketch for the company commander. The sector sketch can be on acetate taped to a map or it can be a hand drawn sketch. Accurate and detailed sketches aid in direct-fire planning and in direct-fire control and distribution.

PLATOON SECTOR SKETCH

4-169. Tank commanders prepare their Standard Range Cards and submit them to the platoon leader. The platoon leader combines all Standard Range Cards to prepare a platoon sector sketch, which is drawn as close to scale as possible and includes a target list for direct and indirect fires. (See figure 4-19, page 166.) Once the platoon sector sketch is prepared and confirmed, the platoon leader provides it to the company commander. At a minimum, the platoon sector sketch should show—

- Primary and secondary sectors of fire or EAs.
- Primary, alternate, and supplementary positions.
- Maximum engagement lines for 120-mm, M240, and .50 caliber.
- OPs.
- TRPs.
- Mines and other obstacles.
- Indirect-fire target locations and FPF location (if applicable).
- Position and area of flanking unit vehicles.
- Priority engagement by tank.

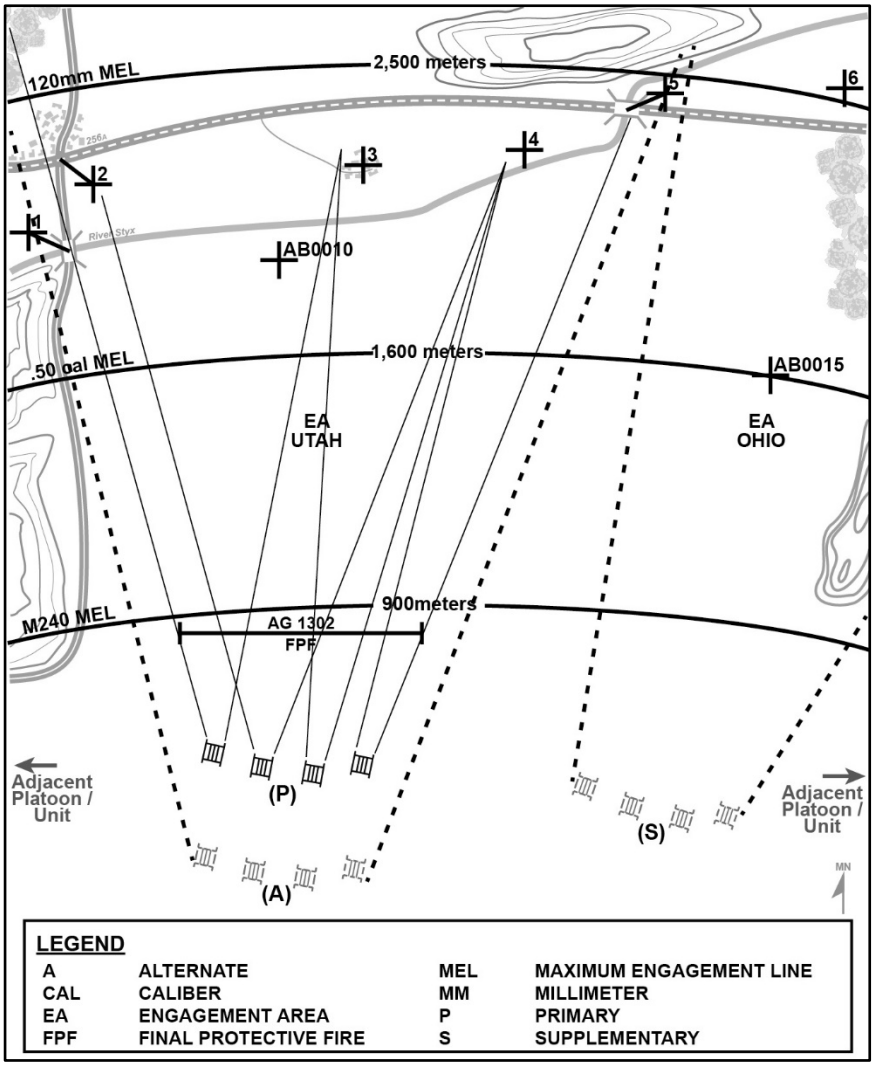


Figure 4-19. Example of a platoon sector sketch

COORDINATION WITH ADJACENT UNITS

4-170. Platoon leaders coordinate with adjacent platoons so that all positions and all platoons have mutually supporting sectors. The platoon leader must ensure that this coordination occurs early in the planning and preparation for the defense. The platoon leader is responsible for maintaining communication and synchronization with adjacent units throughout the defensive operation. Gaps between positions are covered by fire as a minimum. Contact points are established to ensure friendly forces meet at some specific point on the ground to tie in their flanks. In many cases, the exchange of sector sketches will accomplish most of this. Typical information that is exchanged includes the following:

- Locations of primary, alternate, and supplementary positions; sectors of fire for tanks.
- Location of dead space between platoons and how it is to be covered.
- Agreement on which unit owns responsibility for areas that split both, such as roads or trails.
- Agreement about how to hand-off targets moving into or out of adjacent unit sectors.
- Location of OPs.
- Location and types of obstacles and how to cover them.
- Patrols (size, type, time of departure and return, and routes).
- Call signs and frequencies.
- Anticipated routes, support by fire positions, or other locations.

WEAPONS PLANNING RANGES

4-171. The weapons planning range for a tank is the distance at which the platoon leader intends to begin engaging enemy targets. In determining this range, the platoon leader must know the lethality of the kinetic energy rounds the crews will be firing versus the specific vulnerabilities of the enemy armor the platoon leader expects to face. Lethality, and as a result the weapon planning range, is based on the two factors known as probability of hit and probability of kill (PK). While actual values of probability of hit and PK are classified, it is obvious that probability of hit decreases as range increases, as does PK for kinetic energy penetrators. This is because velocity decreases with range; penetration is largely dependent on velocity.

EVALUATING AND DETERMINING THE PLANNING RANGE

4-172. With limited rounds available on board each vehicle, the platoon leader must weigh the tactical alternatives and try to make every round count. Key factors in determining the weapon planning range are mission variables. The commander must consider the capabilities and limitations of friendly forces as well as those of enemy personnel. In addition, the planning range for a tank cannot be separated from the number of rounds the platoon leader is prepared to expend. While it is possible to hit an enemy tank at 3,000 meters, the probability of doing so on the first round is low. Further, even when a hit is made, PK is very low against turret frontal armor.

4-173. Considering these factors, the platoon leader usually directs the tank commanders to engage targets from closer ranges, especially in frontal engagements. Considering only PK, frontal tank engagements should begin at less than 2,500 meters. Several factors combined to make frontal engagements of enemy tanks beyond 2,500 meters only marginally effective. If the tactical situation permits, the optimum weapon planning range against tanks in the frontal 60-degree arc is 1,500 meters. This can be extended with the awareness that probability of hit and PK against turret frontal armor will degrade with increased distances.

4-174. Engagement of enemy fighting vehicles with lighter armor can begin at longer ranges based on the increased PK; however, due to their smaller size, the probability of hit for these vehicles is normally lower than that for tanks. Frontal engagements of enemy fighting vehicles with lighter armor can begin at longer ranges; the PK is higher due to the difference in protection levels.

4-175. Further consideration on engagement range should be based on terrain, weather, obscuration, and enemy capabilities and type of equipment. Platoons may be faced with a wide variety of equipment, including (but not limited to) converted civilian trucks, older equipment upgraded with new sensors and capabilities, similar or peer threats, or superior, state-of-the-art equipment. The tank platoon leader must not only understand how far the tank platoon can observe and engage the enemy, but also how far the enemy can observe and engage the friendly tank platoon.

LONG-RANGE ENGAGEMENT CONSIDERATIONS

4-176. When the decision is made to engage the enemy at longer ranges, the platoon leader is almost certain to compromise the platoon's position and lose the element of surprise. At the same time, however, the forward placement of a platoon may deceive the enemy as to the location of the main defensive position and cause them to deploy sooner than they had anticipated.

4-177. Long-range engagements require the use of sensing tanks and observed fire techniques; as a result, the platoon leader should always attempt to conduct these engagements from an elevated firing position. The platoon leader should task only the most proficient firing crews and most accurate tanks to execute the long-range mission.

TERRAIN

4-178. The platoon leader mentally rehearses the battle as they conduct TLPs. After reconnaissance of the EA or sector, the platoon leader gathers all the tank commanders (and gunners, if possible) where they can view the area. The platoon leader ensures that everyone can identify the assigned TRPs, obstacles, avenues of approach, prominent terrain features, and dead space.

4-179. Using TRPs, terrain features, or man-made obstacles, the platoon leader ensures that each tank has a well-defined and well-understood sector of fire. An individual tank sector should be wide enough to allow some overlap with adjacent vehicles but narrow enough to prevent the overkill of targets. This reduces the scanning requirements for the gunner and the potential for overkill; it also ensures that the entire EA or platoon sector is covered by main gun fire. Based on the commander's guidance, the platoon leader also establishes the trigger line for initiation of direct fires and takes other actions that are time or space dependent.

4-180. The platoon leader decides whether to have all the tanks orient on the TRPs assigned by the company team commander or to have sections or individual tanks orient in slightly different areas (platoon-level targets). For example, if the platoon leader is tasked to orient on TRP 3, the platoon leader might decide on one of the following missions for the subordinates, based on the enemy and terrain:

- All tanks orient on TRP 3.
- Alpha section orients to the left of TRP 3 while Bravo section orients to the right.

4-181. When the platoon leader decides how to use the tanks to best execute the company team commander's intent, the platoon leader checks each firing position that was selected, identifying and confirming sectors of fire to ensure mutual support between tanks. The platoon leader must know where all friendly elements are positioned, if any. The platoon leader must then plan machine gun fires for each tank to protect itself

as well as other tanks in the platoon and adjacent friendly elements. The platoon leader does this by assigning FPFs with the platoon using its coaxial machine guns to fire on dismounted enemy infantry, and by planning for additional indirect-fire support.

SECTION VI – TRANSITIONS

4-182. During the planning for the defensive operation, the platoon leader must discern from the company OPORD what the potential follow-on missions are and begin to plan how to achieve them. During this planning, the leader determines the possible timeline and location for defeat in detail, consolidation, reorganization, and transition which best facilitate future operations and provide adequate protection.

CONSOLIDATION AND REORGANIZATION

4-183. For consolidation the platoon leader and platoon subordinate leaders prepare an initial plan for consolidation during TLPs. The following actions are usually a part of consolidate:

- Eliminating remaining enemy resistance in BPs, noncontiguous assigned areas, and the security area.
- Reestablishing, reoccupying fighting positions, and adjusting unit boundaries.
- Preparing for enemy counterattack.
- Reestablishing local security including OPs and patrols to deny enemy direct or indirect fire on defensive positions.
- Preparing for and assisting with the passage of follow-on forces (if required).
- Continuing to improve security by conducting other necessary defensive actions, such as EA development, direct-fire planning, and BP preparation.
- Adjusting FPFs and registering targets along likely mounted and dismounted avenues of approach.
- Closing gaps or lanes in obstacles, repairing or replacing damaged or breached obstacles, and replacing expended mines.
- Securing enemy detainees.

4-184. Reorganization usually is conducted concurrently with consolidation. It consists of actions taken to prepare the unit for follow-on tasks. As with consolidation, the platoon leader and platoon subordinate leaders plan and prepare for reorganization during TLPs. During reorganization, the platoon leader ensures the following actions are taken:

- Provide essential medical treatment and evacuate casualties, as necessary.
- Treat and evacuate wounded detainees and process the remaining detainees.
- Reestablish key leaders using the designated succession of command.
- Reestablish manning of key weapons, equipment, and vehicle crews.
- Reestablish communications within the organization and with adjacent units.
- Cross-level personnel and adjust forces as required to support operations.
- Conduct resupply operations.
- Redistribute ammunition.
- Conduct required maintenance.
- Continue improving defensive positions, as necessary.
- Prep to fire checks and boresight as available times allows.

CONTINUING OPERATIONS

4-185. At the conclusion of an engagement, the platoon may continue the defense, or if ordered, transition to the offense. The platoon leader considers the higher commander's concept of operations, friendly capabilities, and enemy situation when making this decision. All missions should include plans for exploiting success or assuming a defensive posture. The platoon should assume that the enemy will continue to engage in known friendly positions with indirect fires even if their attack has culminated.

4-186. A company commander may order a defending platoon to conduct a hasty operation (for example, counterattack or retrograde) or participate in an MTC. As part of a reserve force, the platoon may execute a counterattack 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 element moves on a concealed route to firing positions from which it can engage the enemy in the flank and rear. The counterattack force must maneuver rapidly, often fighting through enemy flank security elements, to complete the counterattack before the enemy can bring follow-on forces forward to influence the fight. Platoon leaders remain flexible and prepared for follow-on mission or plan to execute contingency plans in the commander's order.

Chapter 5
Tactical Enabling Tasks and Activities

Tactical enabling tasks are specialized missions that the tank platoon plans and conducts as part of the offense, defense, or during operations focused on stability tasks. The fluid nature of the modern battlefield increases the frequency with which the tank platoon conducts these enabling tasks. This chapter describes additional tasks the tank platoon may conduct to complement or support its primary tasks. The platoon executes these additional tasks separately or as part of a larger force.

SECTION I – MOVEMENT

5-1. Movement places troops and equipment at their destination at the proper time, ready for combat, and ends when ground contact is made, or the unit reaches its destination. Chapter 5 discusses tactical formations and movement techniques. Movement is not maneuver. Maneuver occurs once a unit has made contact with the enemy and combines movement with direct fires to gain a position of advantage over the enemy.

TROOP MOVEMENT

5-2. *Troop movement* is the movement of Soldiers and units from one place to another by any available means (FM 3-90). The ability to posture the force for a main or support effort on the capability to conduct rapid and orderly movement to concentrate the effects of combat power at decisive points and times. The two types of troop movement are nontactical movement and tactical movement.

NONTACTICAL MOVEMENT

5-3. *Nontactical movement* is a movement in which troops and vehicles are arranged to expedite their movement and conserve time and energy when no enemy ground interference is anticipated (FM 3-90). Nontactical movements are only conducted in secure areas. This includes rail and highway movement within the continental United States. Once deployed into a theater of operation, commanders normally do not employ administrative movements.

TACTICAL MOVEMENT

5-4. *Tactical movement* is a movement in which troops and vehicles are arranged to protect combat forces during movement when a threat of enemy interference is possible (FM 3-90). Units maintain security against enemy attacks from both the air and ground and prepare to take immediate action against enemy ambushes, although they do not expect contact with significant enemy ground forces. During movement, the moving force employs security measures, even when contact with enemy ground forces is not expected. During a tactical movement, units are always prepared to take immediate action. There are three methods of tactical movements that units of all types can conduct: approach march, forced march, and tactical road march.

Approach March

5-5. An *approach march* is the advance of a combat unit when direct contact with the enemy is intended (FM 3-90). The approach march is employed when the enemy's approximate location is known and prioritizes security over speed. In an approach march, units are task-organized to allow them to transition to an on order or a be prepared mission without making major organizational adjustments. The approach march terminates in a march objective, such as an attack position, AA, or assault position, or it can be used to transition to an attack.

5-6. The key to movement involves selecting the best combination of combat formation and movement technique for each situation (described in chapter 3). Leaders consider METT-TC (I) in selecting the best route, appropriate formation, and movement technique. The leader's selection must allow the moving unit to—

- Maintain cohesion.
- Maintain communication.
- Maintain momentum.
- Provide maximum security.
- Make enemy contact in a manner allowing them to transition smoothly to offensive or defensive action.

Forced March

5-7. A *forced march* is a march longer or faster than usual or in adverse conditions (FM 3-90). Forced marches prioritize speed over security, requiring speed, exertion, and an increase in the number of hours marched each day beyond normal standards. Soldiers and vehicles cannot sustain forced marches for more than a short period. In a forced march, a unit may not halt as often or for as long as recommended for maintenance, rest, feeding, and fuel. Units must understand that immediately following a long and fast march, Soldiers and combat vehicles experience a temporary deterioration in their physical condition. Combat effectiveness and cohesion of the unit also temporarily decreases. The plan must accommodate stragglers and address increased maintenance failures.

Tactical Road Marches

5-8. A *tactical road march* is a rapid movement used to relocate units within an area of operations to prepare for combat operations (FM 3-90). The primary consideration of the tactical road march is rapid movement, prioritizing speed over security. Tank platoons conduct tactical road marches to move long distances and position themselves for future operations. Tactical road marches are conducted using fixed speeds and timed intervals. Road marches are planned at the BN and company levels and executed by platoons.

5-9. Despite the focus on speed, units maintain security against enemy air attack and UAS and prepare to take immediate action against enemy ambushes, though they do not expect contact with significant enemy ground forces. Tank platoons should consider executing tactical road marches during limited visibility to reduce enemy observation.

ORGANIZATION FOR TROOP MOVEMENTS

5-10. There are several differences between the organization of troop movements. An approach march prioritizes security over speed while nontactical movement, tactical road march, and forced march prioritizes speed over security. A unit conducting an approach march employs larger security forces because of its greater chance for enemy contact. Units conducting approach marches arrange into combined arms organizations. An approach march allows units to disperse their task-organized forces into tactical formations without being constrained to existing roads and trails.

5-11. A nontactical movement, tactical road march, or forced march can organize into columns for rapid movement. For example, vehicles of similar types, speed, and cross-country capabilities move together. Units conducting troop movements establish appropriate tactical intervals between vehicles. They also use fewer routes than units conducting approach marches.

5-12. The organization for a tactical road march is the march column, which includes all elements using the same route for a single movement under control of a single commander. The four elements of a march column include reconnaissance, quartering party, main body, and trail party.

5-13. A march column provides excellent speed, control, and flexibility, but only provides local security. A march column is utilized when speed is essential and enemy contact is unlikely. However, functional and multifunctional support elements, such as air defense and engineers, are spaced throughout the column to protect and support the movement. (See FM 3-90 for more information.)

GRAPHIC CONTROL MEASURES FOR TACTICAL TROOP MOVEMENTS

5-14. The commander directing the tactical troop movement often uses a strip map or overlay. The tank platoon leader should also use an overlay to control the platoon during the conduct of the tactical troop movement. At a minimum, it must show the SP, release point (RP), and route. (See figure 5-1, page 174.)

5-15. The SP location represents the beginning of the road march route. It should be located on easily recognizable terrain, far enough away from the unit's initial position to allow the platoon to organize into the march formation at the appropriate speed and interval. If time is available, the platoon leader should determine the time to reach the SP. This ensures the platoon arrives at the SP at the time designated in the commander's OPORD. The RP location is at the end of the route of march. It also is located on easily recognizable terrain. Elements do not halt at the RP but continue to their respective positions with assistance from guides, waypoints, or graphic control measures. The route is the path of travel connecting the SP and RP. Checkpoints may also be used along the route to help in controlling movement and complying with the established timetable.

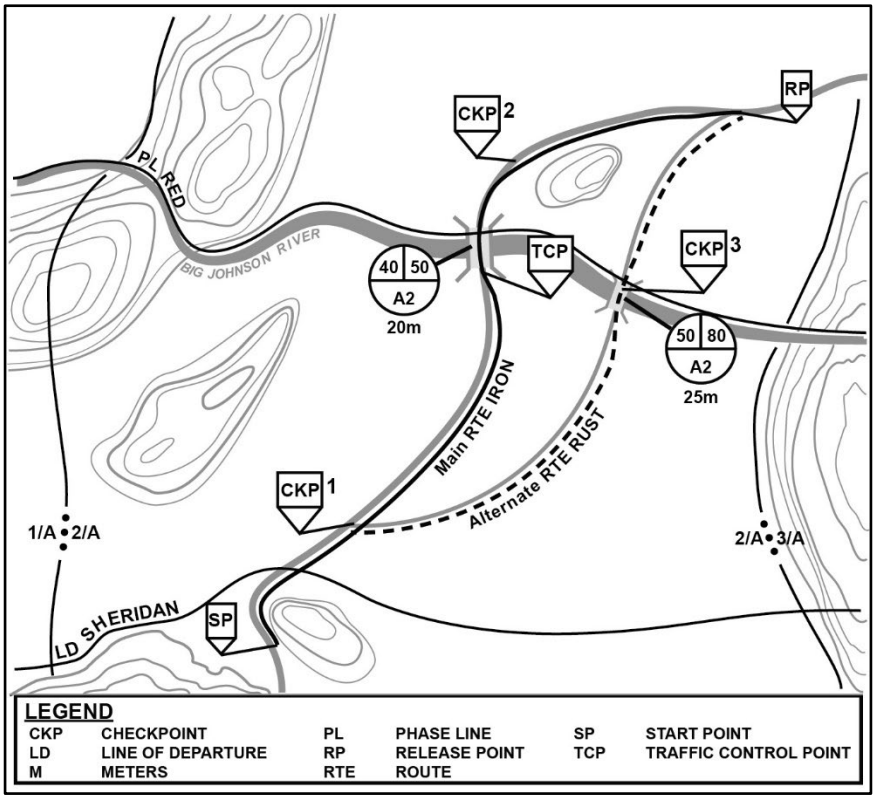


Figure 5-1. Overlay with route control measures

5-16. Digital overlays may serve as a source of graphic control measures, though the traditional hard-copy map and overlay must be maintained as a backup. Digital overlays display waypoints and information concerning unit locations along the route of march that can help tank commanders in navigation and help them in maintaining situational understanding.

5-17. A strip map can be used to help with navigation. (See figure 5-2.) It must include the SP, RP, and checkpoints, and must list the distances between these points. Detailed blow-up sketches should be used for scheduled halt locations 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 tank commanders.

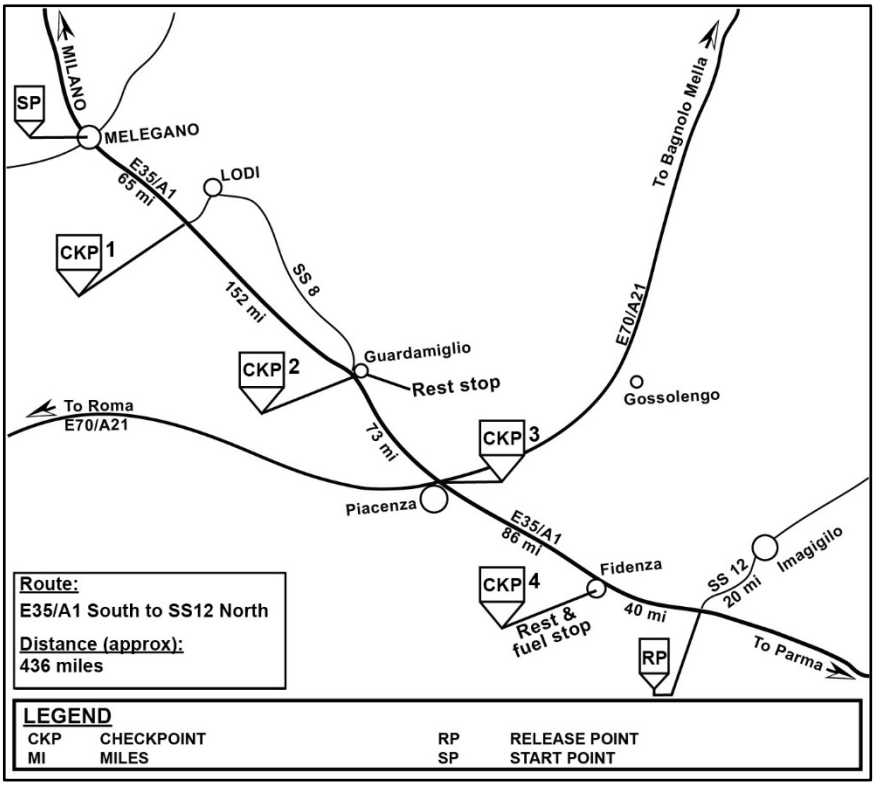


Figure 5-2. Strip map

5-18. Other graphic control measures for tactical troop movement commonly include AA and PLs. The key terms for a tactical road march are defined as follows:

- SP is a location on a route where the marching elements fall under the control of a designated march commander.
- RP is a location on a route where marching elements are released from centralized control.
- Checkpoint is a predetermined point on the ground used to control movement, tactical maneuver, and orientation.
- Critical points are points that identify where interference with movement might occur.
- Light line is a designated PL, forward of which vehicles are required to use blackout lights during limited visibility.
- Traffic control point is a point positioned along the route to prevent congestion and confusion.
  - They may be manned by military police or unit personnel.
  - These personnel report to the appropriate area movement control organization when each convoy, march column, and march serial arrives at and completes passage of their location.

- Movement corridor is a designated area that units establish to set the conditions to protect and enable movement of traffic along a designated surface route.

MARCH TECHNIQUES

5-19. Organized march columns employ three march techniques: open column, close column, and infiltration. Each of these techniques uses scheduled halts to control and sustain the road march. METT-TC (I) requires adjustments in the standard distances between vehicles.

5-20. During movement, elements in a column may encounter many different types of routes and obstacles simultaneously. Consequently, parts of the column may be moving at different speeds, which can produce an undesirable accordion-like effect. The movement order establishes the order of march, rate of march, interval or time gaps between units, column gap, and maximum catch-up speed.

5-21. March units report when they have crossed each control measure unless the commander directs them not to do so for security reasons. The platoon leader should communicate to the commander that they have 'opened' a checkpoint when the first vehicle in the platoon crosses it and should similarly 'close' the checkpoint when the last vehicle crosses it. Movement reporting is also dependent on the commander's guidance, unit SOP, and OPSEC. Units maintain air and ground security throughout the movement.

Open Column March

5-22. The open column is the most common tactical march technique because it offers the most security while still providing a reasonable degree of control. It is normally used during daylight marches but may also be used at night with IR lights, blackout lights, or passive night-vision equipment. Using an open column roughly doubles the column's length and thereby doubles the time it takes to clear a point when compared to a close column moving at the same speed. Vehicle distance varies from 50 to 100 meters but may be greater if required. In an open column, vehicle density varies from 15 to 20 vehicles per kilometer.

Close Column March

5-23. The close column technique is normally employed for marches during hours of darkness under blackout driving conditions or for marches in restricted terrain. This technique takes maximum advantage of the traffic capacity of a route but provides little dispersion. Distance between vehicles varies from 20 to 25 meters. At night, vehicles are spaced so each driver can see the two lights in the blackout marker of the vehicle ahead. Normally, vehicle density is from 40 to 50 vehicles per kilometer along the route.

Infiltration March

5-24. Infiltration provides the best possible passive defense against enemy observation and attack. It is used when time and road space are available, and when security, deception, and dispersion are necessary. During infiltration, vehicles are dispatched in small groups, or at irregular intervals, at a rate that keeps the traffic density low and prevents undue massing of vehicles during the movement.

5-25. The disadvantages of infiltration are that more time is required to complete the move, column control is nearly impossible, and recovery of broken-down vehicles by the trail party is more protracted when compared to vehicle recovery in open and close columns. Additionally, unit integrity is not restored until the last vehicle arrives at the destination, complicating the unit's onward deployment.

Note. An infiltration march during troop movement should not be confused with infiltration as a form of maneuver as discussed in chapter 3 of this publication.

ACTIONS DURING THE MARCH

5-26. The platoon must arrive at the SP at the time designated in the company OPORD. Some commanders designate a staging or marshaling area that enables platoons to organize their march columns and conduct final inspections and briefings before movement. Other units require platoons to move directly to the column from their current positions. To avoid confusion during the initial move, the platoon leader and tank commanders conduct a reconnaissance of the route to the SP, issue clear movement instructions, and conduct thorough rehearsals while paying particular attention to signals and timing.

5-27. The platoon moves through the RP without stopping. The platoon leader picks up the assigned guide or follows the guide's signals to the AA. Depending on terrain and the equipment available (GPS or POSNAV), guides and marking materials may be posted at or near exact vehicle locations.

MARCH SPEED

5-28. An element's speed in a march column changes as it encounters variations in the route and road conditions, which can produce an undesirable accordion-like effect. The movement order establishes the speed of movement and maximum catch-up speed. During the march, the platoon's lead tank must not exceed the fixed march speed. Additionally, the lead tank should accelerate slowly out of turns or choke points to allow the platoon to resume the speed of march gradually after moving past the restriction.

ORIENTATION

5-29. Each tank in the platoon has an assigned sector of fire. The tank commanders assign sectors of observation to crewmen, both to cover their portion of the platoon sector and to achieve 360-degree observation, including air guards.

HALTS

5-30. While taking part in a road march, the platoon must be prepared to conduct scheduled and unscheduled halts. Security must be maintained and whenever possible tank commanders should select survivable positions offering cover and concealment.

Scheduled Halts

5-31. These are executed to conduct maintenance, refueling, personal relief activities, and to allow other traffic to pass. The time and duration of halts are established in the

movement order; unit SOP specifies actions taken during halts. The first priority at a halt is 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 break every 2 hours thereafter.

5-32. During long marches, the unit may conduct a refuel on the move (ROM) operation. Depending on the tactical situation and the company OPORD, the platoon may conduct ROM for all vehicles simultaneously or by section. The OPORD specifies how much fuel or how much time at the pump for each vehicle. It also gives instructions for security at the ROM site and at the post-fueling staging area. (See chapter 5 for more information.)

5-33. Short halts are generally scheduled every 2 to 3 hours of movement and may last up to an hour; long halts occur on marches that exceed 24 hours and last no more than 2 hours. Long halts are not scheduled at night, which maximizes the time of night movement.

Unscheduled Halts

5-34. Unscheduled halts are conducted under a variety of circumstances, such as when the platoon encounters obstacles or contaminated areas, or if a disabled vehicle blocks the route. The platoon conducts actions on contact and establishes 360-degree security.

5-35. A disabled vehicle must not be allowed to obstruct traffic. If possible, the crew moves the vehicle off the road immediately, reports its status, establishes security, and posts 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 is usually comprised of the maintenance team with the M88 recovery vehicle and some type of security. If the crew cannot repair the vehicle, then it is recovered by the maintenance element.

SECTION II – ROUTE SELECTION AND NAVIGATION

5-36. During planning and preparation for tactical movement, the platoon leader should analyze the terrain from two perspectives. First, they analyze the terrain to see how it can provide tactical advantage to friendly and enemy forces. Second, they look at the terrain to determine how it can aid in navigation. The platoon leader should identify areas or terrain features dominating their avenue of approach. These areas can become possible intermediate and final objectives.

5-37. The platoon leader should identify terrain along the route that facilitates navigation and the destruction of enemy forces if contact occurs. If the platoon leader wants to avoid contact, they should choose terrain that conceals the unit from detection; if contact is desired, the leader should select terrain that provides unobstructed observation and fields of fire to identify and engage the enemy. Regardless of whether the mission requires stealth or speed, the platoon leader must ensure most of the terrain along the route provides some tactical advantage.

5-38. Route selection and navigation are made easier with the aid of technology. The latest command and control systems enhance the tank platoon’s ability to ensure they

are in the right place at the right time, and to determine the location of adjacent units. Leaders and crews should be proficient in mounted and dismounted land navigation.

5-39. There is a mobility advantage in mounted land navigation. A crew that becomes disoriented can move to a known point to reorient themselves more quickly than if they were dismounted. A disadvantage of mounted movement, however, is vehicle capabilities and limitations, which the leader must consider during route planning. Most military vehicles are limited in the degree of slope they can climb and the type of terrain they can negotiate. Swamps, thickly wooded areas, or deep streams may present no problems to dismounted Soldiers but may completely stop a tank or lead to it throwing track.

NAVIGATION AIDS

5-40. There are two categories of navigational aids: linear and point. Linear navigational aids are terrain features such as trails, streams, ridgelines, wood lines, power lines, streets, and contour lines. Point terrain features include hilltops and prominent buildings. Navigational aids are usually assigned control measures to facilitate communication during the movement. Typically, linear features are labeled as PLs while point features are labeled as checkpoints, rally points, or TRPs.

CATCHING FEATURES

5-41. Catching features are obvious terrain features which are beyond an intended navigation aid or control measure and can be either linear or point. The general idea is if the unit moves past the objective, LOA, or checkpoint, then the catching feature alerts it that it has traveled too far. A catching feature can also be used as a navigational attack point.

NAVIGATIONAL ATTACK POINT

5-42. A navigational attack point is an obvious landmark near the objective, LOA, or checkpoint that can be found easily. Upon arriving at the navigational attack point, the unit transitions from rough navigation (terrain association or general azimuth navigation) to point navigation (dead reckoning). Navigational attack points are typically labeled as checkpoints.

HANDRAILS

5-43. Handrails are linear features parallel to the proposed route. Examples include roads, highways, railroads, power transmission lines, ridgelines, and streams. The general idea is to use the handrail to keep the unit oriented in the right direction. Guiding off a handrail can increase the unit's speed while also acting as a catching feature.

ROUTE PLANNING

5-44. Route planning must consider enabling tasks specific to tactical movement. These tasks facilitate the overall operation. Tactical movement normally contains some or all the following enabling tasks:

- Planning movement with GPS waypoints or checkpoints utilizing navigation skills.
- Movement to and forward passage of lines.

- Movement to an objective rally point.
- Movement to a PLD.
- Movement to an LOA.
- Linkup with another unit.
- Movement to a patrol base or AA.
- Movement back to and rearward passage of lines.

5-45. Leaders first identify the location of the mission endpoint, usually an objective or LOA. Then, working back to their current location, they identify all the critical information and actions required, as they relate to the route. For example, the leader considers navigational aids, tactical positions, known and templated enemy positions, and friendly control measures. Using this information, they break up the route into manageable parts called 'legs.' Finally, they capture this information and draw a sketch on a route chart. There are three major decisions leaders make during route planning:

- The type(s) of navigation to use.
- The type of route during each leg.
- The start and end point of each leg.

5-46. The leader assesses the terrain in the assigned area. In addition to the standard military map, the leader may have aerial photographs and terrain analysis overlays from the parent unit, or the leader may talk with someone familiar with the area.

5-47. To control movement, a leader uses graphical control measures including an axis of advance, directions of attack, PLs, a PLD, checkpoints, a final coordination line, rally points, an AA, and routes.

DEVELOPING A LEG

5-48. Legs, or segments, in the planned route typically have only one distance and direction. A change in direction usually ends the leg and begins with a new one. A leg must have a definite beginning and ending, marked with a control measure such as a checkpoint or PL. Whenever possible, the start and end point should correspond to a navigational aid, such as a catching feature or navigational attack point.

5-49. To develop a leg, the leader determines the type of navigation and route best suited to the situation. Then the leader determines the distance and direction from the SP to the end point and identifies critical METT-TC (I) as it relates to the specific leg. Finally, the leader captures this information and draws a sketch.

EXECUTE THE ROUTE

5-50. Using decisions about the route and navigation made during planning and preparation, leaders execute their route and direct their subordinates. In addition to executing the plan, leaders—

- Determine and maintain accurate location.
- Designate rally points.

DETERMINING LOCATION

5-51. The tank platoon leader must always know the platoon's location during movement. Without an accurate location, the platoon cannot expect to receive support, deconflict with adjacent units, integrate reserve forces, or accomplish their mission.

There is also an increased risk of fratricide. There are multiple techniques that leaders can use to ensure an accurate location:

- Executing land navigation common skills with a compass and map.
- Using compass and odometer method, also called stabilized turret alignment navigation.
- Using GPS or the POSNAV on digitally equipped tanks.

COMMON SKILLS

5-52. All crewmembers, particularly leaders, must be experts in mounted and dismounted land navigation. Important navigation tasks common to all include the following:

- Locating a point using grid coordinates.
- Using a compass during both day and night.
- Determining location using resection, intersection, and modified resection.
- Interpreting terrain features.
- Measuring distance and elevation.
- Employing digital command and control systems.

MOUNTED LAND NAVIGATION

5-53. The principles of land navigation while mounted are basically the same as while dismounted. The major difference is the speed of travel. To be effective at mounted land navigation, the travel speed must be considered. When preparing to move, the effects of terrain on navigating mounted vehicles must be determined. Soldiers will cover great distances very quickly and must develop the ability to estimate the distance they have traveled.

COMPASS NAVIGATION

5-54. This method entails the use of a dismounted compass. The leader should divide the route into legs (segments) and then determine the magnetic azimuth (direction) and distance of each leg. Developing a chart to track these legs with their corresponding azimuths and distances is highly recommended to help prevent navigational errors. For each leg, the tank commander can dismount a crewmember with a lensatic compass. The crewmember should stand at least 18 meters away from the tank.

ODOMETER NAVIGATION

5-55. Using the vehicle odometer can help in monitoring distance traveled like a pace count when operating dismounted. However, this can be misleading on a map due to turns, elevation, obstacles, and restrictive terrain. A recommended technique is to measure the map distance of travel and add 20 percent to convert to ground distance when operating cross-country.

STABILIZED TURRET ALIGNMENT NAVIGATION

5-56. Another method is to align the turret along the azimuth the leader wishes to travel, then press the turret stabilization button to the ON position. The gunner then orients on the direction of travel, provided by the dismounted navigator, and maintains turret stabilization, holding the gun in place at that azimuth. Once oriented, the driver will

move the tank onto the correct azimuth so that the main gun is centered over the driver's hatch, and the crewmember with the compass can then remount the tank.

5-57. The gunner must always maintain stabilization and will not traverse the turret during movement but will remain focused on azimuth. If the driver begins to steer to the right or left, the tank commander can quickly reorient based on the direction of the turret, which will still be on the correct azimuth. The gun tube remains pointed at the destination no matter which way the vehicle turns. This technique has been proven in the field. It works and is not harmful to the stabilization system. This method is subject to stabilization drift, so it is recommended to use it for no more than 5,000 meters before resetting the null point. (See TC 3-25.26, chapter 11 for more details.)

Note. This method does not allow the gunner to scan for targets during movement. It is recommended that the tank commander utilize the CITV on digitally equipped tanks, and that the other crewmembers remain vigilant with crew binoculars or other thermal devices if enemy contact is possible. Wingman tanks can also be used to provide added security. If the turret must be taken off azimuth to engage a target, this entire navigation process must be done again.

GLOBAL POSITIONING SYSTEMS

5-58. Digitally equipped tanks include the POSNAV, which automatically updates the tank's location through a built-in GPS. A GPS receives signals from satellites or land-based transmitters. It calculates and displays the position of the user in military grid coordinates and in degrees of latitude and longitude. During planning, leaders can enter their waypoints into the POSNAV or a handheld GPS. Once entered, the GPS can display information such as distance and direction from waypoint to waypoint. During execution, leaders use the GPS to establish their exact location.

Note. The best use of GPS or digital displays is for confirming the unit's location during movement. Terrain association and map reading skills still are necessary, especially for point navigation. Leaders must remember GPS can be jammed or spoofed. Over reliance of GPS and digital displays can cause leaders to ignore the effects of terrain, travel faster than conditions allow, miss opportunities, or fail to modify routes when necessary. As part of preparation, leaders ensure the platoon encrypts all GPS receivers to reduce the effects of jamming and spoofing efforts.

TYPES OF NAVIGATION

5-59. There are three types of navigation: terrain association, general azimuth method, and point navigation. Leaders use whichever type or combination best suits the situation.

TERRAIN ASSOCIATION

5-60. Terrain association is the ability to identify terrain features on the ground by the contour intervals and other features depicted on the map. The leader analyzes the terrain using the factors of OAKOC, and identifies major terrain features, contour changes, and

man-made structures along the axis of advance. As the unit moves, the leader uses these features to orient with map locations. Terrain checkpoints are easily recognizable in daylight, in all weather conditions, and at the speed of movement. This method is like an automobile driver using street signs, stores, and parks to navigate. (See TC 3-25.26.) This method should end with a catching feature or navigational attack point, which transitions the unit into point navigation.

5-61. The major advantages of terrain association are that it forces the leader to continually assess the terrain, which leads to identifying tactically advantageous terrain, and that it is generally faster and more forgiving than point navigation. The disadvantage is that terrain association skills are harder to teach, learn, and retain.

GENERAL AZIMUTH METHOD

5-62. For this method, the leader selects linear terrain features; then while maintaining map orientation and a general azimuth, guides along the terrain feature. An advantage of the general azimuth method is that it speeds movement, avoids fatigue, and often simplifies navigation because the unit follows the terrain feature. The disadvantage is that it usually puts the unit on a natural line of drift. This method should end like terrain association, with the unit reaching a catching feature or a navigational attack point, then switching to point navigation.

POINT NAVIGATION

5-63. Point navigation, also called dead reckoning, is done by starting from a known point and strictly following a predetermined azimuth and distance. This form of navigation requires a high level of leader control because even a slight deviation over the course of a movement can cause navigation errors. This method uses the dismounted compass and a vehicle's odometer to follow a prescribed azimuth.

5-64. When navigating with steering marks, the navigator also identifies a terrain feature, such as a hilltop, building, or road intersection. The driver orients on this terrain feature and moves in as straight a line as possible. Point navigation without steering marks is used in flat terrain without features on which to orient. The compass and odometer method are a variant of dead reckoning without steering marks.

Note. Do not take compass reading from inside vehicles. Move away from vehicles when using a lensatic compass.

5-65. When performed correctly, point navigation is very reliable, but time consuming. It is best used when the need for navigational accuracy outweighs the importance of using terrain. Point navigation is particularly useful when recognizable terrain features do not exist or are too far away to be helpful. Using point navigation early on in a long movement can stress the compass person, so it may be advisable to switch them out. One of the problems with point navigation is negotiating severely restrictive terrain or danger areas.

COMBINATION

5-66. Leaders can benefit from combining the three types of navigation. Terrain association and general azimuth method enable leaders to set a rough compass bearing

and move as quickly as the situation allows toward a catching feature or a navigational attack point. Once reached, leaders switch to point navigation. Leaders should pay close attention to detail, taking as much time as necessary to analyze the situation and find their intended point. Terrain association and general azimuth methods allow for some flexibility in the movement, and do not require the same level of control as point navigation. Point navigation, on the other hand, enables leaders to locate their objective or point precisely.

TERRAIN/GRID INDEX REFERENCE SYSTEM

5-67. Many units routinely use the terrain index reference system or the grid reference system as navigation aids. Terrain index reference system identifies locations based on terrain points previously designated on an overlay; Grid reference system uses intersections of four grid squares as the known points.

5-68. Referencing a location from a known point is done in kilometers. For example, 500 meters is given as POINT FIVE, 1,000 meters as ONE, and 3,500 meters as THREE POINT FIVE. Cardinal directions are used. Shifts to the east or west are given first, followed by shifts to the north or south. (Figure 5-3 illustrates this example.)

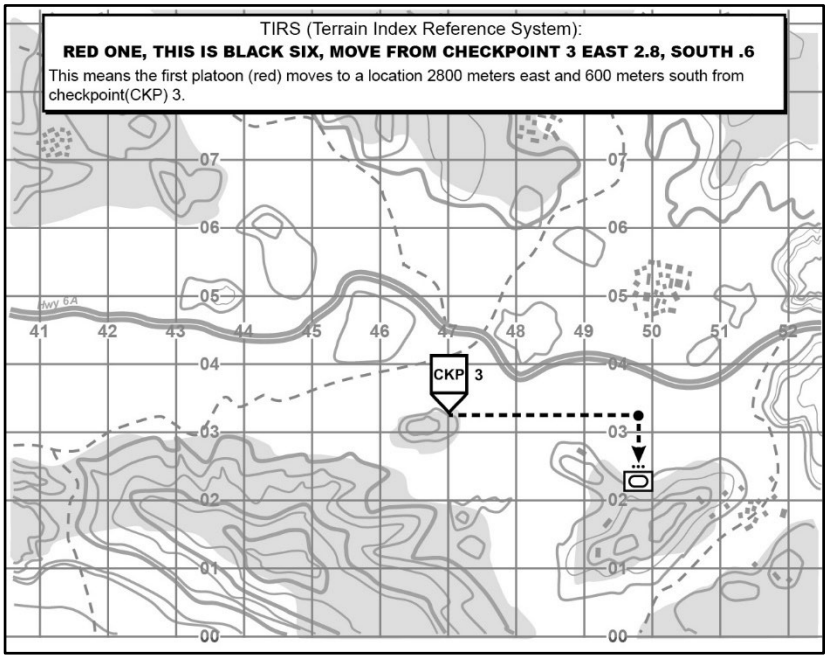


Figure 5-3. Terrain index reference system example

SECTION III – RECONNAISSANCE

5-69. *Reconnaissance* is a mission undertaken to obtain information about the activities and resources of an enemy or adversary, or to secure data concerning the meteorological, hydrographical, geographical, or other characteristics of a particular area, by visual observation or other detection methods (JP 2-0). Conducting reconnaissance before and

during other combat operations provides information to the commander so they can confirm, deny, and modify the concept of operations. Reconnaissance primarily relies on the human dynamic rather than purely technological means. Within the BCT, the Cavalry squadron is the principal reconnaissance organization. (See FM 3-98 for more information.) The seven reconnaissance fundamentals are the following:

- Ensure continuous reconnaissance.
- Do not keep reconnaissance assets in reserve.
- Orient on the reconnaissance objective.
- Report required information rapidly and accurately.
- Retain freedom of maneuver.
- Gain and maintain enemy contact.
- Develop the situation rapidly.

5-70. Reconnaissance identifies terrain characteristics, enemy and friendly obstacles to movement, and the disposition of enemy forces and civilian population so the platoon leader can maneuver the forces freely and rapidly. Reconnaissance before unit movements and occupation of AAs is critical to protecting the force and preserving combat power. It also keeps the force free from contact as long as possible so that it can concentrate on its decisive operation.

5-71. Reconnaissance available to the tank platoon may include, but is not limited to, map and photographic reconnaissance, mounted and dismounted ground reconnaissance, and reconnaissance by fire. The tank platoon may perform mounted reconnaissance or provide support for mounted or dismounted reconnaissance. Whether the tank platoon is conducting reconnaissance as part of TLPs or receiving information through intelligence channels, reconnaissance is important during all phases of the operations process: planning, preparation, execution, and assessment.

RECONNAISSANCE METHODS

5-72. There are four methods of reconnaissance; mounted, reconnaissance by fire, dismounted, and aerial (manned and unmanned). While the tank platoon is best equipped to conduct mounted and reconnaissance by fire, it is still capable of executing dismounted reconnaissance when necessary. (See FM 3-98 for more information.)

MOUNTED RECONNAISSANCE

5-73. Mounted reconnaissance enables a more rapid tempo while increasing the potential compromise of reconnaissance efforts. Mounted reconnaissance should take advantage of standoff capabilities provided by surveillance and weapon systems to observe and engage from greater distances. Leaders consider mounted reconnaissance when—

- Time is limited.
- Distances require mounted movement.
- Stealth and security are not primary concerns.
- Detailed information is not required, or the mounted method affords the same scope and level of detail as the dismounted method.
- The nature of the reconnaissance objective and environmental conditions allow vehicles to approach.
- Enemy location is known.

RECONNAISSANCE BY FIRE

5-74. *Reconnaissance by fire* is a technique in which a unit fires on a suspected enemy position (FM 3-90). This technique is appropriate when time is critical and stealthy maneuver to develop the situation further is not possible. The fires may be either direct, indirect, or a combination of both to cause the enemy forces to disclose their presence by movement or return fire. The advantage of indirect fire is that it does not give away friendly locations and usually causes enemy forces to displace from the impact area. However, reconnaissance by fire may not cause a seasoned or prepared enemy force to react.

5-75. The goal is to cause the enemy to react and give away their position or willingness to fight. The commander may direct the tank platoon to execute reconnaissance by fire when enemy contact is reasonably expected, or when contact has occurred, but the enemy situation is vague. This decision might be based on the original plan, or a recommendation from the platoon leader. The platoon then conducts tactical movement, occupying successive overwatch positions until it makes contact with the enemy or reaches the objective.

5-76. The platoon leader may designate TRPs at each overwatch position. The platoon leader then either requests indirect fires or employs direct fires on likely enemy locations to cause the enemy force to return direct fire or to compromise its positions during movement. Depending on the threat, the platoon leader directs individual tanks or sections to fire their main gun, .50 caliber or coaxial machine guns into targeted areas.

5-77. Individual tanks and sections not designated to reconnoiter by fire observe the effects of the firing tanks and engage enemy forces as they are identified. The platoon focuses reconnaissance by fire on the key terrain that dominates danger areas, on built up areas that dominate the surrounding terrain, and on wooded areas not yet cleared.

DISMOUNTED RECONNAISSANCE

5-78. Dismounted reconnaissance is the most time-consuming method used by ground units but permits the most detailed information collection about the enemy, terrain, civil considerations, and infrastructure. It is unlikely that a tank platoon will conduct a lengthy dismounted reconnaissance mission. However, the tank commander might utilize a crewmember, commonly the loader, to observe beyond an intervisibility line, operate a listening post or OP adjacent to the tank, or ground guide the tank to advantageous positions or BPs. Leaders consider using dismounted reconnaissance when—

- Stealth is required or security is the primary concern.
- Time is available.
- Detailed information is required.
- The reconnaissance objective is a stationary threat, fixed site, or terrain feature.
- Vehicles cannot move through an area because of terrain or threat.
- Terrain creates a visual dead space that prevents optics or sensors from being used.

AERIAL RECONNAISSANCE

5-79. Aerial reconnaissance conducted by manned or unmanned aviation assets serves as a link between sensors and mounted or dismounted reconnaissance. Complex terrain, adverse weather, enemy air defense systems, and deception or countermeasures degrade the effectiveness of aerial reconnaissance. Although the typical Armor company is not outfitted with a UAS platform, Armor companies and tank platoons can still benefit from aerial reconnaissance at higher echelons, as those assets send reports through the BN to the company. Leaders consider aerial reconnaissance when—

- Weather permits.
- Time is extremely limited, or information is required quickly.
- Ground reconnaissance elements are not available.
- The objective is at an extended range.
- Verifying a target.
- Enemy locations are known and extremely dangerous (high risk) to ground assets or are vague but identified as high risk to ground assets.
- Terrain is complex and weather conditions are favorable.

FORMS OF RECONNAISSANCE

5-80. The five forms of reconnaissance are zone, area, route, reconnaissance in force, and special reconnaissance—

- *Zone reconnaissance* is a form of reconnaissance operation that involves a directed effort to obtain detailed information on all routes, obstacles, terrain, and enemy forces within a zone defined by boundaries (FM 3-90).
- *Area reconnaissance* is a form of reconnaissance operation that focuses on obtaining detailed information about the terrain or enemy activity within a prescribed area (FM 3-90).
- *Route reconnaissance* is a form of reconnaissance operation to obtain detailed information of a specified route and all terrain from which the enemy could influence movement along that route (FM 3-90). The route may be a road, highway, trail, mobility corridor, avenue of approach, or axis of advance.
- *Reconnaissance in force* is a form of reconnaissance operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information (FM 3-90).
- *Special reconnaissance* is reconnaissance and surveillance actions conducted as a special operation in hostile, denied, or diplomatically and/or politically sensitive environments to collect or verify information of strategic or operational significance, employing military capabilities not normally found in conventional forces (JP 3-05). Tank platoons and Armor companies do not usually conduct special reconnaissance.

SECTION IV – SECURITY OPERATIONS

5-81. *Security operations* are those operations performed by commanders to provide early and accurate warning of enemy operations, to provide the forces being protected with time and maneuver space within which to react to the enemy, and to develop the situation to allow commanders to effectively use their protected forces (ADP 3-90). The

four types of security operations are screen, guard, cover, and area security. Security operations are not to be confused with the more general term of security.

5-82. The fundamentals of security, like the fundamentals of reconnaissance, provide a framework for security operations. (See FM 3-98 for more information.) The fundamentals of security are applicable to each type of security. The following fundamentals guide security operations:

- Provide early and accurate warning.
- Provide reaction time and maneuver space.
- Orient on the protected force, area, or facility to be secured.
- Perform continuous reconnaissance.
- Maintain enemy contact.

SCREEN

5-83. *Screen* is a type of security operation that primarily provides early warning to the protected force (ADP 3-90). Screens provide less protection than guards or covers. Screen missions are defensive in nature and accomplished by establishing a series of OPs and patrols to ensure observation of the assigned sector. The screen force gains and maintains enemy contact and destroys or repels enemy reconnaissance units by conducting counterreconnaissance. Counterreconnaissance is a tactical mission task that encompasses all measures taken by a unit to counter enemy reconnaissance and surveillance efforts. A unit performing a screen observes, identifies, and reports enemy actions.

5-84. Generally, a screening force engages and destroys enemy reconnaissance elements within its capabilities—augmented by indirect fires-but otherwise fights only in self-defense. The screen has the minimum combat power necessary to provide early warning and allows commanders to retain the bulk of the main body's combat power for commitment at the decisive place and time.

5-85. A screen provides the least amount of protection of any security mission; it does not have the combat power to develop the situation. A screen is appropriate to cover gaps between forces, exposed flanks, or the rear of stationary and moving forces. Units can place a screen in front of a stationary formation. Designed to provide minimum security with minimum forces, a screen is usually an economy of force operation. Units conduct a guard or cover if they expect significant force or require the security operation to provide a significant amount of time and maneuver space. (See FM 3-98 for more information.)

GUARD

5-86. *Guard* is a type of security operation done to protect the main body by fighting to gain time while preventing enemy ground observation of and direct fire against the main body (ADP 3-90). Units conducting a guard mission cannot operate independently. They rely upon fires, functional support, and multifunctional support assets of the main body. BN/squadron-sized elements or higher generally conduct guard missions; the tank platoon may participate in a guard mission though. Types of guard missions include advance guard, flank guard, and rear guard.

5-87. The guard differs from a screen in that the guard force must contain sufficient combat power to defeat, cause withdrawal of, or fix enemy combat forces before they can decisively engage the protected force. A guard is appropriate when significant contact is expected, there is an exposed flank or threat force to the rear, the protected force is conducting a retrograde operation, or there is a requirement for greater protection than a screen can provide.

COVER

5-88. *Cover* is a type of security operation done independent of the main body to protect them by fighting to gain time while preventing enemy ground observation of and direct fire against the main body (ADP 3-90). A covering force accomplishes all the tasks of screening and guard forces but operates independently from the main body to develop the situation early. The covering force usually conducts offensive operations ahead of a moving main body and defensive operations ahead of a stationary main body. The covering force does not require external support or indirect fires from the protected force to destroy or fix the enemy. The cover mission is typically conducted at the brigade level, but the tank platoon may participate in a cover.

AREA SECURITY

5-89. *Area security* is a type of security operation conducted to protect friendly forces, lines of communications, and activities within a specific area (ADP 3-90). Area security operations occur during all types of operations. Synchronization and integration of area and local security are essential to protecting the force. Although vital to the success of military operations, area security is normally an economy of force mission, often designed to ensure the continued conduct of sustainment operations that generate and maintain combat power. Area security focuses on the following activities:

- Site security, including base defense, AA security, and critical asset security.
- Line of communication and route security.
- Convoy security.
- Response force operations, including mobile security force.

LOCAL SECURITY, OBSERVATION POSTS, AND COMBAT OUTPOSTS

5-90. *Local security* is the low-level security activities conducted near a unit to prevent surprise by the enemy (ADP 3-90). Local security is closely associated with unit force protection efforts. Local security provides an immediate and enduring priority of work for the tank platoon though, and it is inherent in all operations.

5-91. Local security can be conducted with active and passive measures. Active measures include, but are not limited to, OPs and patrols, establishing specific levels of alert in the unit based on METT-TC (I), and establishing stand-to-times, dependent on the unit SOP. Passive measures include, but are not limited to, using camouflage, movement control, noise and light discipline, and proper communication procedures, per unit SOP, to avoid enemy detection or deceive the enemy about friendly positions or intentions.

5-92. An *observation post* is a position from which observations are made or fires are directed and adjusted (FM 3-90). All OPs should possess appropriate communications. They help to protect the platoon when long-range observation from current positions is

not possible; this can occur when the platoon is in a hide position or when close terrain offers concealed avenues of approach to the platoon's position. OPs can be either mounted or dismounted.

SELECTION OF THE OBSERVATION POST SITE

5-93. Before deploying an OP, the platoon leader analyzes the terrain in the assigned area and coordinates with adjacent platoons to discover ways to enhance their own sector and eliminate gaps between units. Next, the platoon leader decides on the type of OP, mounted or dismounted, necessary to observe the avenue of approach based on requirements for early warning and platoon security. The platoon leader must consider the platoon's reaction time based on their readiness and the OE. An OP should have the following characteristics:

5-94. Clear observation of the sector. Ideally, the fields of observation of adjacent OPs or units overlap to ensure full coverage of the assigned area.

5-95. Effective cover and concealment. Positions with natural cover and concealment help to reduce the OP's vulnerability to enemy observation and attack.

5-96. Covered and concealed routes to and from the OP. Soldiers must be able to enter and leave their OPs without being seen by the enemy.

5-97. A location that does not attract enemy attention. An OP should not be on a site that would logically be the target of enemy observation or indirect fire.

5-98. A location that does not skyline observers. Avoid hilltops. Position the OP farther down the slope of the hill at the military crest.

5-99. A location that is within range of platoon direct fire. This enables the platoon to cover the OP if withdrawal becomes necessary.

Mounted Observation Posts

5-100. Platoons use mounted OPs when they have access to hull-down or turret-down positions that afford unobstructed surveillance of mounted avenues of approach in the platoon's assigned area. They allow the platoon leader to take advantage of the tanks' capabilities: magnified thermal and daylight optics, sophisticated communications, lethal weapon systems, and enhanced survivability.

5-101. The CITV on the tank is especially valuable in the mounted OP. The tank can occupy a turret-down position and use the CITV to scan the designated sector without moving the turret. All other types of vehicles must occupy turret-down or hull-down positions that allow them to move their turrets when scanning the sector.

5-102. A common mounted OP technique is to position one vehicle to observe an EA 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 establish a listening post or OP to provide nearby local security for the vehicle. The listening post or OP should be far enough away from the tank that sounds from the vehicle do not prevent the dismounts from hearing an approaching enemy. Another method of enhancing local security is to coordinate with Infantry or

Cavalry elements. The Infantry or Cavalry can conduct patrols and occupy dismounted OPs per the company commander's security plan.

Dismounted Observation Posts

5-103. Dismounted OPs provide local security along dismounted avenues of approach whenever the platoon must halt and occupy vehicle positions from which the terrain impedes observation or early warning of enemy activities. During urban operations, the tank commanders need to place OPs to protect blind spots. Use of supporting dismounted Soldiers is the best option, but loaders may need to fill this mission if Infantry or Cavalry are not available. The tank platoon uses the following steps to occupy, staff, and improve a dismounted OP:

- The platoon leader or PSG determines the need for the OP and identifies the location based on the physical characteristics outlined previously in this chapter.
- The platoon leader or PSG assembles OP personnel at the vehicle.
- The OP personnel are designated in the unit SOP but are normally the loaders of wingman tanks.
- In two-man OPs, one crewman observes the sector while the other provides local security.
- Some short-duration OPs may consist of one crewman providing local security for individual vehicles in close terrain.
- The platoon leader or PSG briefs the OP personnel to ensure that they are trained in reporting procedures and individual camouflage techniques and that they have the proper equipment as designated in the unit SOP.
- Equipment normally includes the following:
  - Individual weapons and grenades.
  - Communications equipment.
  - Flag use is based on unit SOP and availability, but a general rule of thumb is green flag for friendly elements, yellow flag for unknown elements, and red flag for enemy elements.
  - Seasonal uniform with the modular lightweight load-carrying equipment fighting load carrier and appropriate mission oriented protective posture (MOPP) gear.
  - Binoculars, night observation devices, and dismounted thermal devices.
  - Paper and pen or pencil for making a sector sketch.
  - Map with overlay, protractor, and compass.
  - Local security measures such as trip flares and networked munitions.

5-104. The platoon leader or PSG leads OP personnel to the OP site and briefs them on the following information:

- Their mission is to see and report and not become engaged with the enemy dismounts.
- When and how to report.
- When and how to withdraw. The withdrawal criteria should be specific; examples include withdrawal when a CBRN hazard is detected, when an enemy tank section crosses a PL, or when enemy dismounts approach to within 300 meters of the OP.

- Challenge and password.
- When they are replaced.
  - Personnel should be replaced every 2 hours, and the PSG and platoon leaders are responsible for establishing these rotations and manning of OPs.
  - During cold weather, this rotation may be done more frequently.
- OP personnel must execute a plan for night vision operations, which includes rotating between personnel, with one not scanning for longer than 20 minutes to—
  - Ensure they retain their night vision.
  - Ensure they maintain good scanning techniques.

5-105. Once in place, OP personnel take the following steps to improve their position:

- Establish communications.
- Camouflage the position and routes into and out of it.
- Prepare a Standard Range Card based on the platoon fire plan (see appendix A).
- Dig in to provide protection from indirect and direct fires.

COMBAT OUTPOST

5-106. A *combat outpost* is a reinforced observation post capable of conducting limited combat operations (FM 3-90). Using combat outposts is a technique for employing security forces in restrictive terrain. They are also used when smaller OPs are in danger of being overrun by enemy forces infiltrating into and through the security area. The platoon leader uses a combat outpost when an extended depth of the security area is wanted, when the platoon leader wants the forward OPs to remain in place until they can observe the enemy's main body, or when the platoon leader anticipates that the forward OPs will likely become encircled by enemy forces.

5-107. While METT-TC (I) determines the size, location, and number of combat outposts established by a unit, a reinforced platoon typically occupies a combat outpost. Therefore, a platoon can be part of a larger unit's combat outpost. A combat outpost must have sufficient resources to accomplish its designated missions, but not so much as to seriously deplete the strength of the main body. It is usually located far enough in front of the protected force to preclude enemy ground reconnaissance elements from observing the actions of the protected force.

SECTION V – ASSEMBLY AREA

5-108. An *assembly area* is an area a unit occupies to prepare for an operation (FM 3-90). A well-planned AA has the following characteristics:

- Concealment from enemy ground and air observation.
- Cover from direct fire.
- Space for dispersion; separate each AA by enough distance from other AAs to preclude mutual interference.
- Adequate entrances, exits, and internal routes.
- Good drainage and a surface that can sustain the movement of the unit's vehicles and individuals.
- Terrain masking of electromagnetic signatures.
- Terrain allowing observation of ground and air avenues into the AA.
- Sanctuary from enemy artillery fires because of its location outside the enemy's range.

5-109. Normally, the platoon occupies an AA as part of a larger unit such as a company. The company commander assigns a sector of responsibility and weapons orientations for each platoon. If the platoon occupies an AA alone, it establishes a perimeter defense. The proper location of an AA contributes to security and flexibility and should facilitate future operations. (See figure 5-4, page 194 for an example of a company team AA.)

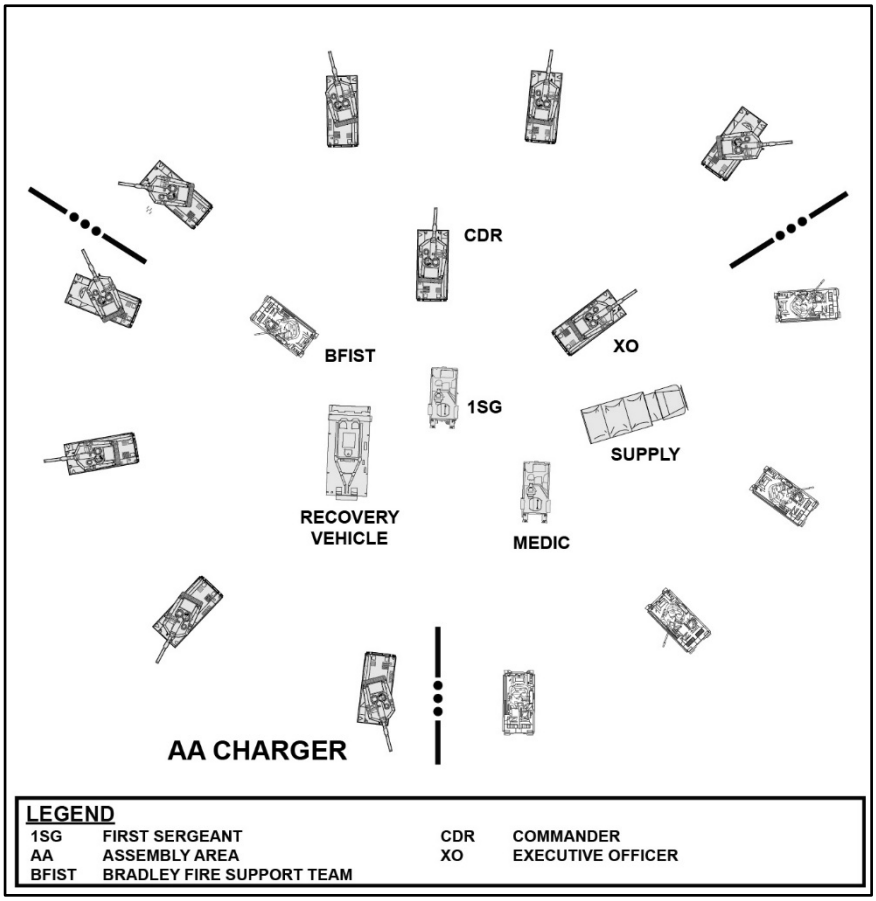


Figure 5-4. Company team assembly area

QUARTERING PARTY

5-110. A *quartering party* is a group dispatched to a new assigned area in advance of the main body (FM 3-90). Normally, a quartering party helps the platoon in the occupation of an AA. The exact composition of the quartering party is established by company SOP, but it may consist of one or two crewmembers from each platoon or even one tank per platoon with the prescribed equipment and uniform. It is generally run by the company XO, 1SG, or by a senior NCO, and should be a small enough element to move quickly while still maintaining a significant self-defense capability. The quartering party takes these actions in preparing the AA—

- Reconnoiter for enemy forces, CBRN contamination.
- Evaluate the condition of the route to the AA, and suitability of the area, covering such factors as drainage, space, and internal routes.
- Organize the area based on the commander's guidance, which includes designating and marking tentative locations for the platoon, company trains, and CP vehicles.

- Improve and mark entrances, exits, and internal routes.
- Mark or remove obstacles within the party's capabilities.
- Mark tentative vehicle locations.

Note. In some cases, a company may occupy an AA without first sending out a quartering party. During this occupation by force, the platoon leader orders a hasty occupation of a BP at the platoon's designated location. (See chapter 4.)

OCCUPATION PROCEDURES

5-111. Once the AA has been prepared, the quartering party awaits the arrival of the company, maintaining surveillance and providing security of the area within its capabilities. Quartering party members guide their unit from the RP to their designated locations in the AA. Prearranged signals and markers for day and night occupation and SOPs should help the tank commanders in finding their positions; when possible, ground guides should be used for safety and efficiency. The key consideration is to move quickly into position to clear the route for follow-on units.

5-112. Once in position, the platoon conducts a hasty occupation of a BP described in chapter 4. It establishes and maintains security and coordinates with adjacent units, allowing the platoon to defend from the AA as necessary. The platoon can then prepare for future operations by conducting TLPs and the priorities of work in accordance with the company OPORD. These priorities of work and preparations include the following:

- Establish and maintain security.
- Position vehicles.
- Emplace OPs.
- Emplace CBRN alarms.
- Establish lateral communications/flank coordination.
- Prepare Standard Range Cards and fire plans.
- Establish wire communication (if directed by unit SOP).
- Camouflage vehicles.
- Select alternate, supplementary positions, and rally points.
- Develop an obstacle plan.
- Conduct TLPs.
- Perform maintenance activities on vehicles, communications equipment, and weapon systems.
- Verify weapon system status, conduct bore sighting, muzzle reference system updates, test-firing, and other necessary preparations.
- Conduct resupply, refueling, and rearming operations.
- Conduct rehearsals and training for upcoming operations.
- Conduct PCCs and PCIs.
- Eat, rest, and conduct personal hygiene.
- Establish field sanitation.

5-113. REDCON, allow changing situations and ensure completion of necessary work and rest plans. The commander uses the REDCON status as a standardized method to

adjust the unit's readiness to move and fight. REDCON normally consists of the following four levels:

5-114. REDCON level 1: Full alert; unit ready to move and fight. CBRN alarms and hot loop equipment are stowed, dismounted OPs have been pulled in, all personnel are mounted with weapons manned, engines started, and the tank platoon is ready to move immediately.

5-115. REDCON level 2: Full alert; unit ready to fight. Equipment is stowed (except hot loop and CBRN alarms), PCCs are complete, personnel alert and mounted, dismounted OPs may remain in place (pending guidance from the commander), and the tank platoon is ready to move within 15 minutes of notification.

5-116. REDCON level 3: Reduced alert. The tank platoon is in 50 percent security while the other 50 percent executes the work and rest plans, and the platoon is ready to move within 30 minutes of notification.

5-117. REDCON level 4: Minimum alert. Dismounted OPs are manned, one Service member per platoon monitors the radio and provides security with turret weapons, maintaining FM and digital communications with the company and adjacent platoons. The tank platoon is ready to move within 1 hour of notification.

SECTION VI – LINKUP

5-118. A *linkup* is a type of enabling operation that involves the meeting of friendly ground forces, which occurs in a variety of circumstances (FM 3-90). It happens when an advancing force reaches an objective area previously seized by another unit; when an encircled element breaks out to rejoin friendly forces or a force comes to the relief of an encircled force; and when converging maneuver forces meet. Both forces may be moving toward each other, or one may be stationary. Whenever possible, joining forces exchange as much information as possible before starting a linkup operation. The HQ ordering the linkup establishes—

- A common operational picture.
- Command relationships and responsibilities of each force before, during, and after linkup.
- Coordination of direct and indirect fire support before, during, and after linkup, including control measures.
- Linkup method.
- Recognition signals and communication procedures to use, including pyrotechnics, vehicle markings, gun-tube orientation, panels, colored smoke, lights, and challenge and passwords.
- Operations to conduct the following linkup.

CONTROL MEASURES

5-119. The leader who orders the linkup establishes control measures for units conducting the linkup and—

- Assigns each unit an assigned area defined by left and right boundaries and an RFL that also acts as an LOA.
- Establishes a no-fire area for protection around one or both units.

- Establishes a coordinated fire line beyond the area where the units will conduct linkup, which allows available fires to attack enemy targets approaching the area quickly where the linkup is to occur.
- Establishes a no-fire area to ensure uncleared air-delivered munitions or indirect fires do not cross the RFL or a boundary and impact friendly forces.
- Establishes linkup points to make physical contact with each other, and designates alternate linkup points, since enemy action may interfere with the primary linkup points.

Note. Control measures are adjusted during the operation to provide for freedom of action as well as positive control.

EXECUTION

5-120. There are two linkup methods. The preferred method is when the moving force has an assigned LOA near the other force and conducts the linkup at predetermined contact points. Units then coordinate additional operations. The leader uses the other method during highly fluid mobile operations when the enemy force escapes from a potential encirclement, or when one of the linkup forces is at risk and requires immediate reinforcement. In this method, the moving force continues to move and conduct long-range recognition via radio or other measures, stopping only when it makes physical contact with the other force.

PHASES OF THE LINKUP

5-121. The tank platoon conducts linkup activities independently or as part of a larger force. Within a larger unit, the platoon may lead the linkup force. The linkup includes three phases. The following actions are critical to the execution of a linkup.

PHASE 1 - FAR RECOGNITION SIGNAL

5-122. During this phase, the forces conducting a linkup establish radio and digital communications before reaching direct-fire range. The lead element of each linkup force should monitor the radio frequency of the other friendly force.

PHASE 2 - COORDINATION

5-123. Before initiating movement to the linkup point, the forces must coordinate necessary tactical information including the following:

- The known enemy situation.
- Command and control systems, if equipped (for example, Joint Battle Command Platform), filter setting and address book commonality.
- Type and number of friendly vehicles and number of vehicles equipped with functional command and control systems.
- Disposition of stationary forces (if either unit is stationary).
- Routes to the linkup point and rally point, if any.
- DFCMs and indirect fire control measures.
- Near recognition signals.
- Communications information.

- Sustainment responsibilities and procedures.
- Finalized location of the linkup point and rally points, if any.
- Special coordination, such as those covering maneuver instructions or requests for medical support.

PHASE 3 - MOVEMENT TO THE LINKUP POINT AND LINKUP

5-124. All units or elements involved in the linkup enforce strict fire control measures to help prevent fratricide and friendly fire. Moving or converging forces must easily recognize linkup points and RFLs. Linkup elements take the following actions:

- Conduct far recognition using radios or command and control systems, if equipped.
- Conduct near recognition using the designated signal.
- Complete movement to the linkup point.
- Establish local security at the linkup point.
- Conduct additional coordination and link-up activities, as necessary.

SECTION VII – RELIEF IN PLACE

5-125. A relief in place is an operation in which all or part of a unit is replaced in an area by an incoming unit and the replaced unit's responsibilities, and the assigned area are transferred to the incoming unit. (See FM 3-90 for more information.) It may be accomplished during any phase of an operation but conducted preferably during periods of limited visibility.

5-126. The three techniques used to conduct a relief in place are sequential, simultaneous, or staggered:

- A sequential relief occurs when each element within the relieved unit is relieved in succession, from right to left or left to right, depending on how it is deployed.
- A simultaneous relief occurs when all elements are relieved at the same time.
- A staggered relief occurs when each element is relieved in a sequence determined by the tactical situation, not its geographical orientation.

5-127. A relief in place requires detailed planning, coordination, and reconnaissance before the operation is executed. Once execution begins, precise movement and effective communication are required. Simultaneous relief takes the least time to execute but is more easily detected by the enemy. Sequential or staggered reliefs can occur over a significant amount of time. A relief can also be characterized as either hasty or deliberate, depending on the depth and detail of planning, and how much time it takes to execute it. Maintaining security is critical throughout the entire operation.

PLANNING

5-128. Once ordered to conduct a relief in place, the leader of the relieving unit contacts the leader of the unit to be relieved. The co-location of unit CPs also helps achieve the level of coordination required. If the relieved unit's forward elements can defend the assigned area, the relieving unit executes the relief in place from the rear to the front. This facilitates movement and terrain management.

5-129. When planning for a relief in place, the platoon leader takes the following actions:

- Issues an order immediately.
- Sends a key leader with the advance party to conduct detailed reconnaissance and coordination with the unit being relieved.
- As the relieving unit, adopt the outgoing unit's normal pattern of activity as much as possible and determine when the platoon will assume responsibility for the outgoing unit's position.
- As the relieving unit, co-locates with the relieved unit's HQ.
- Maximizes OPSEC to prevent the enemy from detecting the relief operation.
- Plans for relief of sustainment elements after combat elements are relieved.
- As the unit being relieved, the leader plans for transfer of excess ammunition, wire, petroleum, oil, lubricants, and other materiel of tactical value to the incoming unit.
- Controls movement by reconnoitering, designating, and marking routes, and providing guides.

COORDINATION

5-130. The incoming and outgoing unit leaders meet to exchange tactical information, conduct a joint reconnaissance of the area, and complete other required coordination. The two leaders carefully address the passage of command and jointly develop contingency actions to deal with enemy contact during the relief. Every effort is made to conceal the relief from the enemy for as long as possible. The process of coordination includes the following:

- Location of vehicle and individual fighting positions (including hide, primary, alternate, and supplementary positions).
- Leaders should verify fighting positions by conventional map and use the latest command and control systems available.

Note. When a tank platoon is relieving an Infantry unit, leaders should allocate time to construct or expand individual vehicle fighting positions.

- Enemy situation.
- Outgoing unit's tactical plan, including graphics, company and platoon fire plans, and individual vehicle sector sketches.
- Direct and indirect-fire support coordination, including indirect-fire plans and time of relief for supporting artillery and mortar units.
- Types of weapons systems that are being replaced.
- Time, sequence, and method of relief.
- Location and disposition of obstacles, and time when the leaders will transfer responsibility.
- Supplies and equipment to be transferred.
- Movement control, route priority, and placement of guides.
- Command and control information, including digital and FM communications information.

Note. Units conduct relief on the radio nets of the outgoing unit to facilitate control during the relief.

- Maintenance and logistical support for disabled vehicles.
- Visibility considerations.
- Time or event that triggers the passage of command (when responsibility for the assigned area transitions from the unit being relieved to the relieving unit) is established by both the outgoing and incoming leaders.

CONDUCT THE RELIEF

5-131. When conducting the relief, the outgoing leader retains responsibility of the assigned area and mission, including operational control over all subordinate elements of the incoming unit, until the previously established time or event that triggers the passage of command. At that time, when all elements of the outgoing unit have been relieved and adequate communications are established, responsibility passes to the incoming leader. The conduct of the relief varies by technique (sequential, simultaneous, or staggered). Regardless of the method being used, the incoming unit generally moves to an AA to the rear of the outgoing unit and, if the tactical situation permits, establishes a screen to the front of the outgoing unit's BPs.

5-132. A sequential relief is the most time-consuming method because subordinate elements are relieved one at a time (for example, one platoon is relieved before another). A sequential relief follows this general sequence:

- The outgoing and incoming units co-locate their HQ and trains elements to facilitate mission command and transfer of equipment, ammunition, fuel, water, and medical supplies.
- The first element being relieved (for example, a tank platoon) moves to its alternate fighting positions or BP while the relieving element moves along designated routes into the outgoing unit's primary fighting positions, occupying them as appropriate.
- Incoming and outgoing elements complete the transfer of equipment and supplies.
- The relieved element moves to the designated AA behind its position.
- Once each outgoing element clears the rally point en route to its AA, the next relieving element moves forward, and the sequence repeats.

5-133. A simultaneous relief is the fastest, but least secure, method because all outgoing elements are relieved at once. The relief follows this general sequence:

- Outgoing elements move to their alternate fighting positions or BP while the relieving element moves along designated routes into the outgoing unit's primary fighting positions.
- Incoming and outgoing elements complete the transfer of equipment and supplies.
- The relieved element moves to the designated AA behind its position.

5-134. A staggered relief is like a sequential relief in that each element is relieved in sequence. The difference is that in a sequential relief, the elements are relieved based on geographic orientation. In a staggered relief, units are relieved based on the tactical

situation (for example, units in contact with the enemy versus units not in contact). Like a sequential relief, a staggered relief in place is time consuming.

SECURITY AND COMMUNICATIONS

5-135. OPSEC is critical in preventing enemy reconnaissance and intelligence assets from identifying weaknesses and vulnerabilities that occur during the relief. Net discipline is the key to an effective and secure relief operation. Before beginning the relief, the incoming (relieving) unit changes to the outgoing unit's frequency, and the two units both operate on the same net throughout the relief. The incoming unit observes radio listening silence while the outgoing unit maintains normal radio traffic.

5-136. Leaders at all levels can contact other units involved in the relief to warn of emergency situations, such as enemy contact, by monitoring the same frequency and maintaining digital links. Because of the proximity of the relieved and relieving elements, however, leaders must remember that the net is crowded with many stations and digital links competing for limited availability of airtime. If radio communications are lost, tank crews can use hand and arm signals or red, green, and yellow flags, if issued. (See TC 3-21.60.)

5-137. Once the relief is complete, there are two methods for returning to separate unit frequencies. The first is to have the incoming unit switch back to its original frequency; the second is for the outgoing unit to switch to an alternate frequency. This latter method offers several advantages.

5-138. The relieving unit establishes voice and digital communications and is prepared to defend immediately upon the exit of the relieved unit.

5-139. The relieving unit never loses the digital link (if applicable) as it assumes the new mission. Once the relief is complete, the relieved unit simply logs off the digital net and switches to an alternate FM; it can then reestablish a digital link after leaving the relief site.

5-140. Maintaining radio traffic on the same frequency before, during, and after the operation helps deceive the enemy as to whether a relief has taken place.

SECTION VIII – PASSAGE OF LINES

5-141. In a passage of lines, a unit moves forward or rearward through another stationary unit's positions with the intent of moving into or out of contact with the enemy. Units usually conduct passage of lines when at least one METT-TC (I) factor does not permit the bypass of a friendly unit. A passage of lines is a complex operation requiring close supervision and detailed planning, coordination, and synchronization between the leaders of the unit conducting the passage and unit being passed.

5-142. A passage may be designated as a forward or rearward passage of lines, and its primary purpose is to transfer responsibility for an area from one unit to another which is known as a battle handover. A forward passage of lines occurs when a unit passes through another unit's positions while moving toward the enemy; a rearward passage of lines occurs when a unit passes through another unit's positions while moving away from the enemy. The tank platoon participates in a passage of lines as part of a larger

force. If it is part of the stationary force, it occupies defensive positions and helps the passing unit. If it is part of the passing unit, it executes tactical movement through the stationary unit.

PLANNING CONSIDERATIONS

5-143. The controlling company is responsible for planning and coordinating a passage of lines that involves the platoon. No special task organization is required for either the stationary force or the passage force. In some situations, such as the company using multiple passage routes, such as a separate route for each platoon, the platoon leader takes responsibility for planning and coordinating the operation. The passage of lines may be categorized as hasty or deliberate, depending on the tempo of the operation and on METT-TC (I).

5-144. Units are highly vulnerable during a passage of lines, as vehicles may be concentrated, fires might be masked, and the passing unit may not be able to maneuver effectively or react to contact. Detailed reconnaissance and coordination are crucial to ensure the passage is conducted quickly and smoothly. The commander normally conducts all necessary reconnaissance and coordination for the passage, but at times, might designate the XO, 1SG, or a platoon leader to conduct liaison duties for reconnaissance and coordination. Platoon leaders must therefore be prepared to coordinate and plan for a passage of lines as either the stationary or passing force.

5-145. The following tactical factors and procedures are coordinated in a passage of lines (table 5-1 also describes the stationary unit and passing unit responsibilities):

- Passage lane is the lane through an enemy or friendly obstacle that provides safe passage for a passing force.
- Passage point which is a designated place where the passing units pass through the stationary unit.
- Battle handover line (BHL), which is a designated PL where responsibility transitions from the stationary force to the moving passing force and vice versa.
- Unit designation and composition, including type and number of passing vehicles.
- Passing unit arrival time(s).
- Location of attack positions or AAs.
- Current enemy situation.
- Stationary unit's mission and plan (including OPs, patrols, and obstacle locations).
- Location of contact points, passage points, and passage lanes.
- Guide requirements.
- Order of march.
- Anticipated and possible actions on enemy contact.
- Supporting direct and indirect fires, including the location of the RFL.
- Any CBRN conditions.
- Available sustainment assets and locations (for example, CCP or unit maintenance collection point [MCP]).
- Communications information (including frequencies, digital command and control systems, brigade and below data, and near/far recognition signals).
- Any additional procedures for the passage.

Note. The use of GPS or POSNAV waypoints simplifies this process and, as a result, speeds the passage. The stationary unit is also generally responsible for establishing the necessary graphic control measures (passage points, lanes, and so forth) because it controls the terrain and is more familiar with the obstacle layout.

Table 5-1. Stationary and passing unit responsibilities

STATIONARY UNIT	*PASSING UNIT*
Clears lanes or reduces obstacles along routes.	May assist with reducing obstacles.
Provides obstacle and friendly units' locations.	Provides order of movement and scheme of maneuver.
Clears and maintains routes up to the battle handover line (BHL).	May assist with maintaining routes.
Provides traffic control for the use of routes and lanes.	Augments the traffic control capability of the stationary unit as required.
Provides security for passage up to the BHL.	Maintains protection measures
Identifies locations for the passing unit to use as assembly area (AA) and attack positions.	Reconnoiters from its current location to its designated AA and attack positions.
Provides the passing unit previously coordinated or emergency logistics assistance within its capability.	Assumes full responsibility for its own sustainment support forward of the BHL.
Controls all fires in support of the passage.	Positions artillery to support the passage.

FORWARD PASSAGE OF LINES

5-146. In a forward passage, the passing unit first moves to an AA or an attack position behind the stationary unit. Designated liaison personnel from the passing unit 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.

5-147. The stationary unit is responsible for security. It secures the assigned area far enough to its front that the passing force has maneuver space to reform into a combat formation before making enemy contact. The stationary force secures the passing force until the passing force masks the stationary unit's direct fires; at this point, forward security transitions to the passing force to prevent fratricide.

5-148. The passing force 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 and holds its fire until it passes the BHL or the designated fire control measure unless the leader 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 conducts tactical movement according to its orders. (See figure 5-5, page 204.)

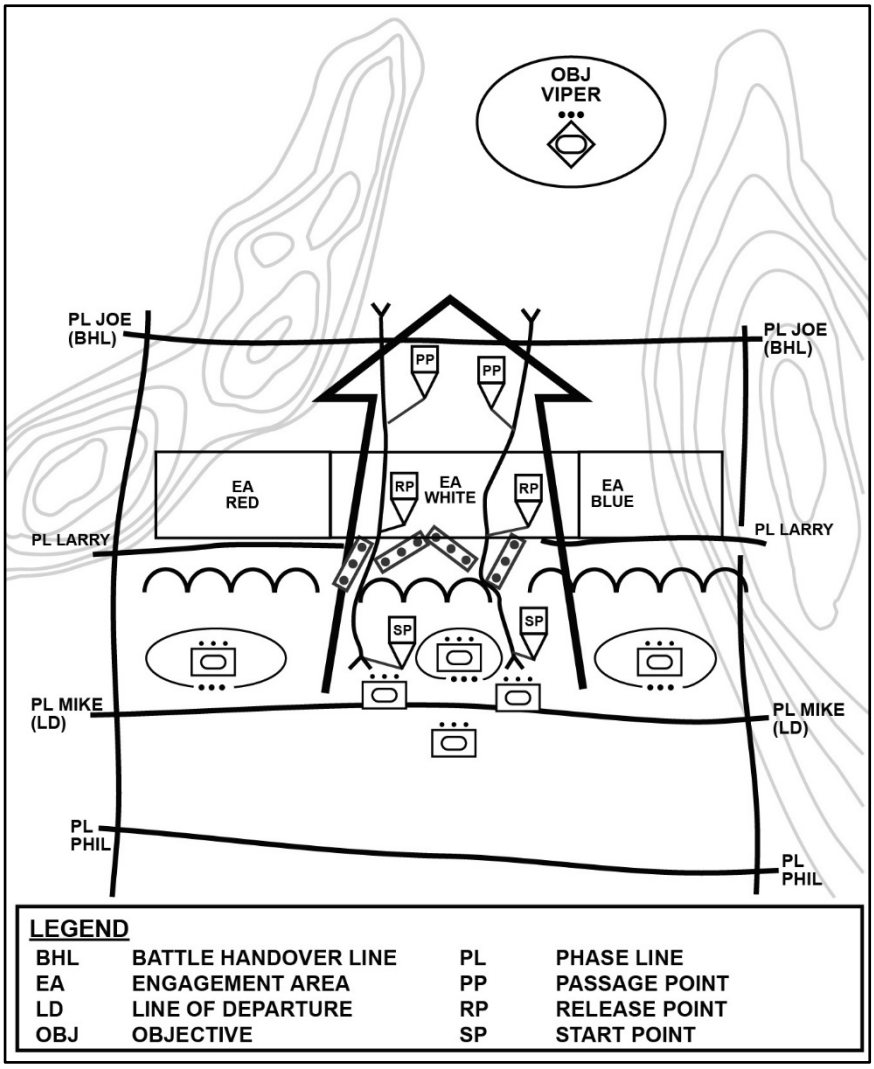


Figure 5-5. Forward passage of lines

REARWARD PASSAGE OF LINES

5-149. Coordination of recognition signals and direct-fire restrictions are critical because of the increased risk of fratricide during a rearward passage. Rehearsals and training can help reduce fratricide. 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. Both passing and stationary units can employ additional fire control measures, such as RFLs, to minimize the risk of fratricide. (See figure 5-6.)

5-150. Following coordination, the passing unit continues tactical movement toward the passage lane. The passing unit is responsible for its security until it passes the BHL. If the stationary unit provides guides, the passing unit can 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.

> ***Note.*** The concepts of rearward and forward passages are similar, but a rearward passage of lines is generally more dangerous because the enemy likely has the initiative, the rearward passing unit is tired and possibly disorganized, and differentiation between friendly forces versus threats is harder.

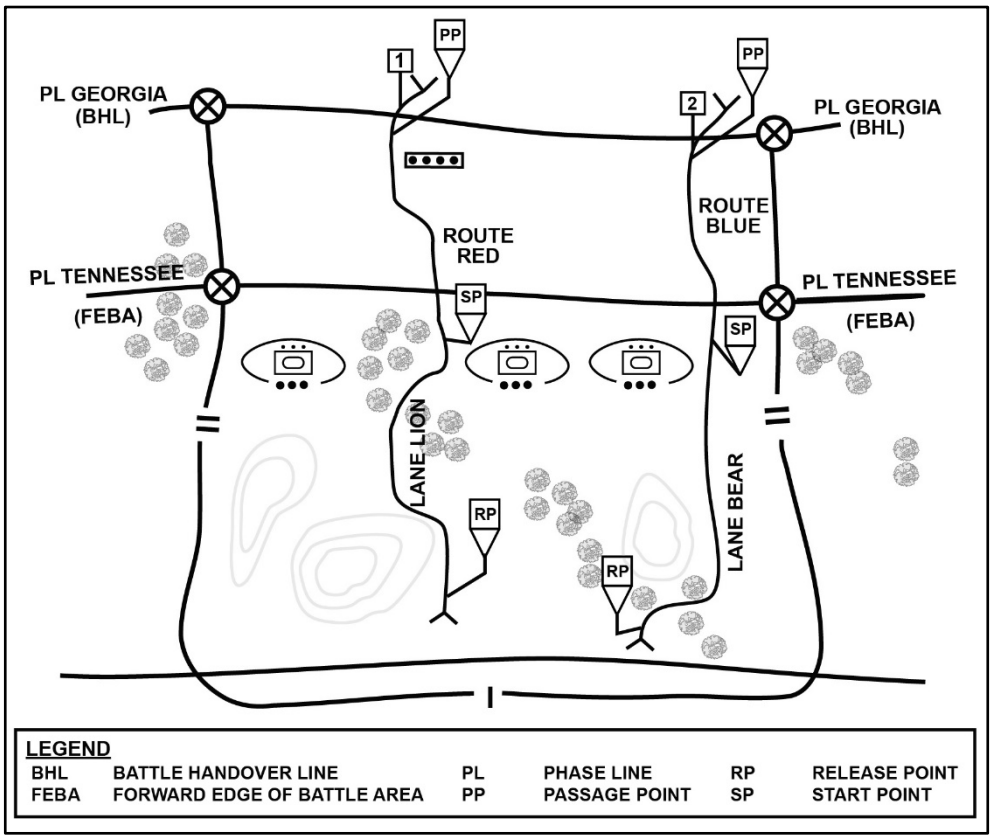


Figure 5-6. Rearward passage of lines

SECTION IX – OBSTACLES AND BREACHING

5-151. *Mobility tasks* are combined arms activities that mitigate the effects of obstacles to enable freedom of movement and maneuver (ATP 3-90.4). The platoon leader must understand the challenges presented by various types of obstacles and the capabilities and limitations of the assets the platoon and its parent unit can employ to defeat them.

5-152. Obstacles are any obstructions designed or employed to disrupt, fix, turn, or block the movement of an opposing force, and to impose additional losses in personnel, time, and equipment on the opposing force. They are usually covered by observation and enhanced by direct or indirect fires, and as such, the platoon leader needs to plan for this possibility. There are two categories of obstacles: natural and man-made.

NATURAL OBSTACLES

5-153. Natural obstacles are inherent aspects of the terrain that impede movement and maneuver. They include things such as vegetation, water features, soil composition, and surface configuration. Natural obstacles are described as existing. (See ATP 3-90.4 for more information.)

5-154. The platoon leader should pay particular attention to natural obstacles that meet the following criteria:

- Ravines, gullies, gaps, or ditches more than 3-meters wide.
- Streams, rivers, or canals more than 1-meter deep.
- Mountains or hills with a slope of more than 60 percent (30 degrees).
- Lakes, swamps, and marshes are more than 1-meter deep.
- Tree stumps and large rocks more than 18-inches high.
- Forests or jungles with trees 8 inches or more in diameter and with less than 4 meters of space between trees on a slope.

MAN-MADE OBSTACLES

5-155. Man-made obstacles are those impediments to movement and maneuver constructed by humans. They fall into two categories: explosive and nonexplosive. Man-made obstacles can be further described as being either existing (structures, cultural obstacles, or human obstacles) or reinforcing. Reinforcing obstacles are designed and employed to take advantage of the natural restrictiveness of the terrain. For example, they reinforce the existing (whether natural or man-made) obstacles already present.

MINEFIELDS

5-156. The minefield is the most common reinforcing obstacle the platoon encounters on the battlefield. It is easier and quicker to emplace than other obstacles and can be very effective in destroying vehicles. The minefield may be emplaced in several ways: by hand, by air, or artillery delivery using scatterable mines or by mechanical means.

ANTIVEHICLE DITCH OR ROAD CRATER

5-157. The antivehicle ditch may be reinforced with wire and mines to make it more complex and more difficult for the attacker to overcome. In addition, soil from the ditch can be built up into a berm on the emplacing unit side. Road craters can be rapidly emplaced and are especially effective where restricted terrain on the sides of a road or trail prevents a bypass. Craters are at least 1.5 meters in depth and 6 meters in diameter and are usually supplemented with mines and wire.

ABATIS OR LOG CRIB

5-158. An abatis provides an effective impediment to vehicular movement. Trees are felled either by sawing or by use of explosives; the cut is made at least 1.5 meters above the ground, with the main trunks crisscrossed and pointed toward the enemy at approximately a 45-degree angle. The abatis is usually about 75 meters in depth and is ideally located on trails where there is no bypass; the trunk of each tree should remain attached to the stump to form an obstacle on the flanks of the abatis. Abatis are usually mined or booby-trapped. A log crib is a framework of tree trunks or beams filled with dirt and rock. It is used to block roads or paths in wooded and mountainous terrain.

WIRE OBSTACLES

5-159. Wire obstacles provide an effective and flexible antipersonnel barrier; they are frequently employed on dismounted avenues of approach such as tanglefoot or triple standard concertina. Employed in-depth or in conjunction with mines, wire obstacles are also very effective against tanks and similar vehicles. A single-wire obstacle, however, will have little effect on armored vehicles; the sprocket of M1-series tanks is designed to cut wire.

TANK WALL AND BERM

5-160. Tank walls and berms are constructed of dirt and rock to slow or canalize enemy tanks. They can also create belly shots for the defender while the attacker is unable to engage.

BREACHING

5-161. A *breach* is a synchronized combined arms activity under the control of the maneuver commander conducted to allow maneuver through an obstacle (ATP 3-90.4). The platoon may have to breach an obstacle in front of their objective or may be part of a larger operation. Whenever possible, units should attempt to find a bypass, enabling them to maintain the momentum of the operation. Leaders must ensure that conducting the bypass provides a tactical advantage without exposing the unit to unnecessary danger. Breaching operations begin when friendly forces detect an obstacle. Breaching operations end when friendly forces destroy the enemy on the far side of the obstacle, or when battle handover has occurred between a unit conducting the breaching operation and follow-on forces. The breach could be a deliberate breach on a known obstacle or a hasty breach if the platoon encounters an unknown obstacle during an offensive operation. Obstacles may be of such size and complexity that the platoon conducts a separate breach mission as part of a larger force. (See ATP 3-90.4 for more information.)

5-162. Breaching activities must be adapted to best exploit the situation. The level and type of planning distinguish which of the three general types of breaching is best for the situation. The three general types of breaching are as follows:

- Deliberate.

- Hasty.
- Covert.

DELIBERATE BREACH

5-163. A *deliberate breach* is the systematically planned and executed creation of a lane through a barrier or obstacle (ATP 3-90.4). Typically, a unit uses a deliberate breach against a strong defense or complex obstacle system. It is characterized by the most planning, preparation, and buildup of combat power on the near side of obstacles. It is like a deliberate attack, requiring detailed knowledge of the defense and obstacle systems. Subordinate units are task-organized to accomplish the breach. The breach may require securing the far side of the obstacle with an assault force before or during reduction.

HASTY BREACH

5-164. A *hasty breach* is the creation of lanes through enemy minefields by expedient methods such as blasting with demolitions, pushing rollers or disabled vehicles through the minefields when the time factor does not permit detailed reconnaissance, deliberate breaching, or bypassing the obstacle (JP 3-15). A hasty breach is an adaptation to the deliberate breach and is conducted when less time is available. It may be conducted during a deliberate or hasty attack due to lack of clarity on enemy obstacles or changing enemy situations.

5-165. An in-stride breach is a type of hasty breach used to describe the situation when a subordinate unit is expected to be able to organize for the conduct of a hasty breach with its organic or task-organized assets, without affecting the higher unit scheme of movement and maneuver or commander's intent. In-stride breach is generally not used below the company level since a platoon is unable to form effective support, breach, and assault forces with its sections and crews.

BYPASS

5-166. A critical consideration is that the tank platoon has only limited ability to deal independently with an obstacle or restriction. If it is equipped with mine plows or other breaching assets, the platoon can create track-width lanes through most wire, mine, and other reinforcing obstacles.

5-167. When tanks encounter an unexpected obstacle, crewmembers must assume that the enemy is covering the obstacle with observation and fire. They must immediately seek cover and establish an overwatch to evaluate the situation. The overwatch tanks scan for evidence of enemy forces in and around the obstacle and on dominant terrain on the far side of the obstacle. They attempt to locate a bypass so the operation can continue without delay. (See figure 5-7.) The platoon should seek to employ obscuration using indirect fire or smoke pots to protect the maneuver element screening to locate the bypass to the obstacle. If no bypass is found, the overwatch determines the dimensions of the obstacle and sends a report to the commander so they can designate a COA.

5-168. If the leader needs to develop the situation further, the commander ideally will use scouts or Infantry to reconnoiter the obstacle, with the tanks continuing to provide overwatch. If this reconnaissance locates a bypass route, the commander can order the unit to execute a bypass as the preferred COA. If a bypass is not possible, the leader may

order a breaching operation, with the tanks either executing a hasty breach within their capabilities or supporting a deliberate breach.

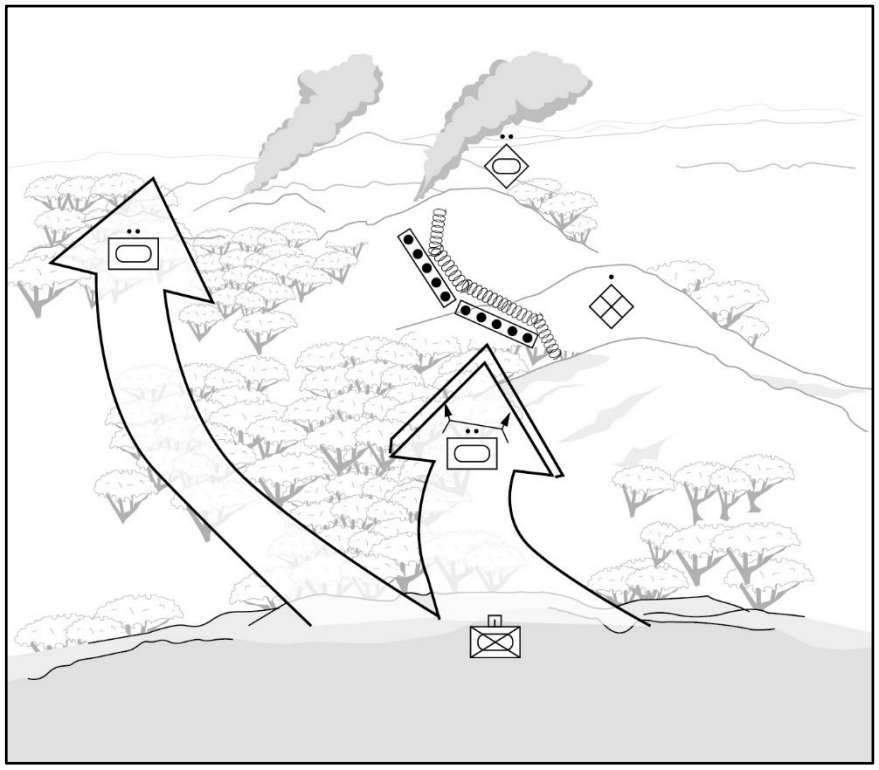


Figure 5-7. Conducting an obstacle bypass

COVERT BREACH

5-169. A covert breach is the creation of lanes through minefields or other obstacles that are planned and intended to be executed without detection by an adversary. Its primary purpose is to reduce obstacles in an undetected fashion to facilitate the passage of maneuver forces. A covert breach is conducted when surprise is necessary or desirable and when limited visibility and terrain present the opportunity to reduce enemy obstacles without being seen. Through surprise, the commander conceals the capabilities and intentions and creates the opportunity to position support and assault forces to strike the enemy while unaware or unprepared. The support force does not usually provide suppressive fire until the initiation of the assault or if the breach force is detected. Covert breaches are usually conducted by dismounted elements, during limited visibility. It uses elements of deliberate and hasty breaching, as required.

BREACH CONTROL MEASURES

5-170. The *breach area* is a defined area where a breach occurs (ATP 3-90.4). It is established and fully defined by the higher HQ of the unit conducting the breach. Within

the breach area is the point of breach, the reduction area, the far side objective, and the point of penetration.

POINT OF BREACH

5-171. *Point of breach* is the location at an obstacle where the creation of a lane is being attempted (ATP 3-90.4). Initially, points of breach are planned locations only. Normally, the breach force determines the actual points of breach during the breach.

REDUCTION AREA

5-172. *Reduction area* is a number of adjacent points of breach that are under the control of the breaching commander (ATP 3-90.4). The commander conducting the attack determines the size and location of the reduction area that supports the seizure of a point of penetration. The reduction area is indicated by the area located between the arms of the control graphic for breach. The length and width of the arms extend to include the entire depth of the area that must be reduced.

FAR SIDE OBJECTIVE

5-173. *Far side objective* is a defined location oriented on the terrain or on an enemy force that an assaulting force seizes to eliminate enemy direct fires to prevent the enemy from interfering with the reduction of the obstacles and allows follow-on forces to move securely through created lanes (ATP 3-90.4). A far side objective can be oriented on the terrain or on an enemy force. The higher HQ assigns the objective; however, the attacking unit normally subdivides the objective into smaller objectives to assign responsibilities and to control and focus the assault of subordinate forces. When breaching as part of a larger force, seizing the far side objective provides the necessary maneuver space for the higher unit follow-on forces to move securely through the lanes, assemble or deploy, and continue the attack without enemy interference.

POINT OF PENETRATION

5-174. *Point of penetration* is the location, identified on the ground, where the commanders concentrate their efforts to seize a foothold on the far side objective (ATP 3-90.4). This is achieved along a narrow front through maneuver and direct and indirect fires that are accurately placed against enemy forces. A commander conducting a breach establishes a point of penetration that supports planning locations for the reduction area and the seizure of the far side objective.

TENETS OF BREACHING OPERATIONS

5-175. Breaching operations are characterized by tenets integrated into the planning process. The tank platoon leader must understand the tenets of breaching operations and roles the platoon may be tasked to execute during obstacle reduction. (See ATP 3-90.4 for more information.) The following breaching tenets should be applied whenever an obstacle is encountered in the assigned area, whether during an attack or a route clearance operation:

- Intelligence.
- Breaching fundamentals, which are suppress, obscure, secure, reduce, and assault (mnemonic SOSRA).
- Breaching organization.

- Mass.
- Synchronization.

INTELLIGENCE

5-176. The platoon leader must identify how the enemy is using the terrain and obstacles to minimize the risk of surprise. The company commander (through the BN/squadron S-2) can provide a situation template, which is a graphic depiction of expected enemy dispositions based on threat doctrine. The platoon leader, however, is responsible for analyzing all the elements of METT-TC (I) within the assigned area.

BREACHING FUNDAMENTALS

5-177. SOSRA are the breaching fundamentals that must be applied to enable success when breaching against a defending enemy. These fundamentals always apply but may vary based on METT-TC (I).

Suppress

5-178. Suppress is a tactical mission task that results in temporary degradation of the performance of a force or weapons system below the level needed to accomplish the mission. (See FM 3-90 for more information.) The purpose of suppression during breaching operations is to protect forces by reducing and maneuvering through an obstacle.

Obscure

5-179. Obscuration protects friendly forces conducting obstacle reduction and the passage of assault forces. Correctly employed, obscuration degrades enemy observation and target acquisition without significantly degrading friendly fires and control and conceals friendly activities and movement from the enemy. Obscuration smoke deployed on or near the enemy's position minimizes its vision. Screening smoke is employed between the reduction area and the enemy conceals movement and reduction activities and degrades enemy ground and aerial observation. Obscuration may also be used to allow the support force to move into position if a covered and concealed route is not available. Obscuration must be carefully planned, and the platoon leader should consider the effect of the military aspects of weather, particularly wind, when planning and coordinating for obscuration effects. (See chapter 2.)

Secure

5-180. 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

5-181. Reduction is the creation of lanes through or over an obstacle to allow an attacking force to pass. This is normally accomplished by engineer assets, which the

tank platoon may be responsible for securing during the breach operation. However, the tank platoon must also be prepared to conduct a mechanical breach without engineer support, using organic mine clearing blades and mine clearing rollers. (See ATP 3-90.4 for more information.)

5-182. The number and width of lanes created varies with the enemy situation, the assault force's size and composition, and the scheme of maneuver. The lanes must allow the assault force to pass through the obstacle rapidly. The breach force reduces, proofs, marks, and reports lane locations and the lane-marking method to higher HQ. Follow on units further reduce or clear the obstacle as required. Reduction begins when effective suppression and obscuration are in place, the obstacle has been confirmed, and the reduction area (point of breach) is secure.

Assault

5-183. A breaching operation is not complete until friendly forces have assaulted to destroy the enemy on the far side of the obstacle that can place or observe direct and indirect fires on the reduction area. Also, if planned, battle handover with follow-on forces must be complete.

MASS

5-184. Conduct breaching by rapidly applying concentrated efforts at a point to reduce the obstacles and penetrate the defense. Direct massed combat power against the enemy's weakness. The location selected for breaching depends largely on the weakness in the enemy's defense, where its covering fires are minimized. If friendly forces cannot find a natural weakness, they create one by fixing most of the enemy force and isolating a small portion of it for attack.

SYNCHRONIZATION

5-185. Breaching operations require precise synchronization of the breaching fundamentals by the support, breach, and assault forces. Failure to synchronize effective suppression and obscuration with obstacle reduction and assault can result in rapid and devastating losses of friendly personnel in the obstacles or the enemy's kill zone.

BREACHING ORGANIZATION

5-186. The platoon can be assigned the task of support, breach, or assault force. The support force's primary responsibility is to eliminate the enemy's ability to interfere with a breach operation. Elements of the breach force secures the point of breach and reduces, proofs, and marks lanes to allow passage of the assault force. The assault force's primary mission is to destroy the enemy and seize terrain on the far side of the obstacle to prevent the enemy from placing direct fires on the created lanes.

Support Force

5-187. As the support element, the platoon usually leads movement of the breach elements. After identifying the obstacle, it moves to covered and concealed areas and establishes support by fire positions. The support force leader sends a voice or digital spot report (SPOTREP) to the commander. This report must describe the location and complexity of the obstacle, the composition of enemy forces that are overwatching the

obstacle, and the location of possible bypasses. The commander decides whether to maneuver to a bypass or to breach the obstacle.

Note. Leaders should be aware that a bypass may lead to an enemy kill zone.

5-188. In either case, the support force suppresses any enemy elements that are overwatching the obstacle to allow the breach force to breach or bypass the obstacle. The support force should be in position to request suppressive artillery fires and smoke for obscuration. As the breach and assault forces execute their missions, the support force shifts or ceases supporting fires. Because the enemy is likely to engage the support force with artillery, the support force must be prepared to move to alternate positions while maintaining suppressive fires. (See figure 5-8.)

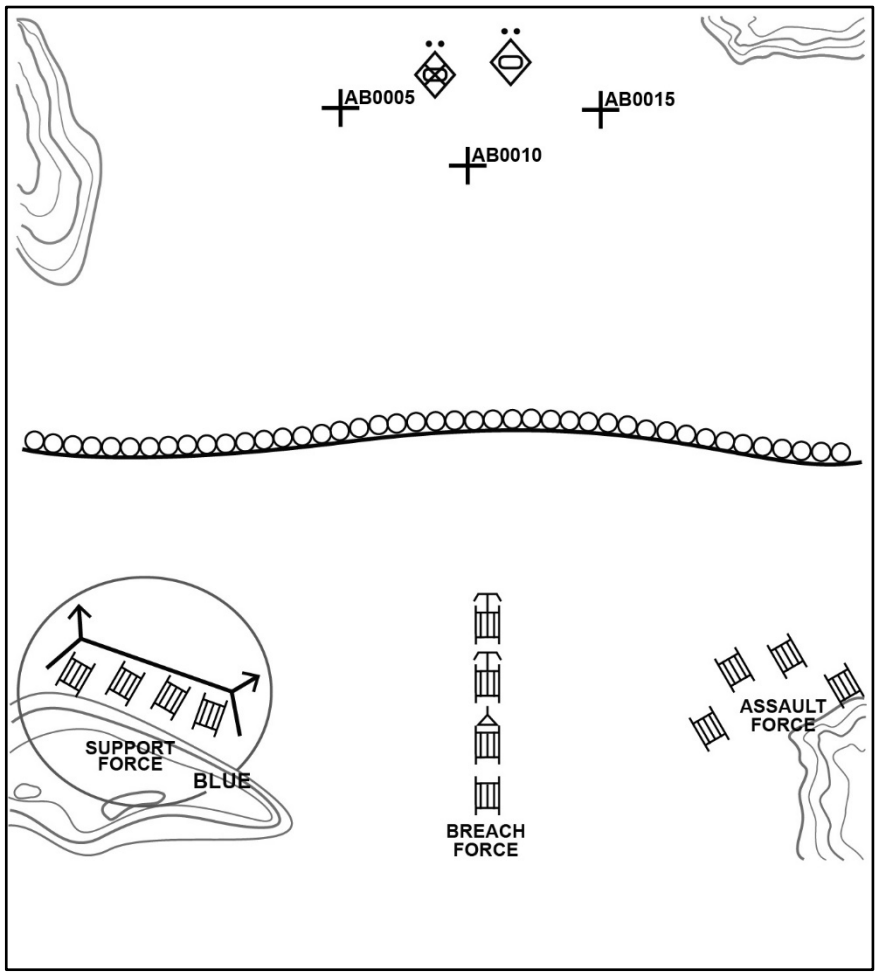


Figure 5-8. Support force

Breach Force

5-189. As the breach force, the platoon leader receives a voice or digital SPOTREP identifying the location of the obstacle or bypass. The breach force then must fulfill the following responsibilities:

- Provide local security for the breach site as necessary.
- Reduce the obstacle:
  - Elements of the breach force reduce, proofs, and marks a lane through the obstacle, or secures a bypass.
  - It may be task-organized with engineer assets or may conduct a mechanical breach without engineers (see figure 5-9 for an example of a mechanical breach).
- Move through the lane to provide local security for the assault force on the far side of the obstacle:
  - In some instances, the breach force may move to hull down firing positions that allow it to suppress enemy elements overwatching the obstacle.
  - At other times, it may assault the enemy, with suppressive fires provided by the support force.

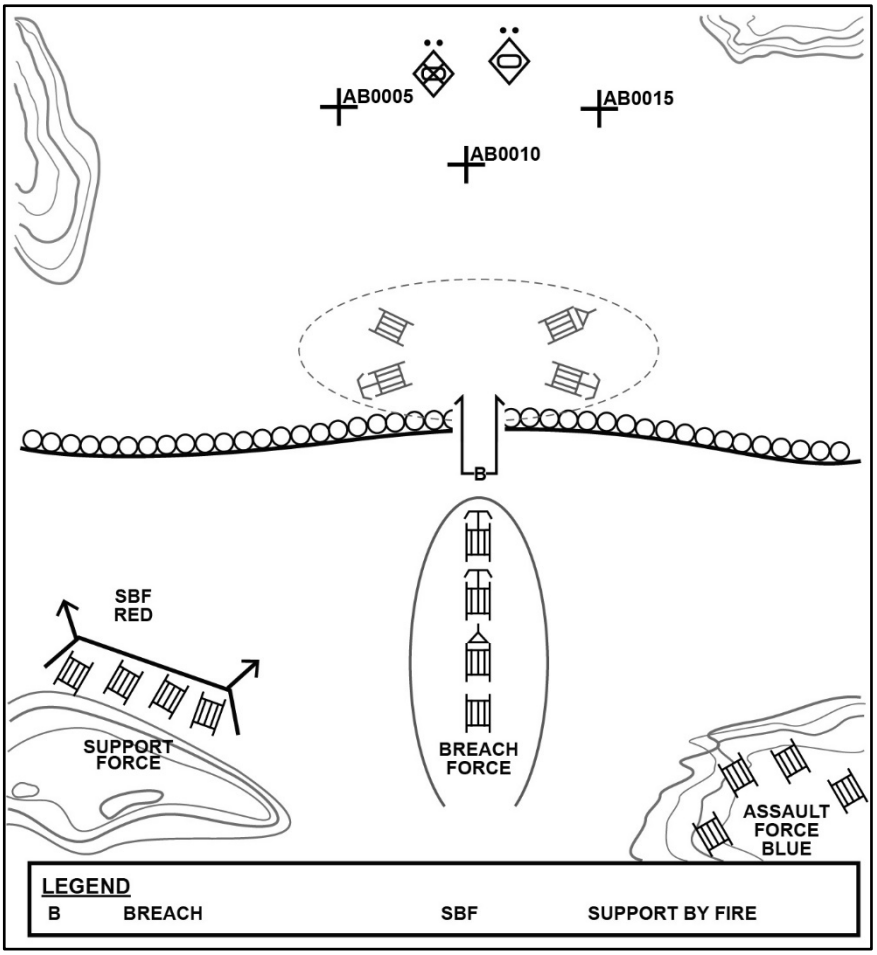


Figure 5-9. Breach force without engineer support

Breaching Methods

5-190. Engineer assets like the assault breacher vehicle are designed for obstacle reduction, however, the platoon can create a lane by itself if it is equipped with the assets required to breach the type of obstacle encountered. Three breaching methods are available to the platoon:

- Mechanical breaching, usually with mine plows (also called mine-clearing blades) or mine rollers.
- Explosive breaching, employing such means as the mine-clearing line charge, M173 line charge, or 1/4-pound blocks of TNT.
- Manual breaching:
  - This type involves probing by hand or using such items as grappling hooks, shovels, picks, axes, and chain saws.
  - Manual breaching is the least preferred method for the tank platoon.

5-191. In extreme cases, the commander may order the platoon to force through an obstacle. This technique requires the breach force to move in column formation through the obstacle location. If available, a disabled vehicle can be pushed ahead of the lead breach vehicle to detonate mines.

Reducing and Proofing the Lane

5-192. The mine plow is the breaching device most employed by the tank platoon. The BN/squadron or company commander may allocate one to three plows per platoon. to create a single lane through the obstacle. When properly equipped and supported with four plows to ensure a redundancy asset for each lane, the platoon can create up to two lanes through an obstacle. Plow tanks lead the breach force. Immediately following them are vehicles that proof the lane. These are usually tanks equipped with mine rollers. This process ensures that the lane is clear.

5-193. If the location or dimensions of the obstacle are unknown, the platoon leader may choose to lead with tanks equipped with mine rollers to identify the leading edge of the obstacle. If the platoon is allocated one plow, the PSG's wingman normally serves as the breach tank. The PSG follows immediately behind to proof the lane and provide overwatch. The platoon leader's section follows the PSG. If the platoon has two or more plows, it can create multiple lanes. The wingman tanks are normally equipped with plows, while the section leader tanks follow to proof the lanes and provide overwatch. (See ATP 3-90.4 for more information.)

Marking the Lane

5-194. After the lane is created and proofed, it is then marked to ensure safe movement by vehicles and personnel; this is critical for follow-on forces that may not know the exact location of the cleared lane. Distinctive markers must show where the lane begins and ends. Initial lane marking begins with entrance and exit markers and a left handrail. (See ATP 3-90.4 for further discussion on lane marking.)

Note. As the breach force for a deliberate breach, a tank platoon should be augmented with combat engineers to mark the lane properly and conduct traffic control for follow-on forces.

5-195. To minimize the necessary breaching time, the proofing vehicle may simultaneously mark the lane. The lane is marked according to the North Atlantic Treaty Organization standard. (See ATP 3-90.4.) Unit SOPs dictate marking materials, which commonly include the following:

- Cleared lane mechanical marking system.
- Pathfinder system.
- Engineer stakes with tape.
- Guides.
- Chemical lights.
- Expended shell casings.

Completing the Breach

5-196. Throughout the operation, the platoon leader provides continuous updates of the breach force's progress to higher HQ and other elements involved in the breach. The platoon leader also coordinates with the support force for suppressive fires.

5-197. After marking is complete, the platoon leader uses voice and digital systems to report the location of the lane and the method of marking to expedite the movement of the assault force. Digital overlays enable units to move quickly to the breach lanes using GPS or POSNAV.

Assault Force

5-198. The platoon assigned as the assault force helps the support force or follows the breach force while maintaining cover and dispersion. Once a lane is opened through the obstacle, the assault force then moves through the breach. (See figure 5-10.) It secures the far side of the obstacle by physical occupation or continues the attack per the commander's intent.

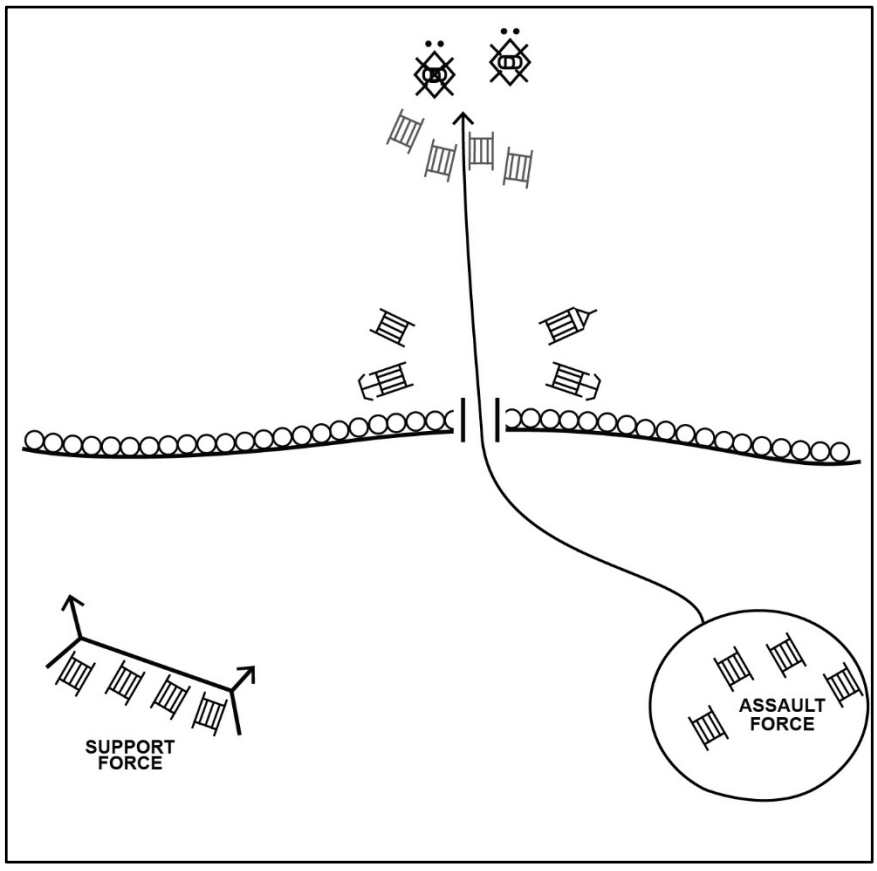


Figure 5-10. Assault force

5-199. Tank platoons are ideally suited for assault force operations against mobile enemy defenses in open terrain. Consideration should be given to have Infantry as an assault force attacking dug-in enemy positions in close terrain.

SECTION X – COUNTER-UNMANNED AIRCRAFT SYSTEM AND ELECTROMAGNETIC WARFARE

5-200. The platoon should assume they are being observed by enemy reconnaissance and targeting systems, and not assume they are under a protective umbrella of friendly air and missile defense units. UAS is a key threat to the tank platoon's ability to maneuver. While not all hostile air threats require engagement using air defense measures from air and missile defense units, there is still a requirement to detect, identify, and be prepared to counter and defeat all classes of UASs. (See ATP 3-01.81 for groups of UASs.)

COUNTER-UNMANNED AIRCRAFT SYSTEMS

5-201. The adversary's use of commercial off-the-shelf technology to gain a tactical advantage compromises the platoon's ability to conduct operations without revealing their intentions and making themselves vulnerable to attack. Not all encounters with unknown UAS means the unit is at risk or under attack. However, spotting unidentified UASs either stationing on, or transiting through the unit's location may indicate an imminent attack. The platoon must react quickly and appropriately respond and report when recognizing signs of possible enemy observation or attack. Whether a counter response is available or not units must implement passive air defense measures to include camouflage, cover, concealment, and hardening to protect lives and equipment. (See ATP 3-01.81 for C-UAS operations.)

UNMANNED AIRCRAFT SYSTEM GROUPS

5-202. UASs are categorized into Group 1 through Group 5, this designation is based on weight, operating altitude, and speed. The bigger the platform the more robust its suite of capabilities. While group designations help in understanding UASs and their capabilities, it is important that leaders understand the lines of differentiation between groups operationally are not rigid. (See table 5-2 for a brief description of the UAS groups.)

5-203. All UASs should be considered threats, but the immediate threat to the tank platoon is the SUAS. UAS Groups 1 and 2 are commonly known as SUAS. An SUAS has a lower radar cross section than Groups 3, 4, and 5 UASs. Integrated air and missile defense capabilities can effectively counter larger classes (Groups 3, 4, and 5). Air and missile defense assets have difficulty tracking, identifying, and defeating SUASs. The low radar cross-section is harder to detect by friendly forces' early warning and detection capabilities. Launch and recovery requirements allow SUASs launching capability from unimproved areas by a single person or small team, making them more difficult to find. Advances in technological capabilities enable the employ of SUAS with minimal operator interaction. The challenge is at the brigade and below level with planning for and defending against SUAS threats.

Table 5-2. Unmanned aircraft system groups

Group	*Weight (lbs.)*	*Speed (kts)*	*Normal Operating Altitudes (ft)*	*Notes*	*Threat & COTS Examples*	*Friendly Examples*
Group 1: micro/mini UAS	0 to 20	<100	< 1,200 AGL	Generally, hand launched commercial-off-the-shelf, radio-controlled platforms. Limited ranges and small payload capabilities. Real time video. Operated within line of sight of the user.	DJI MAVIC, Enterprise Dua	RQ-11 Raven
Group 2: small tactical	21 to 55	101 to 250	<3,500 AGL	Small airframes with low radar cross sections provide medium range and endurance. Launched from unimproved areas with a small number of people involved. Requires line of sight to the ground control station.	SKY-09Ps	Scan Eagle
Group 3: tactical	56 to 1,320	101 to 250	< FL 180	Like Group 1 and 2 UAS, it requires a larger logistical footprint. Range and endurance vary significantly among platforms.	Shahed	RQ-7B Shadow

Table 5-2. Unmanned aircraft system groups, continued

Group	*Weight (lbs.)*	*Speed (kts)*	*Normal Operating Altitudes (ft)*	*Notes*	*Threat & COTS Examples*	*Friendly Examples*
Group 4: Strategic or theater	> 1,320	Any speed	< FL 180	Relatively large systems operated at medium to high altitudes. It has extended range and endurance capabilities. Normally it requires a runway for launch and recovery.	Forpost	MQ-1C Gray Eagle MQ-1A/B Predator
Group 5: Strategic	> 1,320	Any speed	> FL 180	Operates at medium to high altitudes having the greatest range, endurance, and air speed. Requires large logistical footprint like that of manned aircraft and has a suite of optics for targeting and weaponry for engagements.	Wing Loong II	RQ-4 Global Hawk MQ-9 Reaper

Legend: <— less than; >— greater than; AGL—above ground level; COTS—commercial-off-the-shelf; FL—flight level; ft—feet; kts—knots; lbs.—pounds; UAS—unmanned aircraft system

5-204. UAS Groups 1 and 2 are abundant and difficult to detect on the battlefield. They constitute one of the most significant threats facing friendly ground forces when integrated with direct- and indirect-fire capabilities. The technological enhancements, accessibility, and economic feasibility of the SUAS systems make them an area of interest for potential adversaries. When planning for threat UASs leaders should assume that all UAS platforms may be capable of being outfitted with a suite of capabilities. These may include intelligence, surveillance, reconnaissance, and targeting capabilities. UAS payloads may utilize some form of electro-optical or IR optics, radar, signals intelligence, or laser designation supporting delivery of EW, air-to-surface weapons, or one-way lethal payloads.

COUNTER-UNMANNED AIRCRAFT SYSTEM PLANNING

5-205. Platoon leaders must plan for the threat environment where the units will conduct operations. Passive air defense, combined arms for air defense and counterreconnaissance tasks training should be an integral part of the units' C-UAS practices. The unit should develop and refine C-UAS planning and tailored to the expected threat environment. The platoon and company must plan and execute operations as an integrated combined arms team employing all forms of passive air defense techniques when active air defense is limited or not available. Intelligence preparation of the operational environment provides the commander with specific threat information on known enemy locations, tactics, and threat capabilities.

5-206. Examples of key tasks to integrate into plans and combined arms unit training strategies addressing SUAS threats include the following:

- Employ dedicated observers (conducting air guard techniques).
- Perform visual aircraft recognition training.
- Conduct air threat avoidance techniques.
- Establish a security force and quick reaction force.
- Establish an early warning organic sensor network.
- Conduct UAS reporting procedures.
- Employ cover and concealment techniques.
- Select appropriate SUAS defeat mechanisms.
- Conduct hardening of unit positions.
- Disseminate the air defense warning and weapons control status (WCS).
- Employ countertracking techniques.

5-207. Platoon leaders must understand the plan for friendly UAS employment. This assists the platoon in differentiating from friendly and threat UAS, and disseminating the information when one is launched at the platoon/company/BN.

TECHNIQUES FOR CONDUCTING COUNTER-UNMANNED AIRCRAFT SYSTEM AIR GUARD

5-208. Platoon security operations are complemented by employing air guard techniques. An air guard may assist with mitigating the threat's use of aerial assets against the unit. Air guards need to be vigilant, focusing on the horizon. Air guards will perform actions such as search and scan techniques for approaching threat UASs while observing their assigned sectors. Air guards should position themselves where they can best observe and more importantly listen for threat UAS. When listening, OPs should exercise noise discipline, ensure all engines are off and remove their headgear to listen. Early warning is the key for air guards since it is their responsibility to alert the formation of any possible air threats. Reporting threat UAS activity should include an estimate of the threat location from the air guard position. The air guard reports the approximate distance, time, duration, size, estimated elevation, and direction the UAS was heading when detected. Reporting of a threat UAS should utilize a standard reporting format. (See table 5-3, page 222 for an example reporting format in accordance with ATP 3-01.81.) Leaders should always have a plan for air guards to include:

- Plan for air guards while moving and at halts.

- Plan for air guards in AAs and defensive positions.
- Plan for air guards when in overwatch positions.

Table 5-3. Unmanned aircraft system reporting format

Line	*Information*	*Example*
1	Size	Report the number of UASs (unmanned aircraft systems), or size of the formation.
2	Activity	Report detailed account of actions: • What is the UAS's direction of movement? • Was there any hostile action? • Is the threat UAS loitering in one spot? • Is it flying straight? • Was the threat UAS approach observed or was it spotted overhead?
3	Location	Report the location of the activity. Include six to eight-digit grid coordinate of reporting element and either grid or distance and direction from reporting element location (known point).
4	Unit (Description of UAS)	Include details such as— • Fixed-wing or rotor/multi-rotor. • If fixed wing— ▪ Estimated length of wingspan. ▪ Tail configuration. • If rotor/multi-rotor— ▪ Number of rotors. ▪ Height. ▪ Payload, sensors, and weapons. ▪ Any lights. ▪ Other distinguishable markings.
5	Time	Report the time the activity was observed.
6	Equipment	If possible, report all equipment associated with the UAS, such as payload or weapons.

5-209. Based on threat activity and mission tasks relative to C-UAS observers (air guards) should consider developing quick reference or pre-deployment and combat checklists to focus the team on C-UAS. The checklist should be available through standard military digital devices or in hardcopy form and include the following:

- Current UAS trends (type classification).
- Specific data on local air threats and named areas of interest.
- Secure radio operations and frequencies.
- Unit call signs to request support (quick reaction force or reconnaissance and information collection support).
- Military map of area.
- Binoculars and night vision devices.

- Orientation techniques (location, heading, speed, and line of sight).
- C-UAS SPOTREP.

PASSIVE DEFENSE

5-210. Platoons should be ready to employ passive defense measures to protect themselves from detection, observation, and attack. Passive defense measures decrease the effectiveness of enemy attacks using UAS. Limiting damage and attack avoidance measures are passive defense measures that are used to avoid detection from aerial threats and limit damage if attacked. Platoons must use caution when exercising C-UAS passive measures. Platoon leaders should select positions of advantage that provide concealment for Soldiers, equipment, and unit activities. When planning damage limiting and attack avoidance measures, the platoon leader should consider their forces on the following passive defense tasks:

- When operating at night or during limited visibility, practice light restrictions and discipline during times of limited visibility and night operations.
- Disseminate early warning of air threats to the lowest echelon is essential to countering the UAS threat.
- Practice good OPSEC—
  - OPSEC is an essential part of the planning process.
  - Leaders must always enforce their units' OPSEC measures.
- Use emission control (EMCON) to limit electromagnetic and acoustic footprints, which includes the selective and controlled use of electromagnetic, acoustic, or other emitters to optimize mission command systems and controlling capabilities while minimizing OPSEC.
- Use camouflage and concealment:
  - Camouflage is the use of natural or artificial materials to disguise personnel and/or equipment.
  - Concealment is used to reduce the factors of recognition.
  - Hiding, blending, and disguising are some techniques of concealment.
- Employ countertracking measures:
  - When moving a platoon, avoid leaving multiple sets of tracks when occupying an AA or BP.
  - Multiple sets of tracks leave a large overhead signature.
- Use decoys and deception to set up false locations with smoke to draw attention away from an operation or emitters and emulators to confuse collection activities can conceal unit activities from enemy detection.
- Use of hardening tactics:
  - The use protective construction and overhead cover to provide damage limiting cover for friendly forces and equipment.
  - The hardening and fortifying of cover will limit the threat UAS's ability to visually see and limit the damaging effects of an aerial attack.
- Use of obscurants:
  - The use optical and noise reducing measures to limit the glare or noise of equipment.
  - Placing mud on headlights and using camouflage nets to obscure the glare of windshields prevents drawing attention to their position.
- Unit dispersion:

  - Disperse assets to minimize detection and damage if attacked.
  - Dispersion may be the best damage-limiting measure.
  - Proper dispersion of units and equipment lessens target density and reduces the lethal effects of threat ordnance.
- Maintain vigilance:
  - Platoons must assume they are always vulnerable to enemy targeting attempts.
  - This is especially true when conducting troop movements or performing supply actions or moving through open areas or concentrating at choke points.
- Establish early warning networks using the radios and digital networks.
- Minimize heat signature, such as turning off engines when stationary.

ACTIVE DEFENSE

5-211. Platoon leaders have the responsibility to take whatever action is necessary to protect their forces and equipment against attack and ensure their Soldiers operate in accordance with established ROE. Active measures for the platoon must include basic rules that assist in the identification and defeat process for threat UASs. For example, establish SOPs for disseminating WCS and hostile criteria. The platoon leader should consider training their forces in the following active measures:

- Define characteristics for threat UAS (factors for defining the characteristics of threat UASs are speed, altitude, location, and heading).
- Develop and transmit WCS.

5-212. WCS is a control measure designed to establish procedures for forces using surface-to-air weapons (including small arms weapons) to engage threats. WCSs can apply to weapon systems, volumes of airspace, or types of air platforms. This includes established restricted and engagement zones. Categories of WCS are as follows:

- Weapons-free is the least restrictive WCS and indicates that weapons systems may fire at any target not positively identified as friendly.
- Weapons-tight indicates that weapons systems may only fire at targets identified as hostile in accordance with current ROE.
- Weapons-hold is the most restrictive WCS and indicates that weapons systems may only fire in self-defense or when ordered by proper higher authority.

USE AIR GUARD

5-213. Designate air guards for every vehicle and position to establish 360-degree security and execute the following:

- React to threat UASs by determining distance and bearing to the threat and take pictures if possible.
- Immediately report sightings of threat UAS (SPOTREP) as prescribed by the SOPs.
- If the air guards' position and personnel become threatened execute the following actions:
  - Respond in accordance with established unit SOP that could include moving to alternate positions.
  - Engaging the threat UAS with small arms using combined arms for air defense firing techniques.

- Request engagement support with air and missile defense weapon systems and aviation assets.

5-214. Air guards need to be vigilant with eyes on the horizon. Air guards are responsible for spotting aerial threats within proximity to the unit's location and providing early warning by alerting the unit of possible air threats. Sector limits cover likely avenues of approach for threat aircraft. Air guards can be used during mounted and dismounted offensive and defensive operations.

5-215. When scanning for UAS, do not limit the search to near the horizon and miss higher-flying aircraft or search too high above the horizon and miss lower flying targets. When the tank is completely buttoned up, a crew member has limited ability to scan the horizon. This limited ability must be considered during the threat assessment.

5-216. Platoons should always post an air guard day and night for all operations, based on METT-TC (I). If two or more teams are posted, then assign sectors. Air guards must be trained to watch but also listen for adversary UAS. Listening and OPs should also be assigned the air guard mission. While moving or stationary all members of the platoon should be vigilant and on the watch for threat UAS.

ELECTROMAGNETIC WARFARE

5-217. *Electromagnetic warfare* is military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy (JP 3-85). Commanders and subordinate leaders at each echelon integrate EW activities into operations through cyberspace electromagnetic activities. EW capabilities are applied from the air, land, sea, space, and cyberspace by active or passive actions. Cyberspace electromagnetic activities are the process of planning, integrating, and synchronizing cyberspace and EW operations. *Cyberspace operations* are the employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace (JP 3-0).

ELECTROMAGNETIC WARFARE CAPABILITIES

5-218. EW capabilities assist in shaping the OE to gain an advantage. For example, EW may be used to set favorable conditions for cyberspace operations by stimulating networked sensors, denying wireless networks, or other related actions. Operations in cyberspace and the electromagnetic spectrum depend on EW activities maintaining freedom of action in both. EW consists of three functions, electromagnetic attack, electromagnetic protection, and electromagnetic support. In any environment, the primary focus at the platoon and company level is on electromagnetic protection considerations as it relates to communications within small-unit operations.

5-219. During planning units must prepare for denied, degraded, and disrupted command and control systems and reduced access to cyberspace and space enabled capabilities. Enemy force electronic warfare activities, when they are most effective, may simply look like nothing is wrong. (See table 5-4, page 226.) Key indicators that command and control systems are being degraded include:

- Degraded voice communications.
- Uncharacteristically few voice or digital transmissions.
- Increased latency for data transmissions.

- Frequent and accurate targeting by threat, lethal and nonlethal effects.
- Increased pings/network intrusions.
- Inconsistent digital common operational picture (for example, spoofing).
- Inaccurate GPS data/no satellite lock and inconsistency between inertial navigation aids and GPS-enabled systems.

Table 5-4. Electronic attack tactics, techniques, and procedures

Threat	*Indicators*	*Proactive Tactics, Techniques, and Procedures*
Communications Jamming	Random noise, static on radio Recorded sounds (messages, music) on radio	Minimize radio transmissions Train radio silence Use low power setting Terrain masking
Global Positioning System (GPS) Jamming	Loss of GPS signal Loss of time, incorrect time Wrong location displayed on map	Map, compass training Use encrypted GPS Antenna masking Terrain masking

ELECTROMAGNETIC PROTECTION

5-220. *Electromagnetic protection* is a division of electromagnetic warfare involving actions taken to protect personnel, facilities, and equipment from any effects of friendly or enemy use of the electromagnetic spectrum that degrade, neutralize, or destroy friendly combat capability (JP 3-85). For example, electromagnetic protection includes actions taken by the commander and subordinate leaders to ensure friendly use of the electromagnetic spectrum, such as frequency agility in a radio or variable pulse repetition frequency in radar. They avoid confusing electromagnetic protection with self-protection. Both defensive electromagnetic attack and electromagnetic protection protect personnel, facilities, capabilities, and equipment. (See ATP 3-12.3 for a detailed discussion on EW functions and activities.)

5-221. Efforts to increase survivability and prevent degraded command and control systems include the following actions:

- Reduce radio power settings.
- Use hand and arm signals or pyrotechnics for routine communications.
- Minimize length of FM transmissions through brevity codes and execution checklists.
- Use terrain to mask transmission signatures.
- Employ directional antennas.
- Use remote antennas/carry spare antennas.
- Require physical presence of leaders at orders, for example, disseminate information via analog means in person.
- Use camouflage and deception in all environments.
- Dig in CP.
- Use communications windows to reduce transmissions.
- Employ encryption/cypher techniques.

- Occupy hardened facilities when available.
- Plan to displace or make routine survivability moves.
- Ensure signature discipline across all energy spectrums.
- Practice leader discipline by assuming that the platoon is always visible and able to be targeted and behave accordingly.
- Employ the right measures to reduce transmissions for friendly force tracking and other systems that continuously emit.
- Restrict the use of personal electronic devices.

5-222. Efforts that counter the effects of degraded command and control systems include the following actions:

- Establish and disseminate a viable PACE plan.
- Train to recognize indicators.
- Develop and rehearse contingency plans during the planning process and preparations.
- Maintain analog common operational pictures at all echelons.
- Train to operate from the commander's intent, analog graphics, and synchronization matrixes.
- Keep plans as simple as possible that are less susceptible to friction.

EMISSION CONTROL

5-223. Leaders are responsible for EMCON as an element of electromagnetic protection that inhibits enemy EW capabilities from detecting, intercepting, finding, fixing, or engaging emitters. *Emission control* is the selective and controlled use of electromagnetic, acoustic, or other emitters to optimize command and control capabilities while minimizing, for operations security: a. detection by enemy sensors, b. mutual interference among friendly systems, and/or c. enemy interference with the ability to execute a military deception plan (JP 3-85).

5-224. In large-scale combat operations against near-peer competitors, the enemy is expected to use EW capabilities to detect, intercept, deny, degrade, disrupt, destroy, or manipulate friendly communications, command and control, and intelligence capabilities. EMCOM is a planning aid designed to help leaders develop standard procedures and battle drills for their unit's unique suite of emitters using an appropriate mix of the EMCON considerations. (See table 5-5, page 228.)

Table 5-5. Emission control considerations

Techniques and Procedures	
Minimize length and frequency of radio transmissions. *	Use satellite communications (SATCOM) information on these practices.
Use appropriate power settings. *	Use high frequency (HF) transmissions.
Use electronic terrain masking. *	Train while employing radio silence.
Establish and enforce a primary, alternate, contingency, and emergency (PACE mnemonic) communications plan. *	Ensure electronic equipment is properly grounded and has shield cables.
Use remote antennas.	Train on land navigation (without GPS).
Use brevity codes and proword execution matrixes.	Train on hand and arm signals.
Use secure landlines.	Execute survivability moves.
Use directional antennas.	Ensure equipment is grounded.
Use line of sight communications parallel to the forward line of own troops.	Understand the impact of terrain composition on emissions.
Use alternate means of communication for planning/preparation; use primary for execution.	Recognize communications jamming (reporting criteria).
Use data-burst transmissions.	Recognize GPS jamming (reporting criteria).
Mask with camouflage netting.	Recognize radar jamming (reporting criteria).
Use encrypted GPS.	Recognize satellite jamming (reporting criteria).
Note. *These emission control considerations should always be practiced, but leaders emphasize them more as threats involving the electromagnetic spectrum elevate.	
Legend: GPS—Global Positioning System	

5-225. EMCON prevents the threat of discovering and attacking the locations of friendly forces with EW. When establishing EMCON best practices, it is important to understand the general categories and status criteria for EMCON levels. Based on the tactical situation, the commander can dictate the appropriate EMCON level to the platoon. During operations, commanders consider EMCON level 3 (amber) as the baseline condition. Even if given no guidance, the platoon leader should implement EMCON measures within the platoon. (Table 5-6 captures the five EMCON levels and the general descriptive criteria associated with each level.) (See ATP 3-12.3 and ATP 6-02.53 for additional information.)

Table 5-6. Emission control conditions

EMCON Status	*Description*
EMCON 1 Green	Describes a situation where there is no apparent hostile activity against friendly emitter operations. Operational performance of all EMS-dependent systems is monitored, and password encryption enabled systems are used as a layer of protection.
EMCON 2 Yellow	Describes an increased risk of attack after detection. Increased monitoring of all EMS activities is mandated, and all end users must make sure their systems are secure, encrypted, power levels monitored, and transmissions limited. EMS usage may be restricted to certain emitters, and rehearsals for elevated EMCON is ideal.
EMCON 3 Amber	Describes when a risk has been identified. Counter ECM (encryption, FH, directional antennas) on important systems is a priority, and the CEWO's alertness is increased. All unencrypted systems are disconnected.
EMCON 4 Red	Describes when an attack has taken place, but the EMCON system is not at its highest alertness. Non-essential emitters may be taken offline, alternate methods of communication may be implemented, and modifications are made to standard lower EMCON configuration (for example, power levels and antenna types).
EMCON 5 Black	Describes when attacks are taking place based on the use of the EMS. The most restrictive methods of EP are enforced. Any compromised systems are isolated from the rest of the network.
Legend: CEWO—cyber electromagnetic warfare officer; ECM—electromagnetic countermeasures; EMCON—emission control; EMS—electromagnetic spectrum; EP—electromagnetic protection; FH—frequency hop	

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Chapter 6
Sustainment

Sustainment units provide logistics, (consisting of maintenance, transportation, and field services), personnel services, and Army Health Service support to supported units. The platoon leader oversees and aids in the sustainment planning. However, the PSG is the platoon's main sustainment planner and executer. The PSG works closely with the company XO and 1SG to forecast anticipated sustainment requirements for future missions and ensures the platoon receives the required support for its assigned mission. Sustainment responsibilities and procedures in the tank platoon remain basically the same as other formations. The company normally forecasts supplies and 'pushes' rather than 'pulls' them to the platoon. The PSG is assisted by the other tank commanders and the gunners on the platoon leaders and PSG's vehicles.

SECTION I – PLANNING AND RESPONSIBILITIES

6-1. Planning sustainment operations is primarily a company, FSC, and BN-level operation. The company commander, XO, and 1SG plan the concept of support for the company's operation. The platoon leader and PSG are responsible for sustainment planning, preparation, execution, and assessment at the platoon level. Sustainment is characterized by eight principles: integration, anticipation, responsiveness, simplicity, economy, survivability, continuity, and improvisation. (See FM 3-96 and FM 4-0 for additional information.) The platoon leader, with the assistance of the PSG, integrates these guiding principles to shape the sustainment concept of support for the platoon. This section describes sustainment operations in support of the platoon, specifically responsibilities, functions, tasks, activities, and unit relationships throughout high-operating tempo of decentralized operations.

PLANNING CONSIDERATIONS

6-2. The platoon leader and PSG develop the sustainment plan by anticipating what supplies will be consumed, what supplies are on hand, and coordination to acquire needed supplies. The sustainment plan is informed by any number of variables, examples include the following considerations:

- How will the platoon reach 100 percent stockage on all supplies prior to the mission?
- Can it complete the assigned mission with the quantity of supplies, or will it require resupply prior to the end of the mission?
- How will the platoon manage its ready- and semi-ready stowage?
- How will the platoon cross-level and resupply at the end of the mission?
- Which section is the priority for resupply at any time in the operation?

6-3. The sustainment plan should provide answers to operational questions such as the following:

- Quantities:
  - What quantities will the platoon require?
  - Will emergency resupply (Classes III, IV, and V) be required during the battle?
  - Does this operation require pre-stocked supplies or caches?
- Threat:
  - What is the composition, disposition, and capabilities of the expected enemy threat?
  - How will these affect the platoon sustainment plan during execution?
  - Where and when will the platoon expect contact to occur?
  - What is the platoon's anticipated Class V expenditure during expected contact?
  - What are the platoon's expected casualties and vehicle losses based on the nature and location of expected contact?
- Terrain and weather:
  - How will terrain and weather affect sustainment plans during the battle?
  - What terrain will provide the best security for vehicle recovery and CCPs?
  - What is the platoon's vehicle and CASEVAC routes?
  - What are the platoon's dirty routes for evacuating contaminated personnel, vehicles, and equipment?
- Time and location:
  - When and where will the platoon need sustainment support?
  - Where and when in the operation should the platoon pause to transfer Class V from semi-ready to ready boxes?
  - Based on the nature and location of expected contact, what are the best sites for the CCP?
  - How will the platoon move detainees and where are the collection points?
- Requirements:
  - What are the support requirements by element and type of support?
  - Which section has priority for emergency Class III resupply?
  - Which section has priority for emergency Class V resupply?
- Risk:
  - Will lulls in the battle permit support elements to conduct resupply operations in relative safety?
  - With no lull in the battle, how does the platoon conduct a resupply of Classes III and V?

6-4. After this initial analysis, the platoon leader and PSG should have an understanding of how much Classes III and V the platoon will consume and when in the mission that will occur; whether it can achieve the assigned mission using onboard stowage or whether it will have to be resupplied, whether internally (cross-level, pre-stocks, upload from semi-ready stowage) or externally; where casualties are most likely to occur, with the associated CCPs; and what, if any, external resources are required and how they will be allocated or controlled. With this understanding, the platoon's leaders make a detailed plan.

INDIVIDUAL RESPONSIBILITIES

6-5. The platoon must plan, prepare, and execute its portion of the company sustainment plan. Concurrently with other operational planning, the platoon develops its sustainment plan during the mission analysis and refines it in the war-gaming portion of the TLPs. Rehearsals are normally conducted at each echelon to ensure the smooth, continuous flow of material and services.

6-6. Sustainment responsibilities for the platoon include reporting and requesting support requirements through the company and ensuring sustainment operations are properly executed when support elements arrive in the platoon area. The PSG is normally in charge of these functions, with guidance and oversight provided by the platoon leader. The PSG must submit timely and accurate personnel and logistical reports, along with other necessary information and requests. Early and accurate sustainment reporting ensures that necessary supplies can be requested for a specific operation and continues during an operation all the way through consolidation and reorganization.

PLATOON LEADER

6-7. The platoon leader is ultimately responsible for the sustainment plan and for the condition and performance of the platoon's equipment and material. The platoon leader works directly with the PSG to determine specific sustainment requirements of the tactical plan and reports those requirements to the company XO. The platoon leader must anticipate sustainment requirements and ensure arrangements are made to provide the necessary support requirements to the platoon during all phases of the operation. In that role, the duties include the following:

- Attend company sustainment rehearsals and ensure the platoon knows what actions to take at the company's resupply points.
- Ensure, within the platoon's maintenance capabilities, that all platoon vehicles, weapon systems, are always operational.
- Ensure equipment that cannot be repaired at platoon level is reported to FMT as soon as possible using DA Form 5988-E or DA Form 2404 (*Equipment Inspection and Maintenance Worksheet*).
- Track the status of current platoon maintenance activities, including corrective actions for equipment faults, maintenance work orders, and requisition of repair parts.
- Keep the commander informed of the platoon's maintenance status.
- Coordinate with the company XO in planning, directing, and supervising unit maintenance for the platoon.
- Develop and supervise an ongoing maintenance training program.
- Ensure that tank crews have appropriate technical manuals on hand and are trained and supervised to complete operator maintenance properly.
- Ensure that unit PMCS are performed daily on all assigned equipment per the appropriate operator's manuals.
- PMCS and DA Form 5988s are completed daily during operations.
- Ensure that all crewmembers are trained and licensed to operate platoon vehicles and equipment.
- Plan and rehearse a maintenance evacuation plan for every mission.

- Know the current logistic status of the platoon, and how quickly each resource (water, fuel, ammunition, subsistence) is being expended or consumed.
- Knowing the basic load and total carrying capacity of—
  - Class I water in gallons.
  - Class III bulk fuel in gallons.
  - Class III (P) in quarts for each critical type.
  - Class IV and Class V by type of ammunition in the platoon.

PLATOON SERGEANT

6-8. The PSG is the platoon's primary sustainment executor, keeping the platoon leader informed on all logistic matters and sending the reports to the XO or 1SG. The PSG executes the platoon's logistical plan, relying heavily on platoon and company SOPs. The PSG directly supervises and controls the platoon's assets when available. During preparations for the mission, the PSG works closely with the platoon leader, and tank commanders to determine specific support requirements of the tactical plan. The PSG then ensures proper arrangements are made to provide those support requirements. The PSG also performs the following logistical functions:

- Attend company sustainment rehearsals and ensure the platoon knows what actions to take at the company's resupply points.
- Direct and supervise unit maintenance of platoon equipment, vehicles, and weapon systems.
- Develop a schedule to ensure all weapons and vehicles are checked daily at a minimum and PMCS is conducted daily.
- PMCS and DA Form 5988s are completed daily during operations.
- Assist the platoon leader with the responsibilities and assuming these responsibilities in the platoon leader's absence.
- Supervise and account for platoon personnel during maintenance periods.
- Ensure that repair parts are installed or stored as they are received.
- Collect and review reports of the platoon's maintenance status and sending the appropriate consolidated reports to maintenance personnel.
- Track changes in status for all classes of supply and reports to XO or 1SG.
- Maintain accountability and serviceability of all equipment including hand receipts, shortage annexes, and direct exchange of broken equipment.
- Ensure that vehicles are always topped off.
- Monitor actions during resupply on site and ensure each tank commander is tracking actions at the resupply point.
- Rehearse (to include under simulated CBRN conditions) and directing the platoon's CASEVAC plan:
  - The wounded and deceased are not evacuated together.
  - The deceased and wounded are collected at the company CCP in opposite areas with deceased outside of line of sight of wounded.
  - Direct and supervise the collection, initial identification, and evacuation of human remains to the company CCP.
- Keep the platoon leader informed of the platoon's maintenance and logistics status.
- Know the basic load and total carrying capacity of:
  - Class I water in gallons.

- Class III bulk fuel in gallons.
- Class III (P) in quarts for each critical type.
- Class IV and Class V by type of ammunition in the platoon.

TANK COMMANDERS AND PLATOON LEADER'S GUNNER

6-9. The tank commanders and the gunner from the platoon leader's tank are the platoon's first line of sustainment supervisors including maintenance. In large part, the platoon's maintenance status and thus its combat readiness, depends on their commitment to proper maintenance procedures. Their duties in this area include the following:

- Ensure the worksheet (DA Form 5988-E or DA Form 2404) is filled out daily, accurately, and updated in accordance with DA Pam 750-8.
- Ensure that dispatch records are completed accurately and turned in on schedule.
- Ensure that the crew is properly trained in PMCS procedures and that PMCS are performed on the vehicle per the appropriate technical manual. Crews must be made to use the technical manual to ensure correct checks are being completed.
- PMCS and DA Form 5988s are completed daily during operations.
- Ensure that assigned drivers for each vehicle are properly trained and licensed.
- Ensure that repair parts are installed upon receipt or are stored in authorized locations.
- Ensure that all components of end item and basic issue items are properly marked, stored, maintained, and accounted for.
- Ensure that vehicles are always topped off.
- Update the PSG on the maintenance and logistics status of the vehicle.

Note. Detailed vehicle and equipment checks are outlined in every operator's manual and should always be conducted as stated in the manual. Although operators must learn to operate the equipment without referring to the manual, maintenance must be performed using the appropriate manual, not from memory.

RESUPPLY METHODS

6-10. There are two methods of resupply operations; planned and emergency. Planned resupply operations that are rehearsed and synchronized with the maneuver plan are essential to conducting operations. Emergency resupply should only be used in critical situations where the supply is essential to mission success. The company SOP specifies cues and procedures for each method. The actual method used for resupply in the field depends on mission variables. (See ATP 3-90.1 and ATP 4-90 for more information.)

PLANNED RESUPPLY

6-11. Planned resupply operations cover items in Classes I, III, V, and IX, mail, and other items requested by the platoon. When possible, the platoon should conduct planned resupply daily. Ideally, it does so during periods of limited visibility. Tanks use large amounts of fuel, so the platoon must resupply Class III (B) at every opportunity. The

platoon should have a plan for all classes of supply. Planned resupplies can occur during an operation if they are well thought out and planned. An effectively planned resupply enables the tank platoon to continue the operation unimpeded.

6-12. Leaders must synchronize and deconflict sustainment operations with the scheme of maneuver to ensure the company and platoons are able to refuel/rearm before they commit to the fight, as opposed to afterwards. The company may plan for specific platoons to be refueled/rearmed during the operation. The platoon leader must fully comprehend the company sustainment plan to execute a resupply during an operation effectively. Before requesting emergency resupply, the first step is to cross level supplies as much as possible on systems and then cross-leveling within sections.

6-13. There are multiple techniques for the resupply of supplies, personnel, and equipment. The following are examples of techniques for planned resupply:

- LOGPAC.
- Pre-positioned.
- Cache.

LOGISTICS STATUS REPORT

6-14. The logistics status is an internal status report that identifies logistics requirements, provides visibility on critical shortages, and allows commanders to project mission capability. Accurate reporting of the logistics and Army Health System support status is essential for keeping units combat ready. The PSG compiles reports from all the sections, to include attachments, and completes the unit's logistics status report. Once completed, reports are forwarded to the company 1SG or XO. Logistics status reports should be completed at least daily (based off unit SOP) but may be required more frequently during periods of increased intensity or high operating tempo. (See ATP 3-90.1 and FM 4-0 for additional information.)

6-15. The PSG continually monitors the platoon's supply status through logistical reports and automated situation reports. The PSG notifies the 1SG before a specific vehicle, or the platoon is critically short of these major classes of supply. The PSG must ensure each vehicle crew maintains a stock of oil, grease, and hydraulic fluid, replenishing petroleum, oils, and lubricants products every time refueling takes place. When planning refueling operations, the unit must top off vehicles whenever the tactical situation permits. The 1SG and XO should balance the range and fuel capacity of the unit vehicles against the requirements of future operations.

ROUTINE RESUPPLY

6-16. The LOGPAC technique offers a simple, efficient way to accomplish routine sustainment operations. The key feature, a centrally organized resupply convoy, originates at the BN trains. The convoy carries all items needed to sustain the platoon for a specific period (usually 24 hours) or until the next scheduled LOGPAC. The BN SOP will specify the LOGPAC's exact composition and march order.

6-17. As directed by the commander or XO, the 1SG establishes the company resupply point. The company uses the service station or tailgate method. The 1SG briefs each LOGPAC driver on which method to use. When they have the resupply point ready, the

1SG informs the commander. The company commander then directs each platoon or element to conduct a resupply based on the OPORD and tactical situation.

Tailgate Resupply

6-18. In the tailgate technique, the 1SG or designated person will bring the LOGPAC to individual tanks. (See figure 6-1.) This method is used when routes leading to vehicle positions are available, terrain permits movement of multiple vehicles to each platoon position and the unit is not under direct enemy observation and fire. Individual tanks can remain in combat positions or back out a short distance to allow vehicles carrying Class III fuel and Class V ammunition to reach them. Service members killed in action and their personal effects are turned over to the 1SG or designated person for further movement to the company CCP. This technique is time consuming, but it is useful in maintaining stealth during defensive missions because tanks do not have to move. If necessary, supplies can be hand-carried to vehicle positions to minimize signatures.

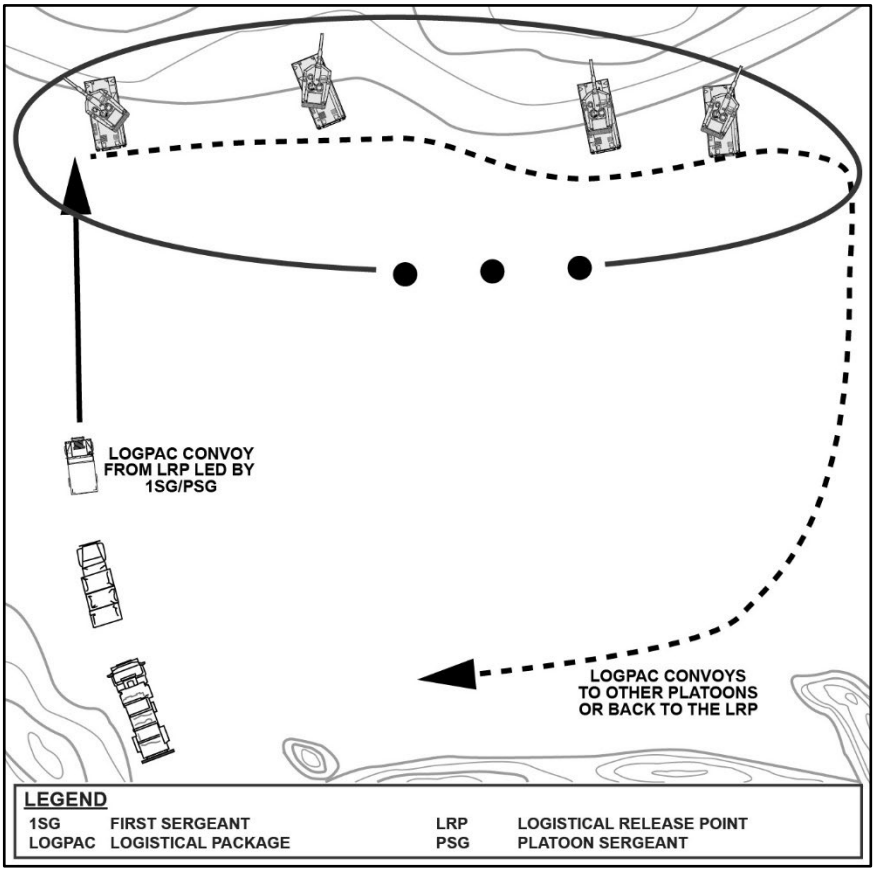

Figure 6-1. Tailgate resupply

Service Station Resupply

6-19. In the service-station technique, vehicles move to a designated location to rearm, refuel, resupply, or turn in damaged equipment. The platoon leader will direct the PSG to rotate vehicles or sections through the resupply site based on the enemy situation and shortages in the platoon. This process will continue until the entire platoon has been replenished. (See figure 6-2.)

6-20. When using this technique, the vehicles will enter the resupply point following a one-way traffic flow and only vehicles requiring maintenance will stop at the maintenance holding area. The maintenance element can help the operator or crew verify PMCS of their vehicles. Minor deficiencies can be corrected on the spot with available tools, repair parts, and battle damage assessment repair techniques.

6-21. Each vehicle will rotate through the supply location, with teams rotating through to eat, pick up mail, and refill or exchange water cans. Service station resupply is inherently faster than the tailgate method, however, it can create significant security concerns due to the amount of movement and concentration of vehicles in one location. During defensive missions, the platoon leader must create a plan to rotate the platoon based on shortages and must be careful not to compromise the location of fighting positions.

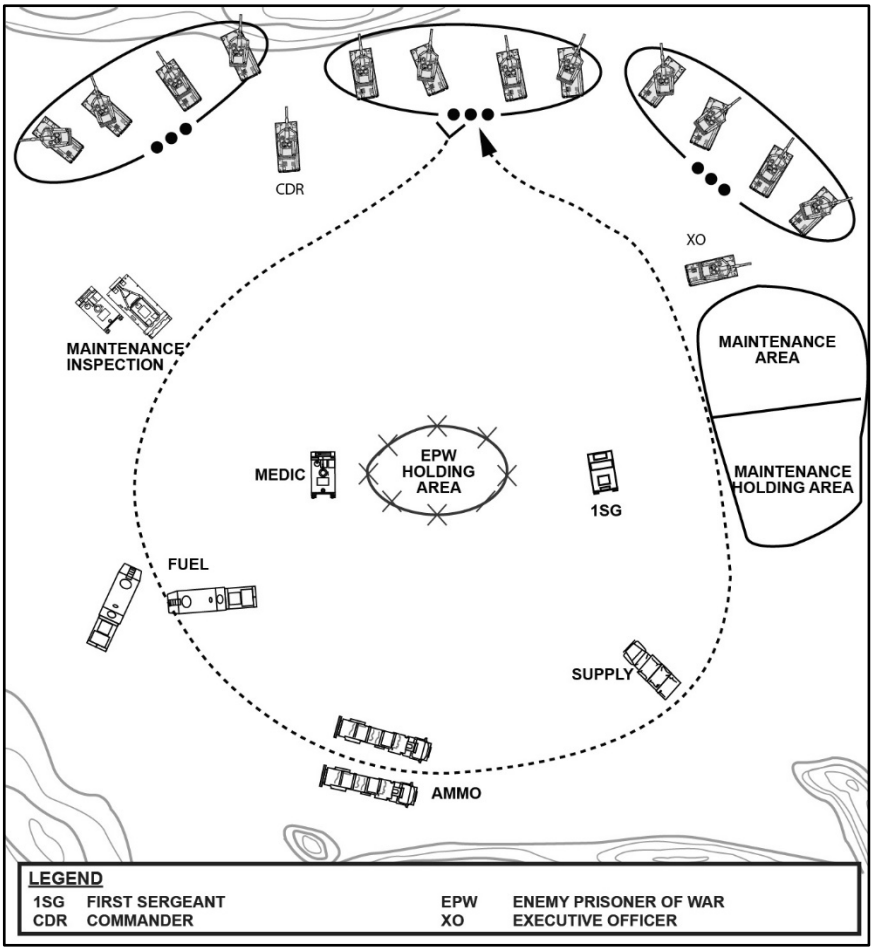

Figure 6-2. Service station resupply

EMERGENCY RESUPPLY

6-22. Emergency resupply, also known as immediate resupply, normally involves Class III and Class V and is executed when the platoon has such an urgent need for resupply that it cannot wait for the routine LOGPAC. Emergency resupply procedures start with immediate redistribution of ammunition in individual vehicles, followed by cross leveling of ammunition in the platoon. It is better to have four tanks with 20 rounds of ammunition each than two tanks with 40 rounds and two others with none.

6-23. Once requested through the commander or 1SG, an emergency resupply can be conducted using either the service station or tailgate technique. Based on the enemy situation, the platoon may have to conduct resupply while in contact with the enemy and procedures may have to be adjusted. The quickest appropriate means is normally used out of the two techniques used to resupply units in contact:

- Limited supplies are brought forward to the closest concealed position, where the tailgate technique of resupply is used.
- Individual vehicles or sections disengage and move to a resupply point, obtain their supplies, and then return to the fight, which is a version of the service station technique.

PRE-POSITIONED SUPPLIES

6-24. In defensive operations, or other times as appropriate, the platoons will most likely need pre-stocked supplies, also known as pre-positioned or cached resupply. Platoons often pre-position (cache) Classes III, IV, and V items for use during defensive operations, with deliberate planning and triggers for movement to and from the pre-position locations.

6-25. All levels must carefully plan and execute pre-stock operations. All leaders must know the exact locations of pre-positioned sites. During reconnaissance or rehearsals, they verify these locations. The platoon takes steps to ensure the survivability of the pre-positioned supplies. These measures include selecting covered and concealed positions and digging in the pre-stock positions. The platoon leader must have a removal and destruction plan to prevent the enemy from capturing pre-positioned supplies.

6-26. During offensive operations, the platoon can pre-position supplies on trucks well forward on the battlefield. This works well if the platoon expects to use a large volume of fire, with corresponding ammunition and fuel requirements, during a fast-moving operation.

CACHE

6-27. A cache is a pre-positioned and concealed supply point. Caches are different from standard pre-positioned supplies because the supported or supporting units conceal the supplies from the enemy whereas units might not conceal other pre-positioned supplies. Units can establish caches for a specific mission or as a contingency measure. Units may conceal cache sites above or below ground. Above ground caches are easier to access but are more vulnerable to discovery by the enemy or civilians.

REFUEL ON THE MOVE

6-28. A ROM operation is typically planned and organized at the forward support company or higher level to sustain formations during long movements. (See ATP 3-90.5 for more information.) The ROM can be tailored to tactical situations. The two primary purposes of an ROM are to—

- Provide rapid, partial fueling for vehicles to extend movement range and enable convoys to reach their intended destination when complete refueling operations are either not practical or unnecessary.
- Provide necessary fuel between engagements to extend the time that forces can spend on the objective.

6-29. Security for ROM sites is normally maintained using BN assets. If enough fuel-hauling vehicles are available, individual vehicles, sections, platoons, or companies/troops proceed directly to their specified fuel vehicle and either top off or receive an amount of fuel specified in the OPORD. Platoons must be prepared to conduct local security during an ROM operation. (See figure 6-3.)

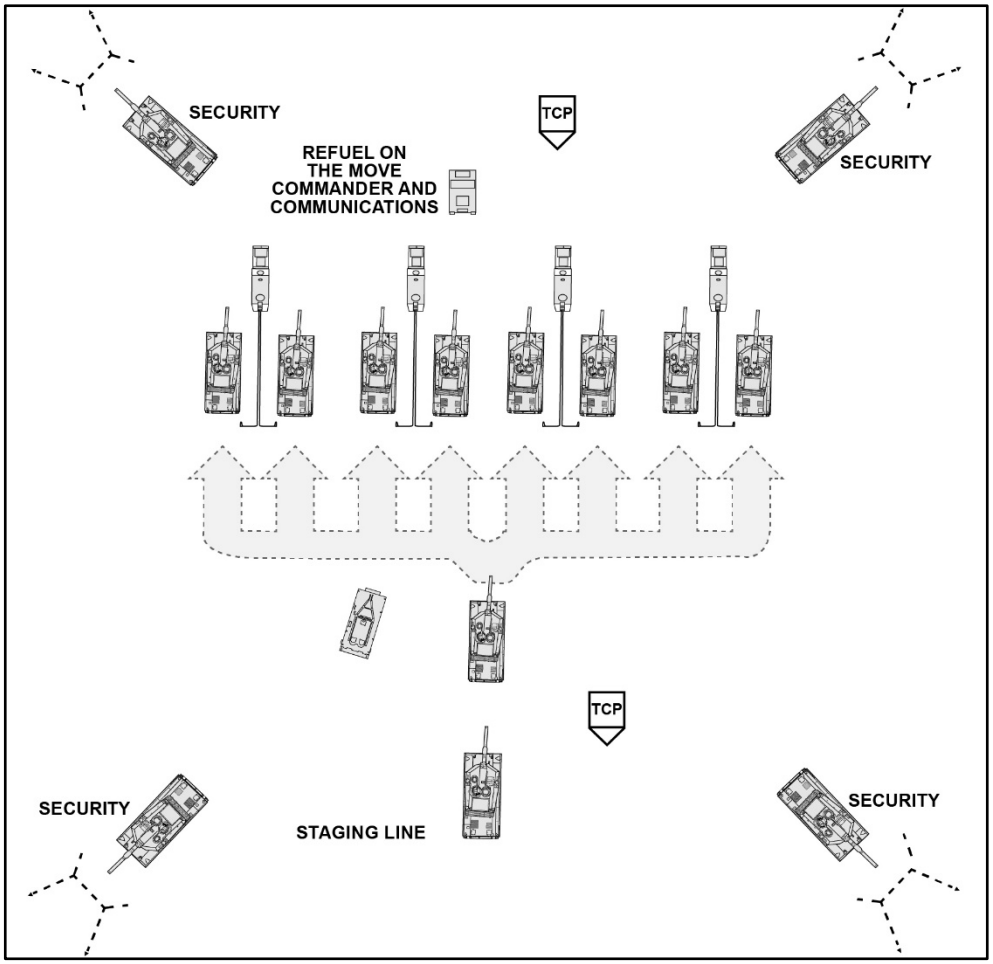

Figure 6-3. Refuel on the Move

UNIT BASIC LOAD

6-30. The quantity of supplies required to be on hand and moved by a unit or formation. The quantity of each item of supply in a basic load is based on the number of days the unit may have to sustain itself in combat without resupply. The commander dictates minimum load requirements; however, the commander or the unit SOPs should specify most items.

COMBAT LOAD

6-31. The combat load is the minimum mission-essential equipment and supplies which are required for Soldiers to fight and survive immediate combat operations. Like the basic load, the commander specifies the platoon's combat load. For Class V (ammunition), the combat load is the standard quantity and type of munitions required

to employ all individual weapons, crew-served weapons, and weapon platforms that are designed for the tank and assigned to its crew.

CLASSES OF SUPPLY

6-32. The PSG requests supplies and delivers them to the platoon. The platoon leader establishes priorities for delivery; however, combat demands that Classes I, III, V, and IX supplies (table 6-1 explains the classes of supply) and equipment take priority because they are the most critical to successful operations. (See FM 4-0 for more information.)

Table 6-1. Classes of supply

Class	*Type of Supply*
Class I	Rations, water, and ice
Class II	Clothing, individual equipment mission oriented protective posture suits, tentage, tool sets, administrative and housekeeping supplies, and equipment
Class III (B)	Bulk petroleum, oils, and lubricants
Class III (P)	Packaged petroleum, oils, and lubricants
Class IV	Construction materials, such as pickets, sandbags, and concertina wire
Class V	Ammunition and mines, to include explosives
Class VI	Mail and personal-demand items normally sold through the exchange system, which may include candy, soaps, cameras, and film
Class VII	Major end items, such as tanks
Class VIII	Medical
Class IX	Repair parts and documents required for equipment maintenance operations
Class X	Materials to support nonmilitary programs
Miscellaneous	Anything that does not fall in one of the existing classes of supply

SECTION II – MAINTENANCE

6-33. The maintenance of weapons and equipment is continuous. Every Soldier must know how to maintain their weapon, vehicle, and equipment according to the applicable technical manual. Maintenance includes inspecting, testing, servicing, repairing, requisitioning, recovering, and evacuating vehicles and equipment. Maintenance at the platoon and section level comprises thorough daily PMCS and accurate reporting of maintenance problems to the company, and taking necessary actions to resolve maintenance problems, such as installing requested parts. The platoon leader and PSG are responsible for prioritizing maintenance in accordance with the commanders' priorities.

MAINTENANCE REPAIR FLOW

6-34. Maintenance and the early identification of problems prevent equipment down time and the reduction of combat effectiveness. The result of proper routine PMCS is fully mission capable equipment. The PMCS results are logged on the DA Form 2404 or the DA Form 5988-E. These forms are the primary means through which the platoon obtains maintenance support or repair parts. The forms follow a pathway from crew level to the FSC maintenance section, maintenance control section to the brigade support area and back. Per unit SOP, the company XO or 1SG supervises the flow of these critical maintenance documents and parts. The daily flow of reporting and repairing equipment includes the following:

6-35. The platoon leader and PSG receive the hard copy DA Form 5988-E from the XO or 1SG during the LOGPAC. The platoon leader and PSG review the DA Form 5988-E to ensure correctness prior to distribution. If there are discrepancies, they notify the XO immediately.

6-36. Each DA Form 5988-E or DA Form 2404 is distributed to the tank commanders, who oversee their crews conducting the PMCS of the tanks, individual weapons, and equipment. Typically, the driver will PMCS the hull and the gunner will PMCS the turret. The crew utilizes the proper -10 level technical manual to conduct a thorough PMCS. The crew follows the before, during, or after PMCS procedures depending on the guidance from their tank commander.

6-37. The crews annotate faults on the DA Form 5988-E or DA Form 2404 in accordance with the technical manual. The faults annotated will either be a non-deadline fault, or a dead-line fault. If the fault renders the vehicle or piece of equipment non-mission capable the crewmember notifies the tank commander and then continues with the PMCS. (See DA Pam 750-8 for more information.)

6-38. Once the crewmember is complete with the PMCS, the tank commander coordinates with the FMT to verify the faults. If a fault renders the tank or piece of equipment non-mission capable, the FMTs utilize the parts on hand to bring the vehicle to fully mission capable status. If they do not have the part on hand, the part will have to be sent forward from the field or combat trains CP, brigade support area, or ordered by the BN's equipment records parts NCO/clerk at the MCP.

6-39. When the faults have been verified by the FMT, the platoon leader collects every DA Form 5988-E or DA Form 2404 and reviews them to understand the status of their vehicles and equipment. Then the platoon leader delivers the DA Form 5988-E or DA Form 2404 to the XO. The XO reviews the forms and updates the company status then gives them to the 1SG.

6-40. The 1SG transports every hard copy DA Form 5988-E and DA Form 2404 on the next LOGPAC to be submitted to the FSC maintenance section. The FMT chief will verify the faults and annotate the correct national stock number for the part to be ordered. The company's parts NCO/clerk will order the part and print off a new DA Form 5988-E with the new faults and parts ordered and provided to the 1SG on the following LOGPAC.

6-41. If the repair or installation of the part requires more time than the operation allows, the tank or piece of equipment may be transported to the unit MCP for further repair.

6-42. The unit SOP should detail when maintenance is performed, to what standards, and who inspects it. The tank commander is most often the one who inspects maintenance work, with the PSG and platoon leader conducting spot checks. Besides operator maintenance, selected Soldiers are trained to perform limited maintenance on damaged weapons and battle damage assessment and repair. PMCS and DA Form 5988s are completed daily during operations.

6-43. Non-mission capable equipment is fixed as far forward as possible. When a piece of equipment is damaged, it should be inspected to see if it can be repaired on the spot. If the equipment cannot be repaired forward, it is evacuated immediately or returned with a LOGPAC. Even if the item cannot be evacuated at once, the maintenance system is notified to prepare for repair or replacement. If a replacement is available (from an evacuated Soldier or inoperative equipment), it is sent forward. If not, the leader must work around it by prioritizing the remaining equipment. An example of this is to use a radio within a section designated for the company command net if the platoon radio is broken. A controlled exchange may take place between NMC equipment, bringing one or more pieces of equipment to make them FMC, approval for this action must be initiated at a higher level (BN commander).

LEVELS OF MAINTENANCE

6-44. The Army has two levels of maintenance: field and sustainment. Field maintenance consists primarily of troubleshooting, repairing, or replacing parts and assemblies on the user's system or platform. Sustainment maintenance is performed by U.S. Army Materiel Command elements normally comprised of civilians and contractors who return equipment to a national standard, after which the equipment is placed back into the Army's overall supply system.

6-45. The link between the using organization and maintenance support is a trained operator/crew who can properly use and maintain the equipment. The continued demand for equipment requires that the operator and/or crew perform PMCS. Maintainers usually diagnose down to the major component failure. They then replace that component and return the system to operational condition. Based on METT-TC (I), the Soldier can diagnose and replace subcomponent items depending on the availability of tools, parts, and time.

FIELD MAINTENANCE

6-46. Field maintenance is on-system maintenance and mainly involves preventive maintenance and replacement of defective parts. The goal of field maintenance is to repair and return equipment to the Soldier. It covers tasks previously assigned to operator/crew, organization/unit, and direct support maintenance levels. It includes some off-system maintenance critical to mission readiness.

6-47. Platoon leaders ensure that vehicle crews and equipment operators perform PMCS. To provide quick turnaround of maintenance problems, each maneuver company has an FMT from the supporting FSC team dedicated to support them. These FMTs have

forward repair systems and mechanics trained to work on the company's equipment. The company 1SG usually positions the FMT in the company trains.

6-48. The built-in diagnostic tests on the M1 tank system enhancement package (built in test) facilitate rapid replacement of defective components and systems. When the crew isolates a problem using these tests, the organizational mechanic can verify the fault as soon as arrival on site and replace the component without further diagnostic testing.

SUSTAINMENT MAINTENANCE

6-49. Sustainment maintenance comprises repairing components off the user's platform. Those repaired components then go back into the supply system. Echelons above BCT perform this level of maintenance. To maximize unit combat readiness, maintenance personnel must repair and return the equipment to the user as quickly as possible. Repairs should be made as far forward as possible.

SCHEDULED SERVICES

6-50. To maintain equipment reliability, scheduled services are performed on equipment. Equipment services are specified maintenance actions performed when required where equipment, components, and systems are routinely inspected, adjusted, lubricated, calibrated, and often disassembled and reassembled according to engineering specifications. Maintenance personnel use scheduled services to identify and replace worn and faulty parts and avoid catastrophic component failures based on analysis and engineering documentation. (See TC 3-20.31-9.)

RECOVERY OF EQUIPMENT

6-51. Recovery operations on the battlefield and in general can be hazardous. The tank commander must integrate risk management and ensure safety is a top priority for the recovery mission. The current tactical situation will determine whether on-site repair or evacuation is necessary of downed equipment. Maintenance assets are limited on the battlefield, and it is imperative that crews perform expedient or authorized repairs within their capabilities immediately rather than requesting maintenance personnel to perform simple mechanic tasks. Most expedient or authorized repairs are in the technical manuals.

6-52. Self-recovery operations start at the location where the equipment becomes disabled. If the tactical situation permits, the crew will assess the damage, use the technical manual to perform troubleshooting procedures and use the basic issue items and additional authorized list equipment to perform self-recovery. If the damaged tank cannot be self-recovered, the tank commander will immediately contact the platoon leader or PSG to start the like-vehicle recovery process. The platoon leader will decide if another platoon vehicle can evacuate the damaged tank for a short distance to the MCP. Like-vehicle recovery is METT-TC (I) dependent.

6-53. When self-recovery and like-vehicle recovery are not practical, the platoon leader or the PSG will contact the company XO or 1SG to coordinate dedicated recovery assets. If available, a recovery vehicle from the supporting FSC will evacuate the damaged tank. If possible, the tank platoon leader will move the tank to a covered position that will allow the recovery vehicle to reach it without exposing the recovery team and the crew

of the downed tank to enemy fire. Evacuate the tank to the closest collection point or to the MCP as necessary.

6-54. In most situations, evacuation is necessary when a damaged vehicle cannot be repaired on site within the time specified in the company SOP or when evacuation is the only means available to prevent capture or destruction by the enemy. When a vehicle needs to be evacuated, the platoon leader or PSG reports its exact location, the vehicle type, and the extent of damage, if known, on the company network to personnel designated in the unit SOP. The crew should remain with the vehicle to help with evacuation and repair, to provide security, and to return the repaired vehicle to the platoon as soon as possible.

SECTION III – TACTICAL COMBAT CASUALTY CARE

6-55. TCCC is divided into three phases: care under fire, tactical field care, and tactical evacuation care. TCCC occurs during a combat mission and is the military counterpart to pre-hospital emergency medical treatment. (See ATP 4-02.5 for additional information.)

CARE UNDER FIRE

6-56. In the care under fire phase, combat medical personnel and their units are under effective hostile fire and are very limited in the care they can provide. In essence, only those lifesaving interventions that must be performed immediately are undertaken during this phase. Casualty care under fire has a positive impact on the morale of a unit. Casualties are cared for at the point of injury (or under nearby cover and concealment) and receive self- or buddy-aid, advanced first aid from the combat lifesaver, and/or emergency medical treatment from the platoon or company combat medics.

Note. Nonmedical personnel, specifically individuals performing self-aid and buddy-aid and combat lifesavers within the platoon, assist combat medics within platoons and the company senior combat medic in their duties. Individuals (self-aid and buddy-aid) and combat lifesaver administer appropriate TCCC. If needed, Soldiers are evacuated to the Role 1 medical treatment facility (MTF) battalion aid station (BAS) in the BN support area, or the Role 2 MTF (brigade support medical company of the brigade support BN in the brigade support area of the BCT. (See ATP 3-90.1 and ATP 3-90.5 additional information.)

6-57. All platoon combat lifesavers and the combat medic carry multiple blank versions of DD Form 1380 (*Tactical Combat Casualty Care [TCCC] Card*) to document pre-MTF care at the point of injury, completing all entries as fully as possible. Such care relates to both battle and nonbattle injuries. Once completed, DD Form 1380 is visibly attached to the patient when transferred to the CCP and/or to a Role 1 or Role 2 MTF. All entries on the DD Form 1380 will be made using a non-smearing pen or marker. All entries on the DD Form 1380 should be printed clearly, including the first responder's name.

6-58. Before casualties are evacuated to the CCP or beyond, leaders remove all key operational or sensitive items and equipment, including communications security devices or signal operating instructions, maps, position location devices. Every unit should establish an SOP for handling the weapons and ammunition of its wounded or killed in action. Protective masks must stay with the individual.

6-59. Casualties are taken to CCP for classification based on their medical condition, assigned evacuation precedence (urgent, priority, routine, and convenience), and availability of medical evacuation (MEDEVAC) platforms. Within a CCP, the combat medic conducts triage of all patients, takes the necessary steps to stabilize their conditions, and initiates the process of evacuating them to the rear for further treatment.

Note. See FM 4-02 and ATP 4-02.2 for a detailed discussion of evacuation precedence for Army operations at Roles 1 through 3 MTFs.

6-60. The ambulance team supporting the company works in coordination with the PSG. In mass casualty situations, nonmedical vehicles can be used to assist in CASEVAC as directed by the platoon leader or company commander. Plans for the use of nonmedical vehicles to perform CASEVAC should be included in the unit SOP. Ground ambulances from the brigade support medical company or other supporting ambulances evacuate patients from the BAS back to the brigade support medical company MTF located in the brigade support area.

TACTICAL FIELD CARE

6-61. During the tactical field care phase, medical personnel and their patients are no longer under effective hostile fire and medical personnel can provide more extensive patient care. In this phase, interventions directed at other life-threatening conditions, as well as resuscitation and other measures to increase the comfort of the patient may be performed. The physician and physician assistant at the BAS or during tailgate medicine support provide TCCC. Tailgate medical support refers to an economy of force device employed primarily to retain maximum mobility during movement halts or to avoid the time and effort required to set up a formal, operational treatment facility (for example, during rapid advance and retrograde operations). (See FM 4-02.) During tactical field care, personnel must be prepared to transition back to care under fire or to prepare the casualty for tactical evacuation, as the tactical situation dictates. (See ATP 4-02.5 for more information on tactical field care.)

6-62. The BNs organic medical resources within its HQ and HQ company include a medical platoon staffed with a field surgeon, physician assistant, and numerous combat medics. The mission of the BN medical platoon is to provide Role 1 Army Health System support to the Soldiers of the BN. Role 1 (also referred to as unit level medical care) is the first medical care a Soldier receives. The medical platoon within the BN is configured with an HQ section, medical treatment squad, ambulance squad (ground), and combat medic section. The treatment squad consists of two teams (treatment team alpha and team bravo). The treatment squad operates the BAS and provides Role 1 medical care and treatment (to include disease and nonbattle injury prevention, sick call, emergency medical treatment [including TCCC], and patient decontamination). Team alpha is clinically staffed with the physician assistant while team bravo is clinically

staffed with the field surgeon. Medical platoon ambulances provide MEDEVAC and en route care from the Soldiers' point of injury, the CCP, or an ambulance exchange point to the BAS. The ambulance squad is four teams of two ambulances composed of one emergency care sergeant and two ambulance aide/drivers assigned to each ambulance. (See ATP 4-02.4 for additional information on the medical platoon.)

6-63. DA Form 1156 (*Casualty Feeder Card*) (see figures 6-4 and 6-5) are used to report those Soldiers who have been killed and recovered, and those who have been wounded. This form also is used to report captured or killed in action Soldiers who are missing or not recovered. The Soldier with the most knowledge of the incident should complete the witness statement. During lulls in the battle, the platoon forwards casualty information to the company HQ. The 1SG ensures a completed DA Form 1156 is forwarded to the BN personnel staff officer, who then enters the data into the Defense Casualty Information Processing System.

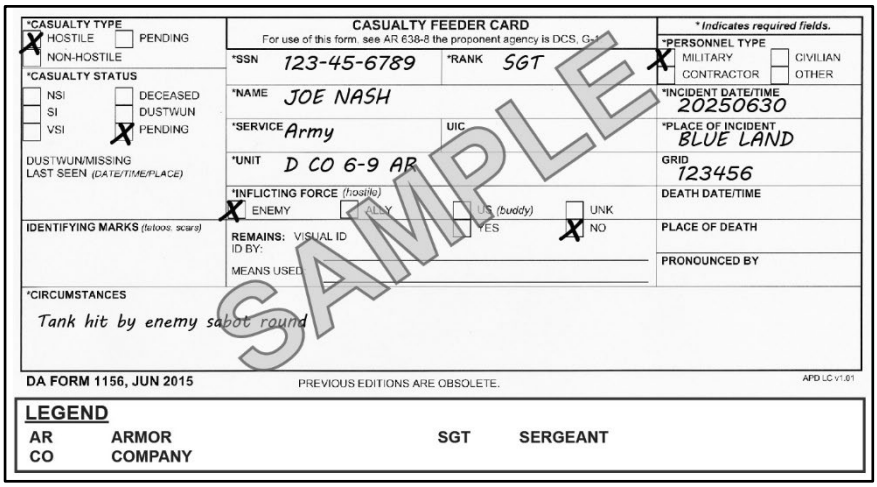

Figure 6-4. DA Form 1156 (Casualty Feeder Card [front])

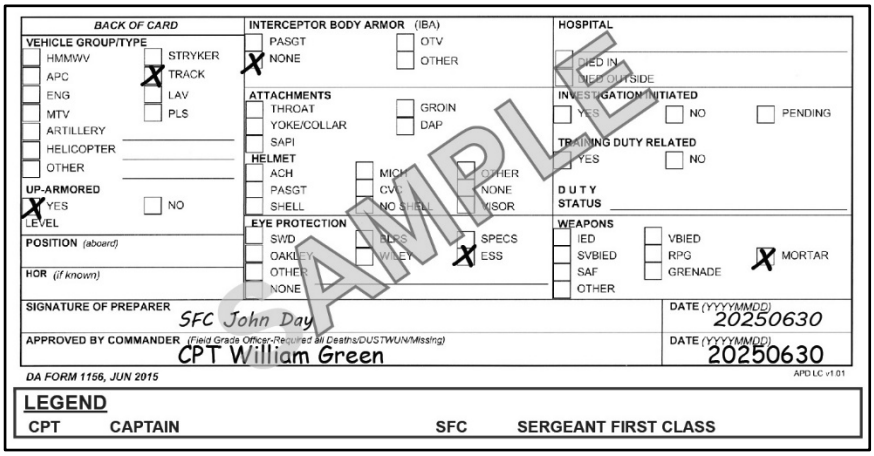

Figure 6-5. DA Form 1156 (Casualty Feeder Card [back])

TACTICAL EVACUATION

6-64. In the tactical evacuation phase, casualties are transported from the battlefield to an MTF. MTFs provide medical treatment and include the Role 1 facility (BAS), Role 2 facility brigade support medical company of the brigade support BN, dispensaries, clinics, and hospital. Evacuation can be by either MEDEVAC (dedicated platforms [ground or air] manned with dedicated medical providers) or CASEVAC (ranging from nondedicated, but tasked, platforms [ground or air] augmented with medical equipment and providers to platforms of opportunity without medical equipment or providers).

6-65. *Medical evacuation* is the timely and effective movement of the wounded, injured, or ill to and between medical treatment facilities on dedicated and properly marked medical platforms with en route care provided by medical personnel (ATP 4-02.2). MEDEVAC includes the provision of en route medical care, whereas CASEVACs may not provide proper medical care during movement. MEDEVAC is the key factor to ensuring the continuity of care to Soldiers by providing care during evacuation and facilitating the transfer of patients between MTFs to receive required specialty care. This ensures that medical resources (personnel, equipment, and supplies [to include blood]) can be rapidly transported to areas of critical need on the battlefield.

6-66. *Casualty evacuation* is the movement of casualties aboard nonmedical vehicles or aircraft without en route medical care (FM 4-02). CASEVAC encompasses a wide spectrum of potential capability depending on the mix of transport platform, medical equipment, and medical providers allocated to the mission. At the upper end of the spectrum, nondedicated platforms can be outfitted with the requisite medical equipment and MEDEVAC assets. At the lower end of the spectrum, CASEVAC can be no more than the transport of casualties using platforms of opportunity with no medical equipment or medical providers (in using such assets, the risk of not moving the casualty must outweigh the risk evacuating the casualty in such a manner). Effective CASEVAC complements MEDEVAC by providing additional evacuation capacity when the number of casualties (workload) or reaction time exceeds the capabilities of MEDEVAC assets. CASEVAC requires detailed assessment and planning to achieve an effective integration of MEDEVAC and CASEVAC capabilities. (See ATP 4-02.13 for more information on CASEVAC.)

WARNING

Casualties transported in nonmedical vehicles may not receive proper en route medical care or be transported to the appropriate MTF to address the patient's medical condition. If the casualty's medical condition deteriorates during transport, or the casualty is not transported to the appropriate MTF, an adverse impact on their prognosis and long-term disability or death may result.

6-67. The Army MEDEVAC system is comprised of dedicated, standardized MEDEVAC platforms (ground and air ambulances). These ground and air ambulances have been designed, staffed, and equipped to provide en route medical care to patients being evacuated and are used exclusively to support the medical mission, in accordance with the law of land warfare and the Geneva Conventions. (See FM 6-27.)

6-68. Dedicated air MEDEVAC aircraft include specifically trained medical personnel to provide en route care. The 9-line MEDEVAC Request Card (GTA 08-01-004) is the standard method to request an air ambulance MEDEVAC.

Appendix A

Direct Fire Planning and 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. The tank platoon leader must be able to mass the fires of all available resources effectively at critical points and times to be successful on the battlefield. This appendix discusses the fundamentals, planning, preparation, and execution of direct fire.

SECTION I – FIRE CONTROL TECHNIQUES

A-1. The tank platoon leader must effectively plan to focus, distribute, and shift the overwhelming mass of their direct fire capability at critical locations and times to succeed on the battlefield. Effective and efficient fire control means that the platoon acquires the enemy and masses the effects of direct fires to achieve decisive results in the close fight. Paragraphs below describe in detail how to focus, distribute, control, and shift fires.

A-2. Focus: An effective direct fire plan uses designated DFCMs assigned targets, or known man-made or natural objects, or terrain features to allow the platoon to focus fires tightly on a concentrated point. For instance, the platoon directs all its fires at TRP 1.

A-3. Distribute: An effective direct fire plan uses DFCMs or directed engagement priorities to ensure the platoon's fires are distributed throughout the width and depth of an enemy formation or a planned EA. For instance, designating a quadrant, or directing the Alpha section to fire between TRPs 1 to 2 while the Bravo section fires between TRPs 2 to 3. Assigning fire patterns or sectors of fire also helps ensure fires are distributed appropriately. The leader should develop engagement priorities to assist in distributing fires. For example, designating the leader vehicles to engage heavy armor and the wing vehicle to engage light armor is another way of distributing fires to reduce overkill.

A-4. Control: The platoon leader builds and rehearses a plan and then, in execution, the platoon leader (or PSG) controls the fires through actively monitoring and directing fires using fire commands to fight the platoon.

A-5. Shift: An effective direct fire plan uses DFCMs to allow the leaders to shift fires from one place to another within the assigned area as the need arises. This shift could be between planned DFCMs, or ad hoc control measures designated to engage unplanned threat targets. For instance, the platoon has focused their fires at TRP 1; however, a new threat emerges at TRP 3, or in an unanticipated area for which the leader designates a target array. (See section III.) Shifting fires also occurs in the normal context of serving as a control measure to protect friendly forces as they advance within a target area.

A-6. *Target acquisition* is the detection, identification, and location of a target in sufficient detail to permit the effective employment of capabilities that create the required effects (JP 3-60). Target acquisition is further described as the discovery of any object in the OE such as personnel, vehicles, equipment, or objects of potential military significance. Target acquisition occurs during target search as a direct result of observation and the detection process.

A-7. Massing of fires is not simply the number of systems or rounds fired but entails focusing fires at critical points and distributing the fires for optimum effect in terms of both destructive and psychological impacts on the enemy while minimizing overkill. Platoons should mass fires on the immediate threat but should have a plan to control fires to avoid target overkill. (See ATP 3-90.1 for more information.)

FIRE CONTROL PROCESS

A-8. To bring direct fires against an enemy force, 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 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 employment of weapons. Massing entails focusing fires on critical points and distributing the fires for optimum effect.

A-9. The following discussion examines target acquisition and massing of fires using the following basic steps of the fire control process:

- Identify probable enemy locations and determine the enemy scheme of maneuver.
- Determine where and how to mass fires.
- Orient forces to speed target acquisition.
- Shift fires to refocus or redistribute.

IDENTIFY PROBABLE ENEMY LOCATIONS AND DETERMINE THE ENEMY SCHEME OF MANEUVER

A-10. Leaders plan and execute direct fires based on their mission analysis. An essential part of this plan is the analysis of the terrain and enemy force, which aids the leader 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 providing good fields of fire and adequate cover for a defender. Similarly, an attacking enemy will have only a limited selection of avenues of approach providing adequate cover and concealment.

A-11. Coupled with available intelligence, an understanding of the effects of a specific piece of terrain on the maneuver, (see figure A-1) helps the leader in identifying probable enemy locations and likely avenues of approach before and during the fight. The leader may use all the following products or techniques in developing and updating the analysis:

- An enemy situation template based on the analysis of terrain and enemy.
- A SPOTREP or contact report on enemy locations and activities.
- Information collection in the AO.

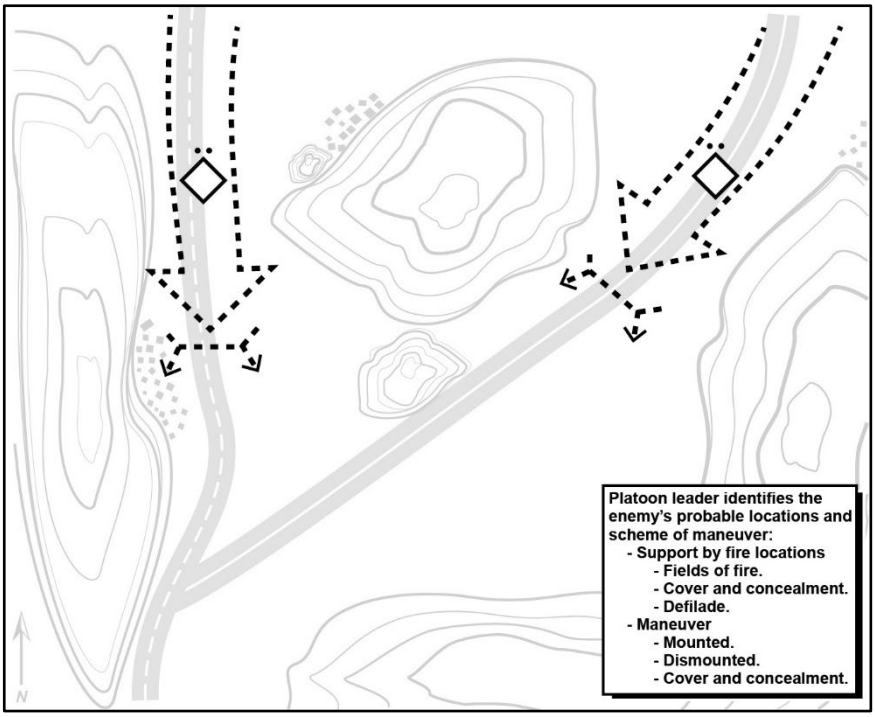

Figure A-1. Identify probable enemy locations and determine the enemy scheme of maneuver

DETERMINE WHERE AND HOW TO MASS FIRES

A-12. To achieve decisive effects, friendly forces must mass their fires. (See figure A-2, page 254.) Massing requires the leader to focus the fires of subordinate elements and to distribute the effects of the fires. Based on the mission analysis and the concept of the operation, the leader identifies points where the leader wants to, or must, focus the unit's fires. Most often, these are locations the leader has identified as probable enemy positions or points along likely avenues of approach where the unit can mass fires. The leader may issue a fire command to focus the fires because subordinate elements may not initially be oriented on the point where the leader wants to mass fires. At the same time, the leader must use DFCMs to distribute the fires of the elements, which now are focused on the same point.

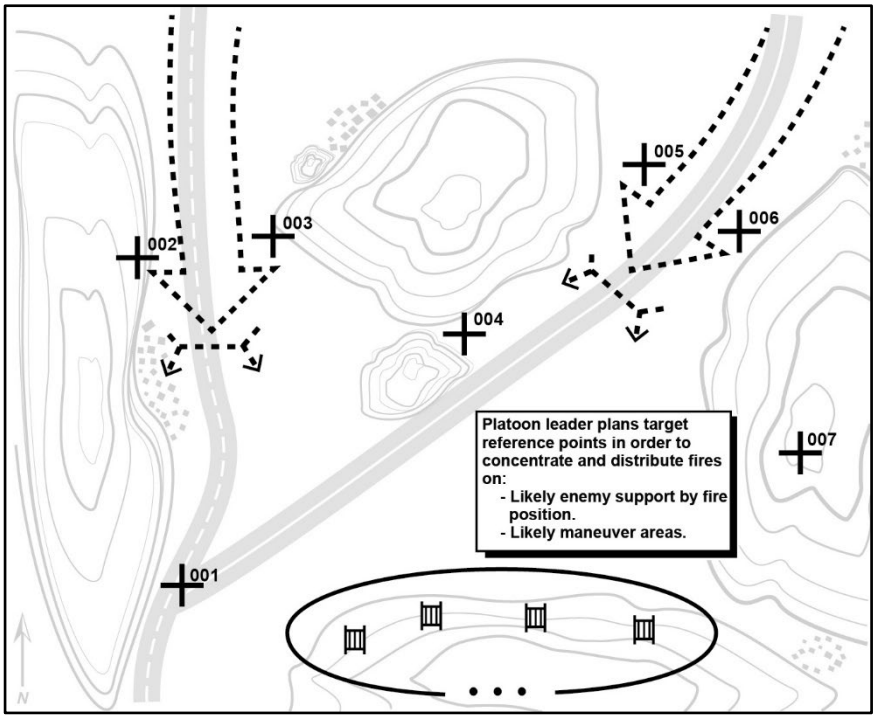

Figure A-2. Determine where and how to mass fires

ORIENT FORCES TO SPEED TARGET ACQUISITION

A-13. To engage the enemy with direct fires, friendly forces must rapidly and accurately acquire enemy elements. (See figure A-3.) Orienting friendly forces on probable enemy locations and on likely avenues of approach will speed target acquisition. Conversely, failure to orient subordinate elements results in slower acquisition; this greatly increases the likelihood enemy forces can 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 friendly forces are best oriented to detect the enemy. To achieve this critical orientation, the leader typically designates TRP on or near probable enemy locations and avenues of approach; the leader orients the 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 crewmembers observe alternate sectors or areas to provide all-around security.

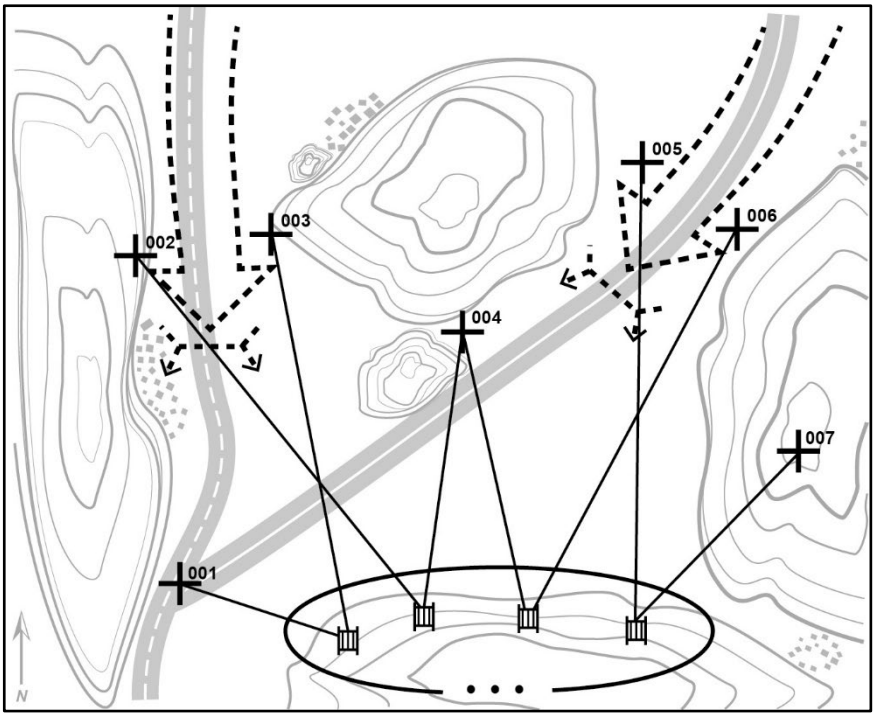

Figure A-3. Orienting forces to speed target acquisition

SHIFT FIRES TO REFOCUS AND REDISTRIBUTE

A-14. As the engagement proceeds, leaders must shift fires to refocus and redistribute the effects based on their evolving mission analysis. Situational awareness becomes an essential part of the fire control process at this point. Leaders apply the same techniques and considerations, including fire control measures they used earlier to focus and distribute fires. A variety of situations will dictate shifting of fires, including the following—

- The appearance of an enemy force is 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 engaging the enemy force.
- Change in the ammunition status of the friendly elements engaging the enemy force.
- Maneuver of enemy or friendly forces resulting in terrain masking.
- Increased fratricide and friendly fire risk as a maneuvering friendly element closes with the enemy force being engaged.

PRINCIPLES OF DIRECT FIRE CONTROL

A-15. Fire control requires a unit to acquire the enemy and mass the effects of fires rapidly to achieve decisive results in the close fight. (See TC 3-20.31-040.) When planning and executing direct fires, the platoon leader and subordinate leaders must know how to apply several fundamental principles.

DIRECT FIRE PRINCIPLES

A-16. When planning and executing fires, leaders must know how to apply fundamental principles. These principles allow the platoon to destroy the enemy while protecting itself and expending the least amount of ammunition. These principles are not meant to restrict the actions of subordinates but to facilitate their ability to acquire and to engage with direct fire against the threat. The direct fire principles are—

- Destroy the greatest threat first.
- Mass the effects of direct fire.
- Employ the best weapon for the specific target.
- Avoid target overkill.
- Minimize exposure.
- Plan and implement control measures.
- Plan for limited-visibility conditions.
- Plan for degraded capabilities.

DESTROY THE GREATEST THREAT FIRST

A-17. The order in which the platoon engages enemy forces directly relates to the danger they present and how the engagement will seize the initiative. Platoon leaders should assess the greatest threat not only in terms of capability, but also how a given target nests within the enemy's capabilities and desired friendly end state. The enemy forces' threat depends on their weapons, range, and positioning in relation to and comparison to the platoon. In general, a platoon, when presented with multiple targets, should initially concentrate fires to destroy the greatest threat, and then distribute fires over the remainder of the enemy force. At the tactical-unit level, the greatest threat may be an enemy command and control system, which directs the fires and maneuver of the enemy force.

MASS THE EFFECTS OF FIRE

A-18. Mass the effects of fire. The platoon 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 platoon'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.

EMPLOY THE BEST WEAPON FOR SPECIFIC TARGET

A-19. Using the appropriate weapon for the target increases the probability of rapid enemy destruction or suppression; at the same time, it saves ammunition. The platoon has many weapons 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 target effects. Additionally, leaders should consider individual crew capabilities when deciding on the employment of weapons. The platoon leader arrays the forces based on the terrain, enemy, and desired effects of fires.

AVOID TARGET OVERKILL

A-20. Target overkill—the overuse of weapon systems to achieve an effect—wastes ammunition and ties up weapons that are better employed acquiring and engaging other threats. Having every weapon engage a different threat, however, must be tempered by the requirement to destroy the greatest threats first. Platoon leaders use only the amount of fire required to achieve the necessary effects. There may be reasons to demonstrate target overkill as a method directed against enemy morale in specific conditions related to commander's intent.

MINIMIZE EXPOSURE

A-21. Units increase their survivability by exposing themselves to the enemy only to the extent necessary to engage the enemy effectively. Natural or man-made defilade provides the best cover. Crews 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.

PLAN AND IMPLEMENT CONTROL MEASURES

A-22. The platoon leader has numerous tools to assist in the planning and implementation of controlling direct fires. These tools include graphic control measures for friendly forces, engagement criteria, identification training for combat vehicles and aircraft, unit weapons safety posture, WCS, recognition markings, and a situational understanding to include Standard Range Cards, sector sketches, and rehearsals. Knowledge and employment of applicable control measures are the primary means of preventing fratricide and noncombatant casualties.

Note. Leaders must constantly monitor positions of attached Infantry squads because it is difficult to distinguish between friendly and enemy dismounted Soldiers.

PLAN FOR LIMITED VISIBILITY CONDITIONS

A-23. Platoons operating during hours of limited visibility can engage enemy forces at nearly the same range as during daylight hours with limited-visibility fire control equipment. Platoons should inspect and bring their limited-visibility equipment prior to conducting operations. This prevents Soldiers from becoming unprepared to the changes in the weather and from daylight to nighttime.

A-24. Obscurants such as dense fog, heavy smoke, and blowing sand can reduce the capabilities of thermal and IR equipment. Although decreased acquisition capabilities have minimal effect on area fire, point target engagements can occur at decreased ranges. The platoon develops contingency plans for such extremely limited-visibility conditions, such as establishing listening posts, trigger lines, and TRPs capable of visual contact with thermals.

PLAN FOR DEGRADED CAPABILITIES

A-25. Platoon leaders initially develop plans based on their units' maximum capabilities; they make backup plans for implementation if casualties occur or if weapons are damaged or fail. 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 secondary sectors of fire provides a means of shifting fire if adjacent elements are out of action.

SECTION II – DIRECT FIRE PLANNING

A-26. The platoon leader plans direct fires as part of TLPs. They must maneuver their units to bring the maximum fire on the enemy. The platoon leader must plan how to organize, sequence, and maneuver their platoon to obtain the best effect on enemy forces.

A-27. Direct fire planning is fundamentally the same for both offensive and defensive operations. The challenge for the platoon in the offense is to control the focus and distribution of fires on the move against a generally static enemy. While in the defense, the goal is to build an EA where the leaders can mass fires by properly focusing and distributing the platoon's firepower.

LEADER PLANNING OVERVIEW

A-28. The platoon leader plans direct fire in conjunction with development of their estimate of the situation and completion of the plan. Determining where and how the platoon can and will mass fires are an essential step as the leaders develop the concept of the operation.

A-29. After identifying probable enemy locations, the platoon leader determines points or areas where they will focus combat power. The visualization of where and how the enemy will attack or defend will assist in determining the volume of fire they must focus on points to have a decisive effect. If leaders intend to mass the fires of more than one subordinate element, they must establish the means for distributing fires effectively.

A-30. Based on where and how they want to focus and distribute fires, platoon leaders and subordinate leaders select appropriate DFCMs, engagement criteria and priorities, establish the weapons ready postures for tanks, and triggers for initiating fires. Leaders understand probable methods of engagement and anticipate how they will initiate and control direct fire. Using this understanding, leaders develop likely fire commands based on anticipated enemy target arrays. Leaders refine that understanding by considering how the enemy formation will change after initial engagements. Leaders must evaluate the risk of fratricide and establish controls to prevent it; these measures include designation of recognition markings, WCS, and weapons safety posture.

A-31. Having determined where and how they will mass and distribute fires, the platoon leader must orient sections so they can rapidly and accurately acquire the enemy. They can rehearse the selected COA or concept of the operation to determine probable requirements for refocusing and redistributing fires and to establish other required

control measures. During mission preparation, the platoon leader and subordinate leaders plan and conduct rehearsals of direct fire (and of the fire control process) based on the estimate of the situation.

A-32. The end state of direct fire planning is an understanding of how the leaders will fight the platoon in contact, linked to the enemy's anticipated scheme of maneuver. The completed plan is disseminated, rehearsed, and refined during TLPs. The completed plan takes the principles of direct fire planning into account and ensures understanding of the following:

- Required DFCM.
- Where the platoon will mass fires to achieve success.
- How and where the platoon will distribute, focus, and shift direct fire.
- Engagement priorities and engagement criteria.
- Methods of control.
- Probable or potential fire commands for the platoon.
- How to respond if the enemy situation deviates from the plan.

A-33. Failure to have a detailed plan for direct fires results in the platoon's inability to mass fires effectively and generally manifests in the form of vehicle crews engaging the enemy as individual elements rather than part of platoon plan.

STANDARD OPERATING PROCEDURES

A-34. A well-rehearsed direct fire SOP ensures quick, predictable actions by all members of the platoon. The platoon leader bases the various elements of the SOP on the capabilities of the force and on anticipated conditions and situations. SOP elements should include standing means for focusing fires, distributing their effects, orienting forces, and preventing fratricide and friendly fire. The platoon leader should adjust the direct fire SOP whenever changes to anticipated and actual METT-TC (I) become apparent.

A-35. If the platoon leader does not issue other instructions, the platoon begins the engagement using the SOP. Subsequently, the platoon leader can use a fire command to refocus or redistribute fires. Paragraphs A-36 through A-40 discuss specific SOP provisions for focusing fires, distributing fires, orienting forces, and preventing fratricide and friendly fire.

FOCUSING FIRES

A-36. TRPs are a common means of focusing fire in both offensive and defensive operations. 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 determine and communicate the location of the TRPs quickly. Unless tied to specific terrain features (as in the defense), these 'floating' TRPs may be designated by SOP with TRP 1 generally at a 45-degree angle to the left front, or 10 o'clock, TRP 2 at 12 o'clock, and TRP 3 at a 45-degree angle to the right front or 2 o'clock, and those TRPs advance as the platoon advances. This is useful for rapid general orientation or reporting. Also in the offense, platoons may designate TRPs on anticipated threat positions; for example, the platoon leader may designate a TRP on a

templated enemy antiarmor position covering the route of advance, and task a specific tank to orient on it when it comes into view.

DISTRIBUTING FIRES

A-37. Two useful means of distributing 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 weapons system. The target array technique can help in distribution by assigning specific friendly elements to engage enemy elements of approximately similar capabilities.

ORIENTING FORCES

A-38. A standard means of orienting friendly forces is to assign a primary direction of fire or use TRPs 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 primary and alternate sectors or establish quadrants. The following example SOP elements illustrate these techniques:

- The left flank section in the primary direction of fire is TRP 1 until otherwise specified.
- The left flank is responsible for left quadrants (overlapping with center).
- The center section primary direction of fire is TRP 2 until otherwise specified.
- The center section is responsible for center quadrants (overlapping with left and right).
- The right flank section primary direction of fire is TRP 3 until otherwise specified.
- The right flank is responsible for right quadrant (overlapping with center).
- Platoons should establish SOPs for offensive fire commands that orient forces during contact front, left, right, and rear while moving (see fire commands).
- Platoons should establish SOPs for bringing vehicles out of defilade in the defense to engage targets.

AVOIDING FRATRICIDE

A-39. The SOP must address the most critical requirement of fratricide prevention and 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.

A-40. A primary means of avoiding fratricide is to establish a standing WCS of WEAPONS TIGHT, which requires positive enemy identification before engagement. The SOP must dictate ways of identifying friendly vehicles, squads, and other dismounted elements. Techniques include marking positions, heat source for thermal identification, combat identification panels, restricted fire lines, IR light source or detonating a smoke grenade of a designated color at the appropriate time. Minimizing the risk of fratricide in the platoon or company can be accomplished through a digital command and control system (if equipped); however, this does not replace the platoon leader’s responsibility to plan for fratricide avoidance.

SURFACE DANGER ZONE

A-41. The platoon leader must consider the SDZs of the tank platoon's weapon systems operating within their unit's assigned area. This information is crucial for leaders to develop safe direct fire control plans. Application of SDZs prevents fratricide and maximizes direct fire capabilities upon enemy contact. Use of SDZs minimizes the risk of injury to dismounted elements when working with armor in a combined arms company team.

A-42. Each weapon system has a unique SDZ. SDZs are the minimum safe distance and angles considered when operating near weapon systems. SDZs take into consideration a round's maximum distance, lateral dispersion, and sabot petal discard hazard to dismounted Soldiers (if applicable). This information allows leaders to plan for safe and effective maneuver of forces. SDZ areas and distances are described in detail in AR 385-63.

SECTION III – DIRECT FIRE CONTROL

A-43. The platoon leader and tank commanders communicate to subordinates the manner, method, and time to initiate, shift, and mass fires, and when to disengage by using DFCMs. Leaders control fires so they can direct the engagement of enemy systems and gain the greatest effect. Leaders use intelligence preparation of the operational environment and information collection to determine the best way to use DFCMs to mass the effects on the enemy and reduce the risk of fratricide.

FIRE CONTROL MEASURES

A-44. Fire control measures are the framework on which the platoon leader builds the plan, and by which the platoon's leaders control direct fire. (See table A-1.) Application of these concepts, procedures, and techniques assist the unit in acquiring the enemy, focusing fires on the enemy, and preventing fratricide and friendly fire. At the same time no single measure is sufficient to control fires. At the platoon 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. Paragraphs A-45 to A-84 focus on the various fire control measures employed by the tank platoon. Standard DFCM are terrain based, and threat based. (See ATP 3-90.1 for more information.)

Table A-1. Common fire control measures

Terrain-Based Fire Control Measures	*Threat-Bases Fire Control Measures*
Target Reference Point	Rules of Engagement
Engagement Area	Weapons Ready Posture
Sector of Fire	Weapons Safety Posture
Direction of Fire	Weapons Control Status
Terrain-Based Quadrant	Engagement Priorities
Friendly-Based Quadrant	Trigger Line
Maximum Engagement Line	Engagement Techniques
Final Protective Line	Target Array
Restrictive Fire Line	Fire Patterns

TERRAIN-BASED FIRE CONTROL MEASURES

A-45. The platoon leader 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. Terrain based fire control measures include the following:

- TRPs.
- EAs.
- Sector of fire.
- Direction of fire.
- Terrain-based quadrant.
- Friendly-based quadrant.
- Maximum engagement lines.
- RFLs.
- FPL.

Target Reference Point

A-46. A *target reference point* is a predetermined point of reference, normally a permanent structure or terrain feature than can be used when describing a target location (JP 3-09.3). A TRP is an easily recognizable point on the ground (either natural or man-made) used to initiate, distribute, and control direct fire. In addition, when leaders designate TRPs as indirect-fire targets, they can use the TRPs when calling for and adjusting indirect fires. Leaders designate TRPs at probable enemy locations and along likely avenues of approach. TRPs should also serve to delineate left or right limits; for example, two sections will tie in their fires at TRP 2, and the platoon's right limit is at TRP 3. These points can be natural or artificial but should be fixed and relatively permanent. A TRP can be an established site (for example, a hill or a building), or an impromptu feature designated as a TRP on the spot (for example, a burning enemy vehicle or smoke generated by an artillery round). Friendly units can construct markers to serve as TRPs. (See figure A-4.) Ideally, TRPs should be visible in three observation modes (unaided, light intensifying, and thermal) so that all forces can see them, and constructed TRPs should have directional markings so only friendly forces can see the TRP. TRPs should have a numbering system so units do not confuse who established and owns the TRP. Units should have an established SOP that is clearly understood by all to avoid using the wrong TRP. Examples of TRPs include the following features and objects:

- Prominent hill mass.
- Distinctive building.
- Observable enemy position.
- Destroyed vehicle.
- Ground-burst illumination.
- Obscurants round for immediate engagements only; this is the least preferred method.

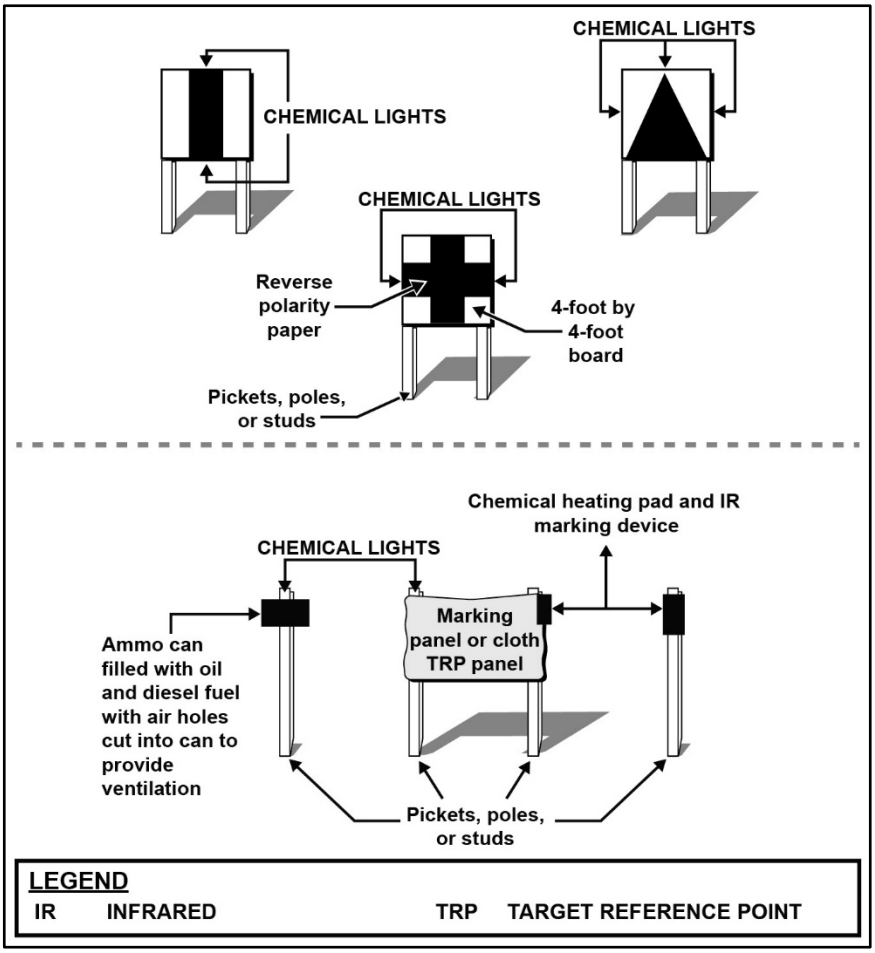

Figure A-4. Constructed target reference point markers example

Engagement Area

A-47. An EA is where the leader intends to contain and destroy an enemy force. The size and shape of the EA is determined by the degree of relatively unobstructed intervisibility available to the unit's weapons systems in their firing positions and by the maximum range of those weapons. Typically, platoon leaders delineate responsibility within the EA by assigning each section to both primary and alternate sectors of fire. They may further refine the EA with additional measures such as a quadrant or a target array. The far side of the EA will generally be designated as the maximum engagement line. Other distinct lines within the EA may serve as trigger lines. Portions of the nearside boundary of the EA will typically be designated as the FPL.

Sector of Fire

A-48. A *sector of fire* is the area assigned to a unit or weapon system in which it will engage the enemy according to the established engagement priorities (FM 3-90). Platoon leaders assign primary and secondary sectors of fire to section leaders, and key weapon systems. Fire shifts to the secondary sector on order or when there are no targets in the primary sector, or when the movement of another friendly element needs covering. Leaders must also assign sectors of fire for alternate and supplementary positions. They may limit the sector of fire of an element or weapon to prevent accidental engagement of an adjacent unit. In assigning sectors of fire, platoon leaders and subordinate leaders consider the number and types of weapons available. They 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:

- TRP.
- Clock direction.
- Fire patterns.
- Terrain-based quadrants.
- Friendly-based quadrants.
- Azimuth or cardinal direction.

Direction of Fire

A-49. 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 employed when assigning sectors of fire would be difficult or impossible because of limited time, insufficient reference points, or when the width of the sector is narrow, such as a trail exiting the woods, a gap between two buildings, or other focused points. The principal direction of fire may also serve as the left or right limit to a sector of fire. Means of designating a direction of fire include the following:

- Leader description or orientation.
- Closest TRP.
- Clock direction.
- Cardinal direction.
- Tracer on target.
- IR laser pointer.

Quadrants

A-50. 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. Establish quadrants on the terrain, friendly forces, or on the enemy formation.

Note. Techniques in which quadrants are based on enemy formations usually are referred to as target array; it is covered in discussion of threat-based fire control measures.

A-51. 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 enemy formations are used simultaneously.

Terrain-Based Quadrant

A-52. A terrain-based quadrant entails use of a TRP, either existing or constructed, to designate the center point of the axes dividing the area into four quadrants. This technique can be employed in the offense and defense. In the offense, the platoon leader designates the center of the quadrant using an existing feature or by creating a reference point. For example, using a ground burst illumination round, an obscurant 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 platoon leader designates the center of the quadrant using an existing or constructed TRP.

A-53. In examples shown in figure A-5, 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).

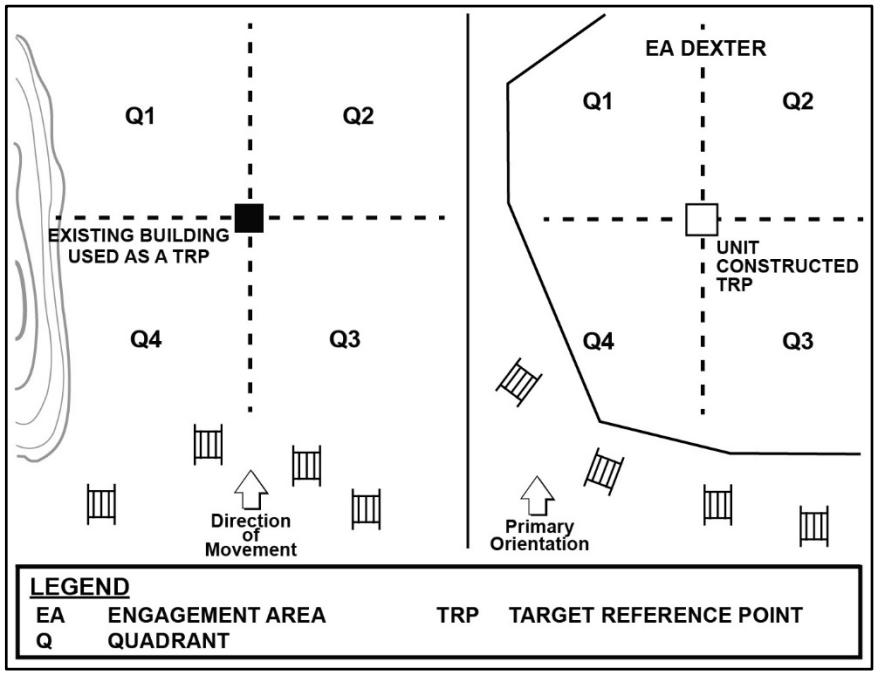

Figure A-5. Terrain-based quadrants example

Friendly-Based Quadrant

A-54. 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 axes run parallel and perpendicular to the general direction of travel. Much like floating TRPs the quadrant moves with the formation as it advances. For rapid orientation, the friendly quadrant technique may be better than the clock direction method; because different elements of a large formation rarely are oriented in the same exact direction and the relative dispersion of friendly forces causes parallax to the target. The friendly-based quadrant is effective at designating sectors of scan and fire in 360 degrees around the platoon formation. However, the platoon may be designated to provide direct fire into a single portion of the company's quadrant, such as the A1 (front left) or B1 (rear left) in the offense. (Figure A-6 illustrates the use of friendly-based quadrants.)

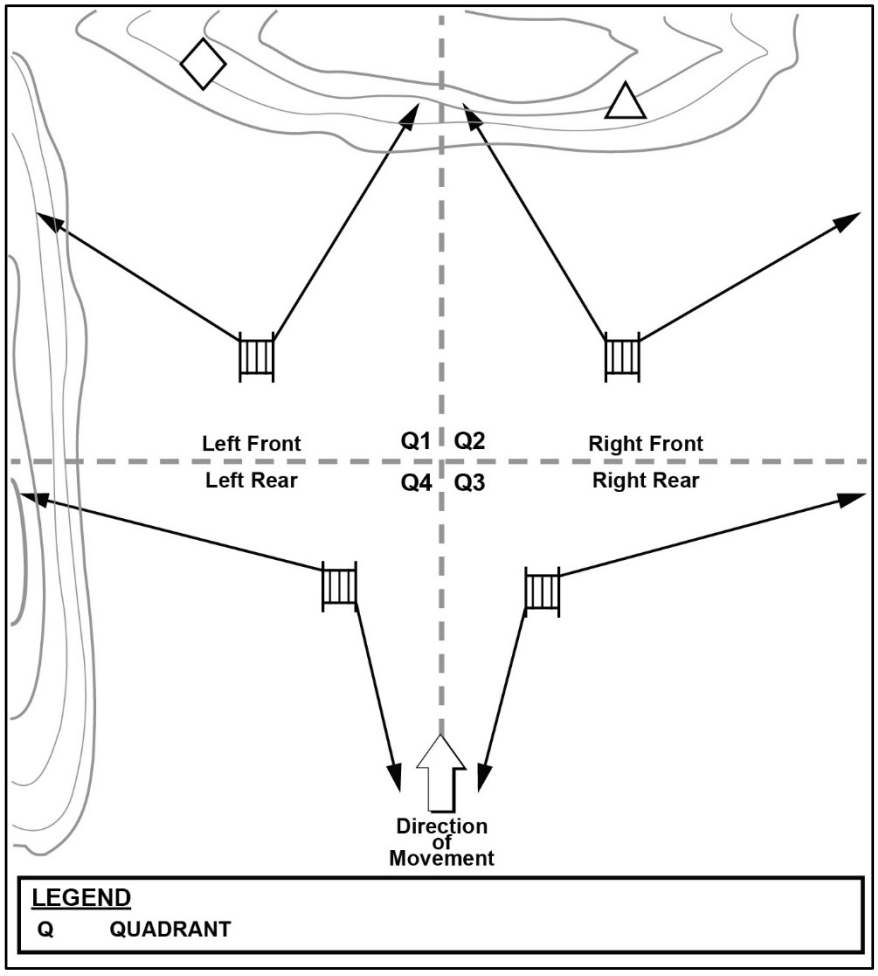

Figure A-6. Friendly-based quadrants example

Maximum Engagement Line

A-55. The maximum engagement line is the linear depiction of the farthest limit of effective fire for a weapon or unit. This line is determined by the weapons, the unit's maximum effective range, and by the effects of terrain. For example, slope, vegetation, structures, and other features provide cover and concealment preventing the weapon from engaging to the maximum effective range. A maximum engagement line serves several purposes. The platoon leader can use it to prevent crews from engaging beyond the maximum effective range, to define criteria of the establishment of triggers, and to delineate the maximum extent of sectors on the assigned area sketch.

Restrictive Fire Line

A-56. A *restrictive fire line* is a specific boundary established between converging, friendly surface forces that prohibits fires or their effects from crossing (JP 3-09). The RFL is a linear fire control measure beyond which engagement is prohibited without coordination. In the offense, platoon leaders can 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 tanks support the maneuver of Infantry squads. In the defense, platoon leaders may establish an RFL to prevent the unit from engaging a friendly Infantry squad positioned in restricted terrain on the flank of an avenue of approach.

Final Protective Line

A-57. *Final protective line* is a selected line of fire where an enemy assault is to be checked by the interlocking fire from all available weapons and obstacles (FM 3-90). The unit reinforces this line with protective obstacles and with FPFs whenever possible. Initiation of the FPFs is the signal for crews to shift fires to their assigned portion of the final protective line. They spare no ammunition in repelling an enemy assault.

Threat-Based Fire Control Measures

A-58. The platoon leader uses threat-based fire control measures to focus and control fires by directing the unit to engage a specific, templated enemy element rather than a point or area. Threat-based control measures are not used instead of terrain-based control measures but are used in conjunction with them. Threat-based fire control measures include:

- ROE.
- Weapons ready posture.
- Weapons safety posture.
- WCS.
- Engagement priorities.
- Trigger.
- Engagement techniques.
- Fire patterns.
- Target array.

Rules of Engagement

A-59. 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, mission, commander's intent, the OE, and the law of armed conflict. ROE always recognize a Soldier's right of self-defense, but at the same time, they clearly define circumstances in which the Soldier may fire. ROE may provide limitations in terms of proportionality, the use of lethal force, a requirement for hostile acts/hostile intent, positive identification, the caliber or effect of friendly weapons, or limitations on what infrastructure may be targeted.

Weapons Ready Posture

A-60. 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 depends on the anticipated engagement range; it is affected by terrain intervisibility, weather, and light conditions.

WEAPONS SAFETY POSTURE

A-61. Weapons safety posture is an ammunition-handling instruction that enables the platoon leader to control the safety of owned unit's weapons precisely. Leaders' supervision of the weapons safety posture, as well as Soldiers' adherence to it, minimizes the risk of accidental discharge and fratricide. (See TC 3-20.31 for more information.) The statuses are:

- Green, fully safe.
- Amber, substantially safe.
- Red, marginally safe.
- Black, not safe.

A-62. When setting and adjusting the weapons safety status, the platoon leader 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 platoon leader could establish the weapons safety status as Black. If the requirement for action is less immediate, the decision to lower the status to Red or Green might be given. Additionally, the platoon leader can designate different weapons safety status for different elements of the unit.

WEAPONS CONTROL STATUS

A-63. The three levels of WCS outline the conditions, based on target identification criteria, under which friendly elements can engage. The commander sets and adjusts the WCS based on friendly and enemy disposition, and the clarity of the situation. The higher the probability of fratricide, the more restrictive the WCS. The three levels, in descending order of restrictiveness, are—

- 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 (subject to the ROE and law of armed conflict).

A-64. As an example, the platoon leader may establish the WCS as WEAPONS HOLD, when friendly forces are conducting a passage of lines. By maintaining situational understanding of owned elements and adjacent friendly forces, however, the WCS may be lowered. In such a case, WEAPONS FREE status may be set when the platoon leader knows there are no friendly elements in the vicinity of the engagement. This permits 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. The WCS directly applies to the air threat as well. The company may direct the platoon's WCS specifically for engagement of aircraft based on the anticipated likelihood of aerial attack. The platoon leader must clearly differentiate between a general WCS and WCS specifically for air threat.

Engagement Priorities

A-65. 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 value targets:
  - In concert with the concept of the operation, the platoon leader determines which target types provide the greatest payoff; the platoon leader then can set these as a unit engagement priority.
  - For example, the platoon leader may decide destroying enemy engineer assets is the best way to prevent the enemy from reducing an obstacle.
- Employ the best weapons to the target by establishing engagement priorities for specific friendly systems that increase the effectiveness with which the unit employs its weapons.
- Distribute the unit's fires by establishing different priorities for similar friendly systems, which helps prevent overkill and achieves distribution of fires.

Trigger Lines

A-66. A *trigger line* is a phase line located on identifiable terrain used to initiate and mass fires into an engagement area at a predetermined range (FM 3-90). Trigger lines are located on identifiable terrain, examples are PLs that cross the EA, the enemy direction of attack, or an enemy axis of advance. Platoon leaders can designate one trigger line for all weapon systems or separate trigger lines for each weapon or type of weapon system. PLs specify the engagement criteria for this situation. The criteria may be either time or event driven, such as when a certain number or certain types of vehicles cross the trigger line before initiating engagement. Platoon leaders can use a time-based fires delivery method or a geography-based fires delivery. Leaders may reserve the authority to initiate an engagement by signaling or giving the command to fire.

A-67. The trigger line can be any natural or artificial linear feature, such as a road, ridgeline, or stream. It may be a line perpendicular to the unit's orientation, delineated by one or more reference points. When developing trigger lines, the platoon leader considers both weapons' actual ranges, crew proficiency, the impact of terrain and maximum engagement lines.

ENGAGEMENT TECHNIQUES

A-68. Engagement techniques are effects-oriented fire distribution measures. The following engagement techniques are common in platoon operations:

- Point fire.
- Area fire.
- Simultaneous (volley) fire.
- Alternating fire.
- Observed fire.
- Sequential fire.
- Time of suppression.
- Reconnaissance by fire.

Point fire

A-69. Point fire entails concentrating the effects of a unit's fire against a specific, identified target such as a vehicle, machine gun bunker, or AT guided missile position. When leaders direct point fire, all unit 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, and revert to area fire against other, less threatening point targets. The platoon may also direct a subordinate element such as the Bravo section to employ point fire while the other elements continue to deliver area fires.

Area fire

A-70. 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 suppression requires judicious control of the rate of fire.

Simultaneous (volley) fire

A-71. Units employ simultaneous fire to mass the effects of their fires rapidly or to gain fire superiority. For example, a unit may initiate support by fire operation with simultaneous fire, then revert to alternating or sequential fire to maintain suppression. Simultaneous fire is employed to negate the low probability of the hit and kill of certain antiarmor weapons. Simultaneous fire should be employed with a designated fire pattern to reduce the likelihood of overkill. Once a platoon establishes fire superiority, or has maximized the effects of massed fires, the platoon should transition to alternating fires.

Alternating fire

A-72. Pairs of elements continuously engage the same point or area target one at a time. 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. Alternating fires is a good technique to maintain fires on an enemy force while allowing

subordinate elements to take cover; displace to alternate, supplementary, or subsequent firing positions; or upload or cross-level ammunition under cover. The key to successful alternating fires is that they are executed under the leader's control.

Observed fire

A-73. Observed fire is usually used when a platoon is in protected positions with engagement ranges more than 2,500 meters. Observed fires can be employed by using vehicles with laser range finders to establish range for weapons systems without range finding capability or vehicles with inoperable laser range finders that are firing in degraded mode. The platoon leader directs one element or section to engage. The remaining elements or sections observe fires and prepare 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. In observed fire, the observing element announces the range or applied corrections to the range allowing the engaging element to apply effective fire immediately.

Sequential fire

A-74. 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 tank platoon may sequence the fires of its four tanks to gain maximum time of suppression. Sequential fire can help to prevent the waste of ammunition, as when a tank waits to see the effects of the first tank before firing.

Time of suppression

A-75. Time of suppression is the period, specified by the platoon leader, 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 weapon systems. 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.

Reconnaissance by fire

A-76. *Reconnaissance by fire* is a technique in which a unit fires on a suspected enemy position (FM 3-90). This response permits the platoon leader and their subordinate leaders to make target acquisition and to mass fires against the enemy element. Typically, platoon leaders direct a subordinate element to conduct the reconnaissance by fire. For example, they may direct an overwatching tank section to conduct the reconnaissance by fire against a probable enemy position before initiating movement by a bounding element.

FIRE PATTERNS

A-77. 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. (See figure A-7.) The fire patterns are as follows:

- Frontal.
- Cross.
- Depth.

Frontal fire

A-78. Leaders may initiate frontal fire when targets are arrayed in front of the unit in a lateral configuration. Weapons 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 weapons systems destroy targets, weapons shift fire toward the center of the enemy formation from near to far or far to near as appropriate. With a mounted element, the wing tanks initiate fire at the outer edge of the visible enemy and work inwards, while the leader tanks start at the center of the visible enemy and work outwards.

Cross fire

A-79. 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 EA provides more flank shots, thus increasing the chance of kills; it reduces the possibility of the enemy detecting friendly elements should the enemy continue to move forward. As friendly elements destroy targets, weapons shift fire toward the center of the enemy formation. Like the frontal pattern, the wing tanks engage the farthest visible target and work inwards, while the leader tracks engage the opposite center and work outwards.

Depth fire

A-80. Leaders initiate depth fire when enemy targets disperse in-depth, perpendicular to the unit. Center weapons engage the closest targets; flank weapons engage deeper targets. As the unit destroys targets, weapons shift fire toward the center of the enemy formation.

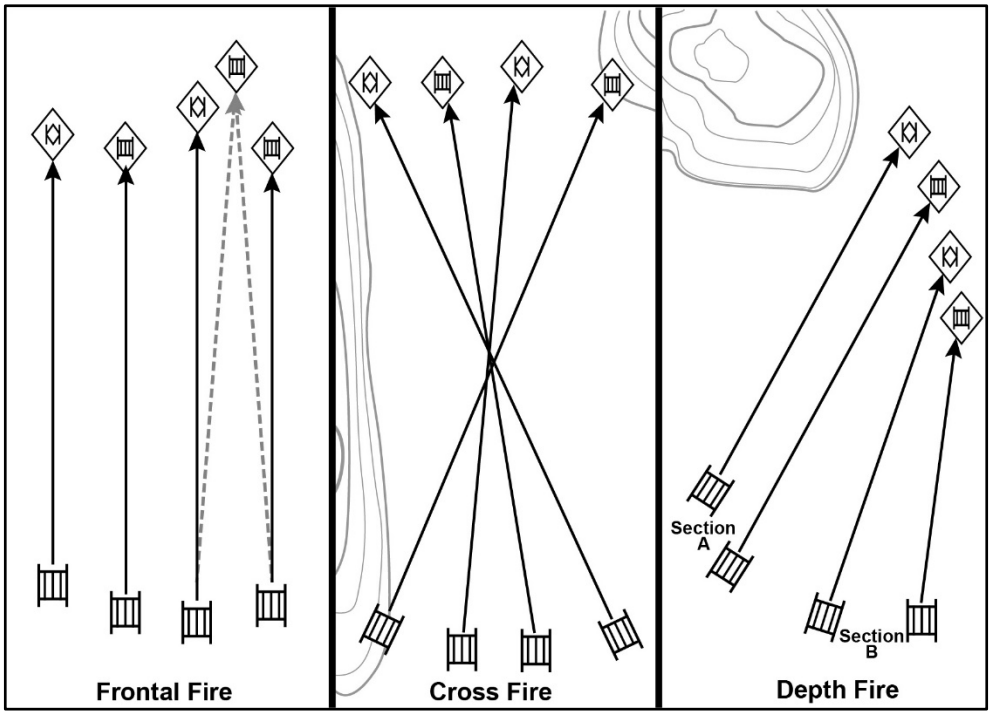

Figure A-7. Fire patterns examples

A-81. Leaders may initiate frontal fire when targets are arrayed in front of the unit in a lateral configuration. Weapons 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 weapons systems destroy targets, weapons shift fires toward the center of the enemy formation from near to far.

A-82. Leaders initiate crossfire when targets are arrayed laterally across the unit's front in a manner permitting 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 EA provides more flank shots, thus increasing the chance of kills; it also reduces the possibility of the enemy detecting friendly elements should the enemy continue to move forward. As friendly elements destroy targets, weapons shift fires toward the center of the enemy formation.

TARGET ARRAY

A-83. Target array enables the leader to distribute fires when the enemy force is concentrated, and terrain-based controls are inadequate. Forces create this threat-based distribution measure by superimposing a quadrant pattern on the enemy formation. Crews center the pattern on the enemy formation, with the axis running parallel and perpendicular to the enemy's direction of travel. The target array fire control measure is effective against an enemy with a well-structured organization and standardized doctrine. However, it may prove less effective against an enemy presenting few

organized formations or does not follow strict prescribed tactics. Leaders describe quadrants using the quadrants' relative locations. (The examples in figure A-8 illustrate the target array technique.)

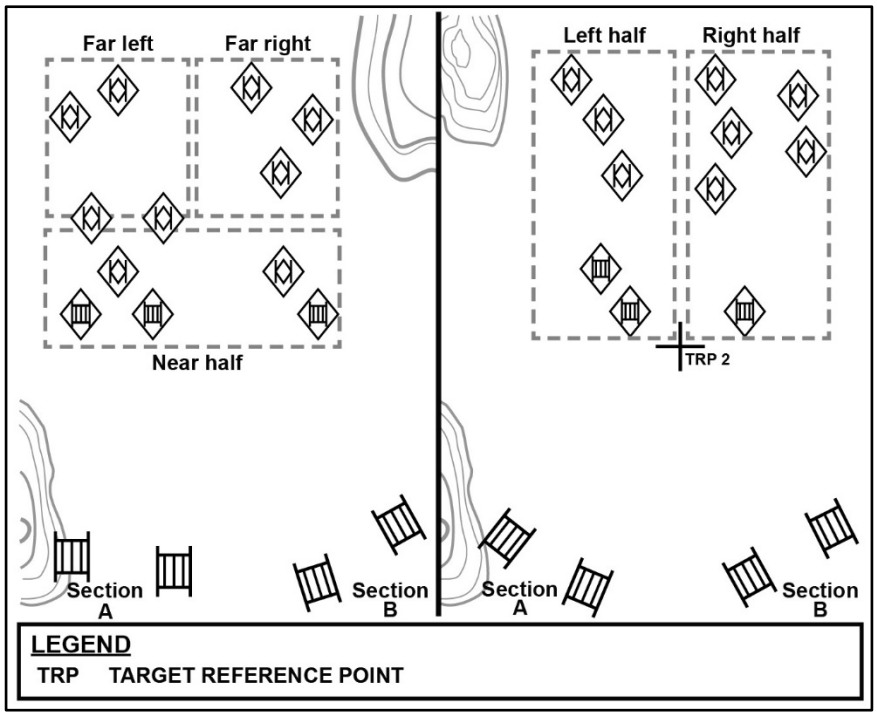

Figure A-8. Target array example

SECTION IV – TYPES OF FIRE COMMANDS

A-84. There are three types of fire commands initial, subsequent, and supplemental. They establish a common conduct of fire to engage individual and multiple threats and assist in rapid adjustment to defeat threats.

INITIAL FIRE COMMAND

A-85. Initial fire commands initiate a direct fire engagement on a target. The initial fire command contains all the elements required to alert the firing element, select a weapon or ammunition to fire, state the target description, provide any direction/elevation information, announce critical range information, provide a method or technique, identify any controls required, and execute the engagement.

SUBSEQUENT FIRE COMMAND

A-86. Subsequent fire commands direct the firing element to continue engaging the same target by delivering subsequent rounds against the same target. They can only be given after the initial fire command is executed. These fire commands specifically direct

the fires of the selected weapon when the desired effect from the previous round(s) has not been achieved. In the event the initial round or burst does not have the desired effect on the target where additional rounds or bursts are required, the leader or tank commander directs the firer to reengage using a subsequent fire command. If rounds fired at a target from a subsequent command fail to achieve the desired target effect, additional subsequent commands are given.

SUPPLEMENTAL FIRE COMMAND

A-87. Supplemental fire commands are used in multiple target engagements. They are given after the initial fire command is executed, and the initial target has been adequately serviced, or the leader wishes to transition to another target. Supplemental commands by the leader, tank commander, or in some cases, the gunner, shifts fire to another target described during the initial fire command or at targets that present themselves during the engagement. Supplemental commands contain all elements necessary to direct the gunner or firer onto a secondary target, the ammunition or weapon to be used, and a command of execution.

ELEMENTS OF A FIRE COMMAND

A-88. Fire commands are oral orders issued by commanders and leaders to focus and distribute fires when necessary, achieving decisive effects against the enemy. They allow leaders to articulate their firing instructions using a standard format rapidly and concisely. Fire commands are complex, and leaders should use every element, so gunners understand the leader's intent. The leader uses only the minimum necessary elements to ensure clarity. The following shows the elements of fire commands with examples. (See TC 3-20.31-040 for a detailed description.) Unit fire commands include the following:

- Alert.
- Weapon or ammunition.
- Target description.
- Direction.
- Range (optional).
- Method.
- Control (optional).
- Execution.
- Termination.

ALERT

A-89. The alert specifies the elements directed to fire. It does not require the leader to initiate the command to identify themselves. 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)

A-90. This element identifies the weapon and 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:

- TWO ROUNDS SABOT.
- ONE ROUND HEAT.

TARGET DESCRIPTION

A-91. Target description designates which enemy elements are to be engaged. Leaders may use the description to focus fires or achieve distribution. Examples of the target description include the following:

- TROOPS IN OPEN.
- BUNKER.
- PERSONNEL CARRIERS.

DIRECTION

A-92. This element identifies the location of the target. There are several ways to designate the location of the target, including the following:

- Closest TRP-example: TRP 11.
- Terrain quadrant-example: QUADRANT ONE.
- Clock direction-example: ELEVEN O'CLOCK.
- Friendly quadrant-example: LEFT FRONT.
- Target array-example: FRONT HALF.

RANGE (OPTIONAL)

A-93. The range element identifies the distance to the target. Announcing range is not necessary for systems ranging finder-equipped or employing command-guided or self-guided munitions. For systems requiring manual range settings, leaders have a variety of means for determining range, including the following:

- Predetermined ranges to target registration points or PLs.
- Laser range finders.
- Range stadia.
- Mil reticle.

METHOD

A-94. Method describes to the firer the way or method the target(s) are engaged. Leaders use this element when presented with multiple targets to identify which target to engage first. For collective fire commands, this can also indicate the fire pattern used to engage the threats. Multiple methods may be used in one fire command.

CONTROL (OPTIONAL)

A-95. The platoon leader 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 platoon leader's instructions and achieve 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 technique-example: VOLLEY.
- Target effect-example: AREA.

EXECUTION

A-96. The execution element specifies when fires are initiated. The platoon leader 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.

TERMINATION

A-97. Termination is the ninth element of the fire command. It informs the gunners to stop firing all weapons and systems in their control. All fire commands are terminated. This command may be given by any Service member or crewmember for any reason, typically safety.

A-98. The leader that issued the fire command is required to terminate the fire command at the completion of every engagement, even if another Service member or crewmember announced it. All fire commands, regardless of type or who issued them, are terminated by the announcement of, CEASE FIRE.

A-99. 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.

LIMITATIONS IN URBAN ENVIRONMENTS

A-100. To ensure that the platoon can operate effectively in an urban environment, the platoon observation and direct fire plans must address the ground-level fight (in streets and on the ground floor of buildings), the above-ground fight (in multistoried buildings), and the subterranean fight. (See ATP 3-06.11 for more information.) Built-up areas, streets, buildings, and subterranean systems are considerations that apply:

BUILT-UP AREAS

A-101. An important aspect of the urban environment is that built-up areas complicate, confuse, and degrade command and control.

STREETS

A-102. 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 are usually more effective than obstacles on roads in open terrain since they are more difficult to bypass.

BUILDINGS

A-103. Buildings offer cover and concealment and severely restrict movement of military elements, especially armored vehicles. They also severely restrict fire distribution and control, especially fields of fire. Every street corner and successive block becomes an intervisibility line, requiring careful overwatch. Thick-walled buildings provide ready-made, fortified positions.

SUBTERRANEAN SYSTEMS

A-104. Subterranean systems found in some built-up areas can be easily overlooked, but they may prove critical to the outcome of urban operations.

ROUNDS, EXPLOSIVES, AND OTHER FACTORS IN THE URBAN ENVIRONMENT

A-105. Numerous factors related to vehicles and equipment affect the tank platoon's planning in the urban environment. These factors include types of rounds and explosives and urban environmental characteristics, and weapons employment.

MAIN GUN ROUNDS

A-106. The preferred main gun rounds in the urban environment are high explosive multi-purpose with tracer (HEMP-T) (M1147), high-explosive antitank (HEAT), multi-purpose antitank (MPAT) (ground mode), MPAT-OR (obstacle-reducing) (M908), and canister (M1028). These all perform much better than sabot rounds against bunkers and buildings.

HIGH EXPLOSIVE MULTI-PURPOSE WITH TRACER

A-107. M1147 HEMP-T is a line of sight, full-bore munition that arms between 15 to 60 meters. The HEMP-T functions using a base detonating, multi-mode programmable fuze that provides three selectable modes of operation. Airburst (primary AT guided missile teams), point detonate, effective against light armor, heavy armor (side and rear) and double reinforced concrete walls and point detonate delay used against earth and timber bunkers.

ANTITANK AMMUNITION

A-108. HEMP-T ammunition will open the largest hole in reinforced concrete or masonry structures better than HEAT, MPAT, or MPAT-OR, however, all offer great incapacitation capability inside structures.

A-109. HEAT ammunition arms between 11 and 60 meters from the gun muzzle and lose most of their effectiveness against urban targets at ranges of less than the arming range.

A-110. MPAT and MPAT-OR rounds arm between 11 and 30 meters from the muzzle of the gun and affect the tank platoon's planning. Because of the shape and metal components of the projectiles, however, this ammunition remains effective at ranges of less than the arming range.

CANISTER AMMUNITION

A-111. Canister (M1028) ammunition is used primarily against troop formations from 100 to 500 meters but can be used effectively against light-skinned vehicles (technical) and to reduce simple obstacles at ranges of less than 200 meters.

SABOT PETALS

A-112. Sabot petals, including those on MPAT and MPAT-OR rounds, endanger accompanying Infantry elements. They create a hazard area extending 70 meters on either side of the gun target line, out to a range of 1 kilometer.

URBAN ENVIRONMENTAL CHARACTERISTICS

A-113. Hard, smooth, flat surfaces are characteristics of urban terrain. The effect of the rounds is reduced by their tendency to strike at an oblique angle and increase the threat of ricochets.

A-114. Engagement ranges tend to be less than 200 meters and could be as little as 35 meters when engaging enemy personnel.

A-115. There tends to be large amounts of flammable material in the urban area, and leaders should understand that engagements have the chance of causing large fires.

WEAPONS SYSTEMS IN THE URBAN ENVIRONMENT

A-116. The tank's main gun can depress to minus 10 degrees and can elevate to plus 20 degrees. This creates considerable dead space for the crew at the close ranges that are typical in the urban environment. (See figure A-9, page 280 for an example of a dead space in an urban environment.)

A-117. The CROWS can scan 360 degrees, with the ability to depress to minus 10 degrees to elevate plus 65 degrees.

Note. Not all M1-series tanks are outfitted with CROWS. This is only if the tank has it available.

A-118. The external M2 heavy barrel machine gun can elevate to plus 36 degrees; however, the tank commander is exposed when firing the M2 on the M1A2 or M1A2 system enhancement package.

A-119. The M240 coaxial machine gun can effectively deliver suppressive fires against enemy personnel and against enemy positions that are behind light cover.

A-120. The loader's M240 machine gun can effectively deliver suppressive fire against enemy personnel and against enemy positions that are behind light cover; however, the loader must be exposed to operate it. This weapon may be dismounted and used in a ground role if units are equipped with the M240 dismount kit.

A-121. When operating with hatches closed, the tank crew has limited visibility to the sides and rear and no visibility to the top.

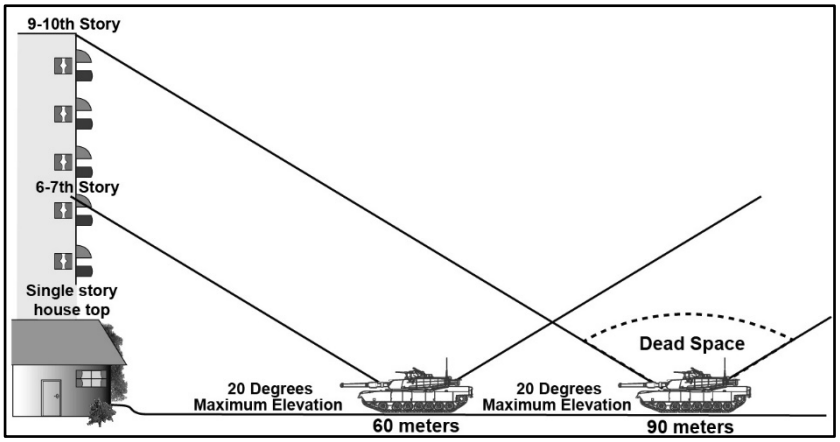

Figure A-9. Tank dead space above street level

A-122. In the urban environment, the .50 caliber machine gun and the 7.62-mm M240 machine gun provide high-volume, long-range, automatic fires for the suppression or destruction of targets. They provide FPF along fixed lines and can be used to penetrate light structures; the .50 caliber machine gun is most effective in this role. Tracers from both machine guns are likely to start fires.

EMPLOYMENT

A-123. The primary consideration that impacts the employment of machine guns within urban areas is the limited availability of long-range fields of fire.

A-124. The .50 caliber machine gun is often employed on its vehicular mount during offensive and defensive operations. The .50 caliber machine gun can be used as an accurate, long-range weapon and can supplement sniper fires. The M240 machine gun is useful to suppress and isolate enemy defenders.

Appendix B

Fire Support Planning

Fire support planning is the continual process of selecting targets on which fires are prearranged to support a phase of the concept of operations. Fire support planning is accomplished concurrently with maneuver planning at all echelons. Leaders conduct fire support planning to suppress, isolate, obscure, neutralize, destroy, deceive, or disrupt known, likely, or suspected targets, and to support the actions of the maneuver forces. Fires are planned for all phases of an operation. This appendix addresses the lethal fires coming from the ABCT indirect fires, mortars, artillery, and supporting aviation assets.

SECTION I – FIRES PLANNING

B-1. *Fire support planning* is the continuous process of analyzing, allocating, integrating, synchronizing, and scheduling fires to describe how the effects of fires facilitate maneuver force actions (FM 3-09). Fire support planning starts as soon as the leader receives a mission. Once initiated, fire support planning continues through the operation's completion. The primary aim of fire planning is to develop how fire is massed, distributed, and controlled to best support the leader's concept of operations. Within the ABCT, the FA BN has three batteries of six M109A6 Paladin self-propelled 155-mm howitzers. Each battery has two three-gun platoons. Within the BN, there is a 120-mm mortar platoon with a fire direction center (FDC) and four tracked mounted 120-mm mortars. Rotary-wing attack aviation or CAS can be requested. Tank platoon leaders need to understand assets available and how to incorporate fires planning into the ground tactical plan. (See ATP 3-90.5, ATP 3-90.1, and ATP 3-09.24 for additional information.)

CONCEPT OF FIRES

B-2. Fire planning begins with the concept of fires. This essential component of the concept of operations complements the leader's scheme of maneuver detailing the leader's plan for direct and indirect preparatory and supporting fires. Fire planning requires a detailed knowledge of weapon characteristics and logistical capabilities of those providing the fire support. Although leaders may be augmented with personnel to assist in planning and controlling attached or supporting assets, the responsibility for planning and execution of fires lies with the leader. Leaders do not wait to receive the higher HQ plan to begin their own fires planning but begin as soon as possible to integrate fires into concept of operations and concept of operations of the higher HQ.

FIRE SUPPORT TEAMS

B-3. *Fire support team* is a field artillery team provided for each maneuver company/troop and selected units to plan and coordinate all supporting fires available to the unit, including mortars, field artillery, naval surface fire support, and close air

support integration (JP 3-09.3). FISTs provide the platoon with an FO, fire support coordination, precision targeting, targeting information in support of Types 2 and 3 CAS terminal attack controls, and effects assessment capabilities (see JP 3-09.3 for more information on the three types of CAS terminal attack controls). Effective fires require qualified observers to call for and adjust fires on targets located. FOs, forward air controllers (airborne), naval gunfire spotter teams, joint fires observers, and joint terminal attack controllers train together and work effectively as a team to request, plan, coordinate, and place accurate fires on targets that create the desired effects.

FIRE SUPPORT OFFICER

B-4. *Fire support officer* is the operational to tactical level field artillery officer responsible for advising the supported commander or assisting the fire support coordinator on fires functions and fire support (FM 3-09). The company FSO extracts information from the BN's fire support plan to develop the company's fire support plan by the commander's intent and concept of the operation. The FSO refines the company fire support plan then passes the targets to the platoon FOs.

DANGER CLOSE

B-5. Risk estimate distance is what FOs, joint terminal attack controllers, or any Soldier uses to determine safe distances from friendly fire. They will pass the phrase DANGER CLOSE, during a fire mission, with the method of engagement or the CAS attack brief remarks. DANGER CLOSE alerts FDCs, ground commanders, and aircrew of the proximity of the closest friendly troops to the intended point of weapon impact. DANGER CLOSE is a warning of the proximity of friendly forces and possibility of an increased risk to them. (See ATP 3-09.32 for risk estimate distance.)

FIRE SUPPORT PLANNING IN THE DEFENSE

B-6. In the defense, fires are generally planned in three locations—in front of the unit positions, on the position's FPFs, and behind positions. To develop a defensive fire plan, the platoon leader within the company defense—

- Redefines designation of unit point or area targets and other control measures, such as TRPs, to coordinate the fire when more than one subordinate is firing into the same EA or sector.
- Identifies likely enemy support by fire positions or other areas where the enemy will likely mass.
- Identifies FPFs, targets to support displacement, and targets on behind positions.
- Masses fires on choke points and key terrain (for example, obstacles, water crossings, and dead space) to canalize, slow, and block the enemy's movements.
- Ensures fires are integrated into the obstacle plan.
- Considers the use of obscurants to support the obstacle plan.
- Refines and bases fire plans on the commander's guidance for fires and allocation of resources.
- Identifies requirements for positioning primary and alternate observers forward of friendly maneuver forces.

- Ensures that extraction guidelines are established and understood.
- Develops alternate plans in case these FOs are forced to withdraw prior to execution of fire support tasks.
- Determines the time needed for all fire support systems to be ready based on the scheme of maneuver and ensure that these times are met.
- Determines how and recommend when to shift the priority of fires and what will be the trigger to shift the priority of fires.
- Plans for the use of obscurants during periods of limited visibility to degrade enemy night vision capabilities.
- Receives target information from subordinates (normally provided on sector sketches or individual weapon range cards).
- Reviews target information to ensure fires are equally distributed across the entire unit's assigned area and sufficient control measures are established.
- Completes the unit's fire plan and gives sector sketch to the company HQ.

B-7. In the defense the EA is the place where the platoon leader intends to destroy an enemy force using the massed fires of all available weapons. The success of engagements depends on how the platoon leader can integrate the obstacle and indirect fire plans with the direct-fire plan in the EA to achieve the unit's purpose. Completing the steps of EA development is not a lengthy process, EA development can occur rapidly without an elaborate decision-making process. (See chapter 4 for EA development.)

FINAL PROTECTIVE FIRE

B-8. A *final protective fire* is an immediately available, prearranged barrier of fire designed to impede enemy movement across defensive lines or areas (JP 3-09.3). The FPFs target the highest type of priority targets and take precedence over all other fire targets. The FPFs differ from a standard priority target in that fire is conducted at the maximum rate until the mortars and artillery are ordered to stop or until ammunition is depleted. If possible, the FPFs should be registered. In the fire support plan, an FPF is continuous artillery or mortar fires—

- Fired on a predetermined target.
- Fired at the maximum rate of fire until the firing unit is requested to stop, ammunition is exhausted, or the firing unit is forced to move.
- Allocated FA FPF, normally from the BCT to the BN level, which may allocate to the company and platoon level.
- Allocated mortar platoon FPF, normally from BN to the company and platoon level.
- Authorized to shoot at the lowest maneuver commander's level in whose area the FPF is placed or that commander's authorized representative.

B-9. The risk estimate distance for a given delivery system (see ATP 3-09.32) is a factor in how close the FPF can be placed in front of friendly front lines. Closer FPFs are easier to integrate into direct-fire FPLs. The high rate of fire achievable by mortars creates effective barriers of fire. The normal allocation of FPFs is identical to the allocation of priority targets (one for each battery/platoon and one for each mortar platoon). While firing FPFs, mortar sections are not normally allowed to cease fire and displace. Due to counter mortar fires, they must take precautions to avoid or withstand counter mortar fire when firing an FPF.

PRIORITY TARGET VERSUS FINAL PROTECTIVE FIRE

B-10. A *priority target* is a target, based on either time or importance, on which the delivery of fires takes precedence over all the fires for the designated firing unit or element (FM 3-09). FPF differs from standard priority target in that an FPF is fired at the maximum rate of fire until mortars are ordered to stop or until all ammunition is expended while a priority target simply fires the planned number of rounds for that mission, for example a battery three (three rounds per gun in a six-gun battery). Firing units lay the guns on the priority target when not actively firing another mission.

DEFENSIVE ECHELONMENT

B-11. In the defense the company FSO will plan how to echelon fires. Echeloning fires are scheduled based on their optimum ranges and delivery systems to maintain continuous fires on the enemy, disrupting the formation and maneuver. Echelonment of fires in the defense places the enemy under increasing volumes of fire as they approach a defensive position. Aircraft and long-range indirect-fire rockets and artillery deliver deep supporting fires. Close supporting fires, such as FPFs, are integrated closely with direct-fire weapons such as tanks, BFVs, Infantry platoons and squads, and antiarmor weapon systems.

FIRE SUPPORT PLANNING IN THE OFFENSE

B-12. Offensive fire planning follows the same methodology as defensive fire planning within constraints of the situation. The main difference is that offensive fire planning always includes the synchronization between the base of fire and maneuver element. Inevitably, the leader's plan will not be as detailed as the defensive plan, but the presence of a maneuver element requires a baseline of planning and control to ensure indirect-fire support is effective and efficient. Offensive fire planning may not be as detailed in some respects; however, the individual targets, such as obscuration in support of a breach will be every bit as complex as defensive fires.

B-13. Leaders must plan how they will engage known or suspected enemy targets, where friendly suppressive fire may be needed, and how they will control their unit's' fires against both planned targets and targets of opportunity. Fire planning should include a thorough analysis of the type of threat expected. This will aid the supporting friendly element in tailoring the weapon and ammunition requirements to suit the situation.

B-14. Offensive fire planning supports four phases: planning and preparation, approach to the objective, actions on the objective, and follow through. (See table B-1.) The degree of completeness and centralization of offensive fire planning depends on the time available to prepare the offensive. Fires are planned in four locations on the battlefield, short of the LD/line of contact, LD/line of contact to the objective, on the objective, and behind the objective.

Table B-1. Fires offensive planning considerations

Phase	*Plan fires to*
Planning and Preparation (Short of the LD/LC).	• Support unit in AA. • Support units' movement to the LD/LC. • Disrupt enemy reconnaissance forces. • Disrupt enemy defensive. • Disrupt enemy spoiling attacks.
Approach to the Objective (LD/LC to the Objective).	• Begin echeloning fires for maneuver unit. • Suppress and obscure for friendly breaching operations. • Suppress and obscure enemy security forces throughout movement. • Provide priority of fires to lead element. • Screen/guard exposed flanks.
Actions on the Objective (On the Objective).	• Fires to block enemy reinforcements. • Fires to suppress enemy direct fire weapons. • Suppress and obscure point of penetration. • Suppress and obscure enemy observation of friendly forces. • Fix targeted forces for engagement with direct fire weapons. • Isolate the objective.
Follow Through (Beyond the Objective).	• Disrupt movement of enemy reinforcements during the assault. Screen friendly forces from enemy counterattacks during the assault. • Block avenues of enemy approach. • Disrupt enemy withdrawal. • Screen friendly forces from enemy counterattacks during the assault. • Consolidate objective after the assault. • Disrupt enemy counterattack. • Prepare a hasty defense.
Legend: AA—assembly area; LC—line of contact; LD—line of departure	

B-15. During offensive fire planning the platoon leader should plan preparation fires and supporting fires (mortars, FA). *Preparation fires* are a brief, intense bombardment on selected targets or a prolonged effort over time covering a large number of targets (FM 3-09). The concept of fires has artillery and mortars in support of an attack to neutralize, suppress or destroy enemy positions on the objective until the last possible moment. When this indirect fire ceases, the enemy should be stunned and ineffective for a few moments. Take full advantage of this period by executing any or all the following:

- Maintain fire superiority using main weapons systems on tanks.
- Maneuver elements:
  - Tanks must identify and engage targets as they advance.

  - Tank crews must observe fire discipline, as in many cases fire control orders will be selective.
  - Tank crews must arrive at the objective with ammunition.
- Audacity is where the ground and vegetation do not prohibit movement, leading sections should move quickly to the enemy positions to minimize exposure.

B-16. When planning fires for the offense, leaders verify with the supporting unit that systems are positioned or repositioned to ensure continuous fires throughout the operation. Mutual support of fire systems promotes responsive support and provides maneuver commanders freedom of maneuver during each critical phase of the engagement or battle.

OFFENSIVE ECHELONMENT

B-17. When planning the echelonment of fire in the offense, weapons are scheduled based on the point of a predetermined safe distance away from maneuvering friendly troops. When scheduled, fires provide protection for friendly forces as they move to and assault an objective. They also allow friendly forces to get in close with minimal casualties and prevent the defending enemy from observing and engaging the assault by forcing the enemy to take cover. The overall objective of offensive scheduled fires is to allow the friendly force to continue the advance unimpeded. Platoon leaders need to understand danger close distances for indirect-fire systems used. Platoon leaders use risk estimate distance, SDZs, and minimum safe distance to manage associated risks.

SECTION II – EMPLOYMENT CONSIDERATIONS

B-18. Mortars and FA are the primary means of indirect-fire support available to the tank platoon. In addition to understanding the capabilities and limitations of these assets, platoon leaders and their tank commanders must know how to request fires. They must also understand how to work with the FIST at company team level to plan and coordinate indirect fires. (See ATP 3-09.30 and ATP 3-09.32 for more information.)

EFFECTS

B-19. Fires can be extremely effective when used for the purposes outlined in paragraphs B-20 through B-24.

DESTRUCTION

B-20. High explosive rounds, mounted with variable time fuses, can be used to disperse dismounted Infantry and vehicles that are in the open. The high explosive rounds have the capability to destroy or disable some armored vehicles and structures.

SUPPRESSION

B-21. The high explosive rounds can be used to force the enemy to button up or move to less advantageous positions. Normally, suppression missions are fired on planned targets, and a length of time to continue firing (duration) is associated with the call for fire.

SMOKE

B-22. Mortar support, provided by the BN mortar platoon or squadron troop mortars, is the most rapid and responsive means of indirect smoke delivery. The tank platoon leader coordinates the planning and execution of smoke missions with the commander and the company FIST. For obscuration and screening, WP rounds are used. WP rounds should be utilized with caution as the intense heat can degrade the effectiveness of friendly thermal sights and can also produce casualties to friendly personnel in close proximity. The platoon leader takes into consideration wind speed and direction when requesting smoke to ensure the obscurant effect does not work in the enemy's favor.

Note. When employing WP rounds ensure it is per current ROE for the specific OE.

ILLUMINATION

B-23. Illumination rounds illuminate an area or enemy position during periods of limited visibility. IR illumination can increase the effectiveness of the tank platoon's thermal sights. This helps the platoon in gathering information, adjusting artillery fire, and engaging enemy targets. Ground burst illumination can also be used to mark enemy positions, mark for CAS, and provide a thermal TRP for control of fires.

B-24. Units must be careful not to illuminate friendly positions. Illumination rounds that initiate directly above or behind the tank platoon enhance the enemy's ability to identify and engage the platoon. Also, as U.S. night vision devices may or may not be superior to those of peer threats, illuminating the battlefield may be unnecessary or even counterproductive.

MORTARS

B-25. Mortars provide immediate and responsive indirect-fire support to maneuver forces. Each BN has four 120-mm mortar systems organized into two sections. Each Infantry BN has four 120-mm mortar systems or four 81-mm mortar systems. Each Infantry company has two 60-mm mortar systems. Each Cavalry troop has two 120-mm mortar systems.

CAPABILITIES

B-26. All mortar systems provide a heavy volume of accurate, sustained fires. They are ideal weapons for attacking a variety of targets, including the following:

- Infantry in the open.
- Targets on reverse slopes.
- Targets in narrow ravines or trenches.
- Targets in forests, towns, and other areas that are difficult to strike with low-angle fires.

B-27. In addition to these highly flexible targeting options, mortars have the following capabilities and advantages:

- Rapid response time.

- Effective against low-density targets.
- Highly destructive target effects.

LIMITATIONS

B-28. Mortars are limited in the following ways—

- Limiting maximum range in comparison to the indirect-fire support capability of FA elements.
- It cannot be used against targets inside their minimum indirect fire effective range.
- Limited types of ammunition, compared to artillery rounds.
- Limited amounts of ammunition are carried by mortar elements.
- Collateral damage concerns an urban environment.
- Clearance of air.
- Limited effectiveness when used against armored vehicles.

FIELD ARTILLERY

B-29. Tank platoon leaders must fully understand how to use fires support to their best advantage. It is often their primary means of delaying and disrupting enemy formations and suppressing enemy positions. The FA can provide immediate, responsive, accurate fires with a wide variety of munitions. Table B-2 shows all indirect fire capabilities when operating with Infantry and Armor BCTs.

Table B-2. Indirect-fire weapons capabilities

CALIBER	*81-mm*	*120-mm (M121)*	*155-mm Self-Propelled/Towed*
LOCATION	Combined Arms Battalion (CAB)	CAB	Brigade Combat Team/Artillery organizations
MAX RANGE (High explosive [HE]) (meters)	5,600	7,200	24,000 30,000 (RAP)
PLANNING RANGE (meters)	(2/3 max)	(2/3 max)	(2/3 max)
PROJECTILES	HE Smoke (White phosphorous [WP] & Red phosphorous) Illumination Infrared Illumination	HE Smoke (WP) Illumination Infrared Illumination	HE Smoke (WP& High Concentration [HC]) Illumination Chemical RAP Excalibur FASCAM
MAX RATES OF FIRE	30 RPM for 2 min. then 15	16 RPM for 1 min.	4 RPM for 2 min. then 1
SUSTAINED RATE OF FIRE (RPM)	15	4	2
MINIMUM RANGE (meters)	83	200	Direct fire
FUZES	PD VT Time dly MO	PD VT Time dly MO	PD VT CP MT MTSQ dly
Danger Close	600 meters	600 meters	600 meters

Legend: CP—concrete piercing; dly—delay; Excalibur—precision guided/extended range; FASCAM—family of scatterable mines; min—minute; mm—millimeters; MO—multi-option; MT—mechanical time; MTSQ—mechanical time super quick; PD— point detonating; RAP—rocket-assisted projectile; RPM—rounds per minute; Time— adjustable time delay; VT—variable time

Note. See ATP 3-09.32 for information on risk estimate distances.

FIRE SUPPORT TEAMS

B-30. Fire support is provided by fire BNs which support the BCT. The tank platoon generally receives fire support through the company FIST.

B-31. FISTs are assigned to the fires BNs and attached to maneuver units for combat operations. The FIST is a valuable resource because of its communications link with the

artillery. Additionally, the FIST operates an M3A3 Bradley fire support vehicle. The Bradley fire support vehicle allows the FIST to maneuver with the tank platoon across the battlefield.

Support Considerations

B-32. FISTs are organized, equipped, and trained to provide the following personnel and support to the company:

- Company FSO as fire support advisor/FIST leader and coordinator.
- Communications link to all available indirect-fire support assets.

Communication

B-33. The FIST normally monitors the following radio nets:

- Attached unit command net (voice).
- BN/squadron mortar fire direction net (digital/voice).
- Fires BN fire direction net (digital/voice).
- BN/squadron fire support net (voice).
- Joint air request net.

B-34. The FIST serves as the net control station on the unit fire support net, while the fire support element serves as the net control station on the maneuver BN/squadron fire support net. The FIST relays the call for fire to supporting artillery on a digital/voice fires net or sends the fire mission to the mortar platoon or section. The command net allows the FIST to monitor operations and links the FIST to the commander and platoon leaders for planning and coordination.

CAPABILITIES

B-35. In support of the tank platoon, fires elements can accomplish the following tasks:

- Provide immediate suppression on unplanned targets.
- Provide continuous fire support on planned targets in all weather conditions and types of terrain.
- Allow platoon leaders to shift and mass fires rapidly.
- Offer a variety of conventional shell and fuse combinations.
- Provide obscuration and screening smoke to conceal movement.
- Fire battlefield illumination rounds as necessary.

LIMITATIONS

B-36. The fires support has the following limitations:

- Limited capability against moving targets.
- Limited capability to destroy point targets without considerable ammunition expenditure or use of specialized munitions during low-angle firing.
- Highly vulnerable to detection by enemy target acquisition systems during high-angle firing.
- Restricted low-angle fires in an urban environment (see ATP 3-09.42 for more information).

SECTION III – FIRE REQUEST PROCESS

B-37. Though the FIST is the primary element responsible for requesting and adjusting indirect fire, every leader in the tank platoon must be familiar with the request and adjustment process and if necessary, make the call for fire themselves.

FIRE REQUEST CHANNELS

B-38. All requests for indirect-fire support are normally sent through the FIST on the company command net and the commander approves the request. The FIST selects the best available fire support asset to engage a target. Adjustments to the fire mission normally are also sent to the FIST, which then relays the message to the artillery unit on a digital fire direction net or to the BN mortars on the fire support net.

B-39. Besides specific requests sent to the FIST, the platoon can request fire support in several other ways—

- Calls for fire can result from SPOTREPs sent on the company command net; the company FIST can monitor the net and requests fires on targets of opportunity and on targets approved by the commander.
- Requests for fire can be submitted through preformatted SPOTREPs and contact reports sent via the joint capabilities release system.

INITIAL CALL FOR FIRE

B-40. The standard call for fire includes three basic transmissions, which in turn comprise six elements:

- Observer identification and WARNORD (first transmission).
- Target location (second transmission).
- Target description, method of engagement, and method of fire and control (third transmission).

OBSERVER IDENTIFICATION AND WARNING ORDER (FIRST TRANSMISSION)

B-41. Observer identification tells the FDC who is calling. The WARNORD clears the net for the fire mission and tells the FDC the type of mission, size of element, and the method of locating the target. The types of indirect-fire missions are adjust fire, fire for effect, suppression, immediate suppression, and immediate smoke.

Adjust Fire

B-42. This is used when the observer is uncertain of the exact target location. The observer says, ADJUST FIRE.

Fire for Effect

B-43. The observer strives for first-round fire for effect when they are sure the target location is correct. The observer should also be sure the rounds of the first volley have the desired effect on the target so little or no adjustment is required. The observer announces FIRE FOR EFFECT.

Note. With digital systems, properly updated positioning data and an accurate range to the target provide extremely accurate target location. This enables observers to call FIRE FOR EFFECT on the first transmission.

Suppression

B-44. The word suppress is used to quickly bring fire on a preplanned target when unable to observe. The following is an example of a simplified call for fire and is sent in one transmission: THUNDER 11—THIS IS RED 1—SUPPRESS AF2401—OVER. The target description is not announced.

Immediate Suppression

B-45. This is used to bring fire quickly on a planned target or a target of opportunity that is firing at a friendly unit or aircraft. As an example, the observer says, THUNDER 11—THIS IS RED 2—IMMEDIATE SUPPRESSION AF2402—OVER. Target description is not announced.

Immediate Smoke

B-46. This is used to place smoke quickly on a planned target or a target of opportunity that is firing at a friendly unit. Sample transmission: THUNDER 11—THIS IS RED 4—IMMEDIATE SMOKE AF2405—OVER.

B-47. The polar and shift methods are announced to the FDC as part of the first transmission. They are covered more in paragraph B-48.

B-48. Following the type of mission, the method of target location is announced; this prepares the FDC to receive the data sent by the observer and apply it to locate the target. The three methods for locating targets are grid, polar plot, and shift from a known point. The polar and shift methods are announced to the FDC. If the observer does not specify either polar or shift, the FDC knows the grid method is being used; the word grid is not announced. Example: THUNDER 11—THIS IS RED 3—FIRE FOR EFFECT—POLAR—OVER.

TARGET LOCATION (SECOND TRANSMISSION)

B-49. The third element of the call for fire is target location. There are five methods of establishing target location. They are grid, laser grid, polar plot, laser polar, and shift from known point. When utilizing precision targeting devices to establish location, it is required to transmit the target location error in the target location portion of the call for fire request.

Grid Method

B-50. In the grid method, the target location normally includes a two-letter grid zone identifier with eight digits (example, AB13572468). The direction from the observer to the target (in mils, if possible) must be given to the FDC after the call for fire, but before the first adjusting rounds are shot. With the likelihood of operating in built-up areas,

crewmembers should call for fire using eight- or ten-digit grids to reduce collateral damage.

Laser Grid Method

B-51. The laser grid method is the same as described for a standard grid mission except the target grid is given at a greater level of accuracy using a laser targeting device (8 to 10 digits depending on targeting device accuracy). The far target locator can be used to acquire the target. The transmission also includes the target location error (if known). For example, GRID AB1357924680, TARGET LOCATION ERROR 4.0 OVER.

> ***Note.*** A mission is not a laser grid mission just because the observer used a laser to determine the initial target location. If the observer plans to send normal left, right, add, or drop corrections, the mission is a normal grid mission. The mission is a laser grid mission only when the method for subsequent corrections is laser burst corrections.

Polar Plot Method

B-52. This method requires that the observer and the FDC know the observer's exact location. The observer determines the direction (to the nearest 10 mils) of the observer target (OT) line and the distance (to the nearest 100 meters) from the position to the target.

Laser Polar Plot Method

B-53. The laser polar method differs from a polar mission in that the direction is determined to the nearest mil (instead of 10 mils) and the distance is to the nearest 10 meters (instead of 100).

Shift From a Known Point Method

B-54. This is the least preferred and most difficult method of target location. The observer may have one or more known points in the area of responsibility and only works if the observer and the FDC have a commonly known point such as an artillery target or significant feature like a bridge or tower. To locate the target, the observer first determines the direction to the known point to the nearest 10 mils. If the observer has no compass, direction can be determined by using a map and protractor or by using the binocular reticle pattern and a known direction to the known point. The observer then determines direction to the target using the RALS rule (also called right add, left subtract).

B-55. The observer then determines the lateral and range shifts. (See figure B-1, page 294.) Lateral shifts are left or right from the known point to the OT line and are given to the nearest 10 meters. Range shifts are given as ADD (when the target is beyond the known point) or DROP (when the target is closer than the known point). Range shifts are given to the nearest 100 meters. (See ATP 3-09.30 for more information.)

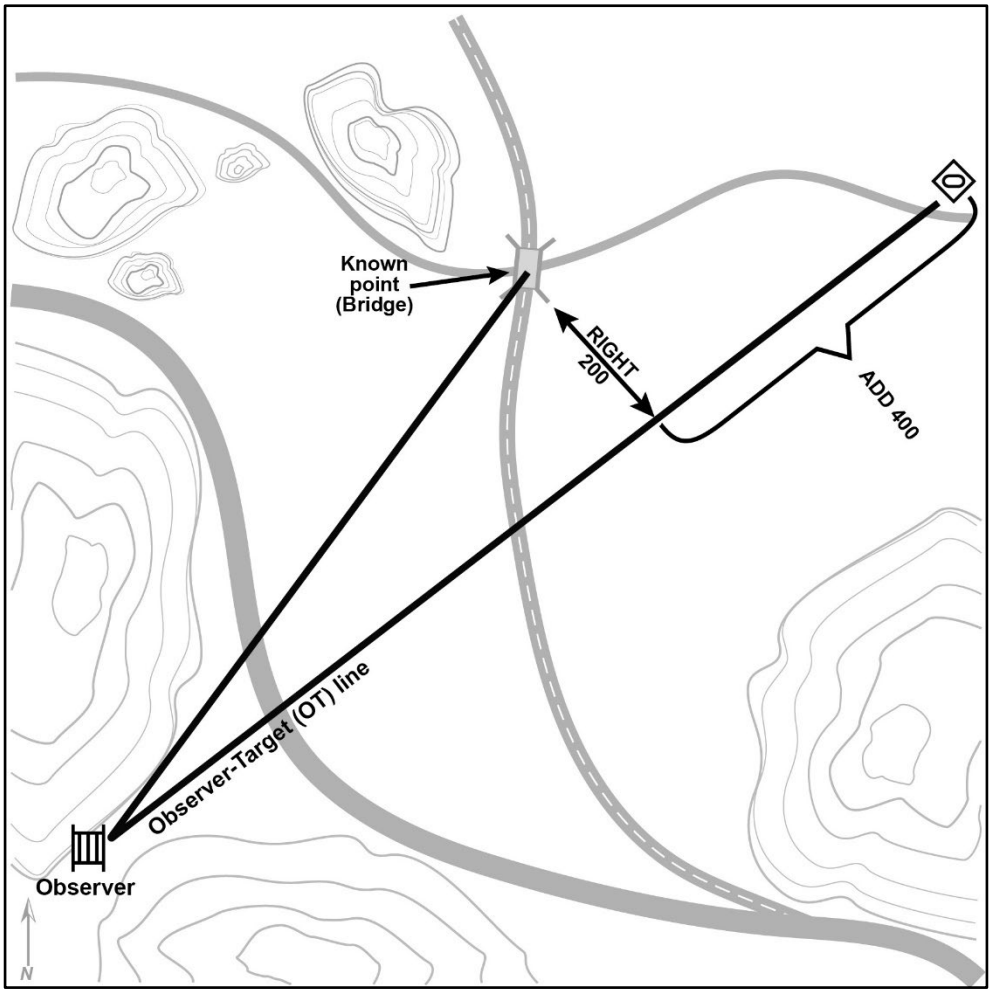

Figure B-1. Lateral and range shifts from a known point

TARGET DESCRIPTION, METHOD OF ENGAGEMENT, AND METHOD OF FIRE AND CONTROL (THIRD TRANSMISSION)

B-56. The observer includes the target description, method of engagement, and method of fire and control in the call for fire using the guidelines discussed in the following paragraphs.

Target Description

B-57. The observer describes the target to the FDC; the FDC then determines the type and amount of ammunition needed. The target description should be brief but accurate. This is the last required element in the call for fire.

B-58. A target description may be DISMOUNTED INFANTRY SQUAD IN THE OPEN or TWO TANKS IN TURRET DOWN POSITION.

Method of Engagement

B-59. The observer requests how to attack the target (including type of ammunition, fuse, and distance from friendly personnel). The FDC may change the ammunition type and fuse based on availability or other constraints. If the target is within 600 meters of friendly personnel, the observer announces DANGER CLOSE.

Method of Fire and Control

B-60. The observer states who will give the command to begin firing. If the observer wants to control the time of firing, they say, AT MY COMMAND. The FDC tells the observer when the unit is ready to fire. At the proper time, the observer says, FIRE. If the observer does not say, AT MY COMMAND, the FDC directs the designated unit(s) to fire as soon as the platoon or battery is ready. (See table B-3.)

Table B-3. Methods and procedures for indirect call for fire

FIRST TRANSMISSION	***THIRD TRANSMISSION***
1. Observers Identification (call signs) 2. Warning Order: • Adjust fire • Fire for effect • Suppress • Immediate suppression/immediate smoke	4. Target Description: • Type • Activity • Number • Degree of protection • Size and shape (length/width or radius) 5. Method of Engagement: • Type of adjustment • Danger close • Mark • Ammunition • Distribution 6. Method of Fire and Control: • Method of fire • Method of control
SECOND TRANSMISSION	
3. Target Location: • Grid coordinate • Shift from a known point • Polar plot	

ADJUSTING INDIRECT FIRE

B-61. Once the call for fire has been made, the observer's next concern is to get rounds on the target. If the observer can locate the target accurately, fire for effect is requested in the initial call for fire. When the observer cannot accurately locate the target, for any reason such as deceptive terrain, lack of identifiable terrain features, or poor visibility, they must execute an adjustment to bring fires on the target. Normally, one artillery piece or mortar is used in adjustment.

B-62. The observer must first pick an adjusting point. For a destruction mission (precision fire), the target is the adjusting point. For an area target (area fire), the

observer must pick a well-defined adjusting point at the center of the area or close to it. The observer must spot the first adjusting round and each successive round and send range and deviation corrections, as required, back to the FDC until fire hits the target. The observer spots by relating the burst or group of bursts to the adjusting point. (See ATP 3-09.30 for more information.)

Deviation Spotting

B-63. As applied to deviation (left or right), spotting involves measuring the horizontal angle (in mils) between the burst and the adjusting point. (See figure B-2.) A burst to the right (or left) of the target is spotted as (number) MILS RIGHT (LEFT).

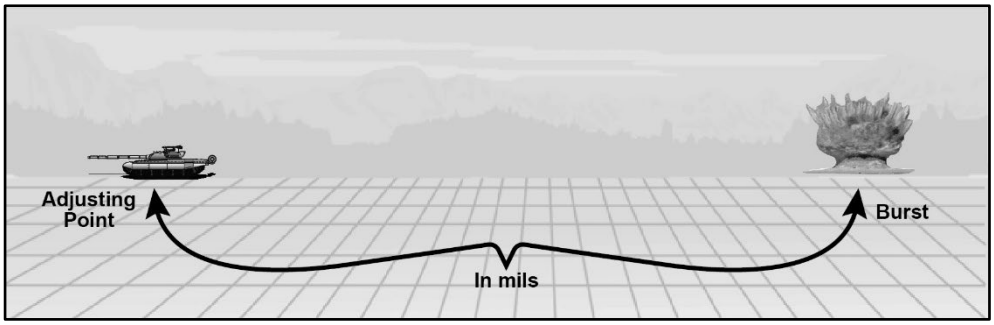

Figure B-2. Deviation spotting

Reticle Method

B-64. The mil scale on military binoculars, or the hand-and-fingers method, is a technique to determine deviation. In the M22 and M24 binoculars, the horizontal and vertical scales are divided into 10-mil increments with shorter hash marks at 5-mil increments. (See figure B-3 for the binocular reticle.) The scale cannot be used to determine vertical angles. Only a level measuring device can accurately measure vertical angles.

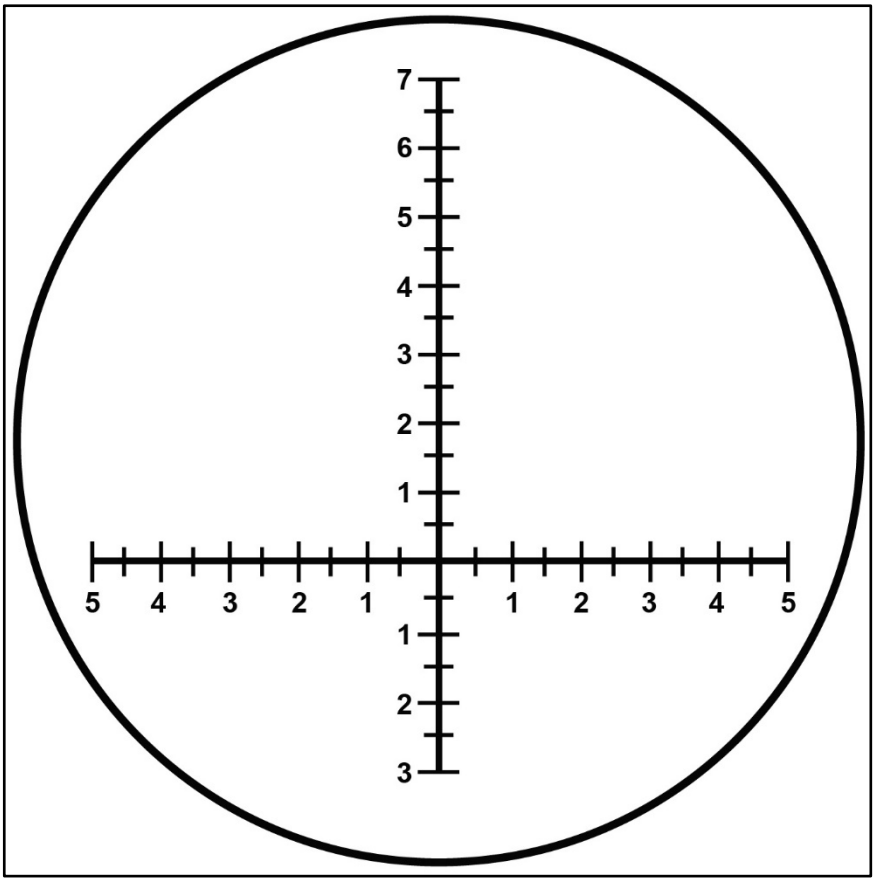

Figure B-3. M22 and M24 binocular reticle pattern

Hand and Finger Method

B-65. When all other means to measure angular deviation are not available, the observer may use the hand and fingers as a measuring device. (Figure B-4, page 298 shows approximate numbers for an average hand.)

B-66. Each tank commander should calibrate their own hand and fingers to determine the width in mils for the various combinations of finger and hand positions shown and then memorize those numbers. Calibrate hand measurements by comparing measurements taken with the hand and measurements taken with a more accurate measuring device.

B-67. When using hand and fingers in measuring angular deviation, the tank commander fully extends the arm (elbow locked) so that the hand and fingers are always the same distance from the eyes. The tank commander always points the palm of the hand toward the target area and holds the fingers as demonstrated in figure B-4, page 298. Anything that changes the method, such as wearing a glove or not keeping the fingers together, affects the measurement.

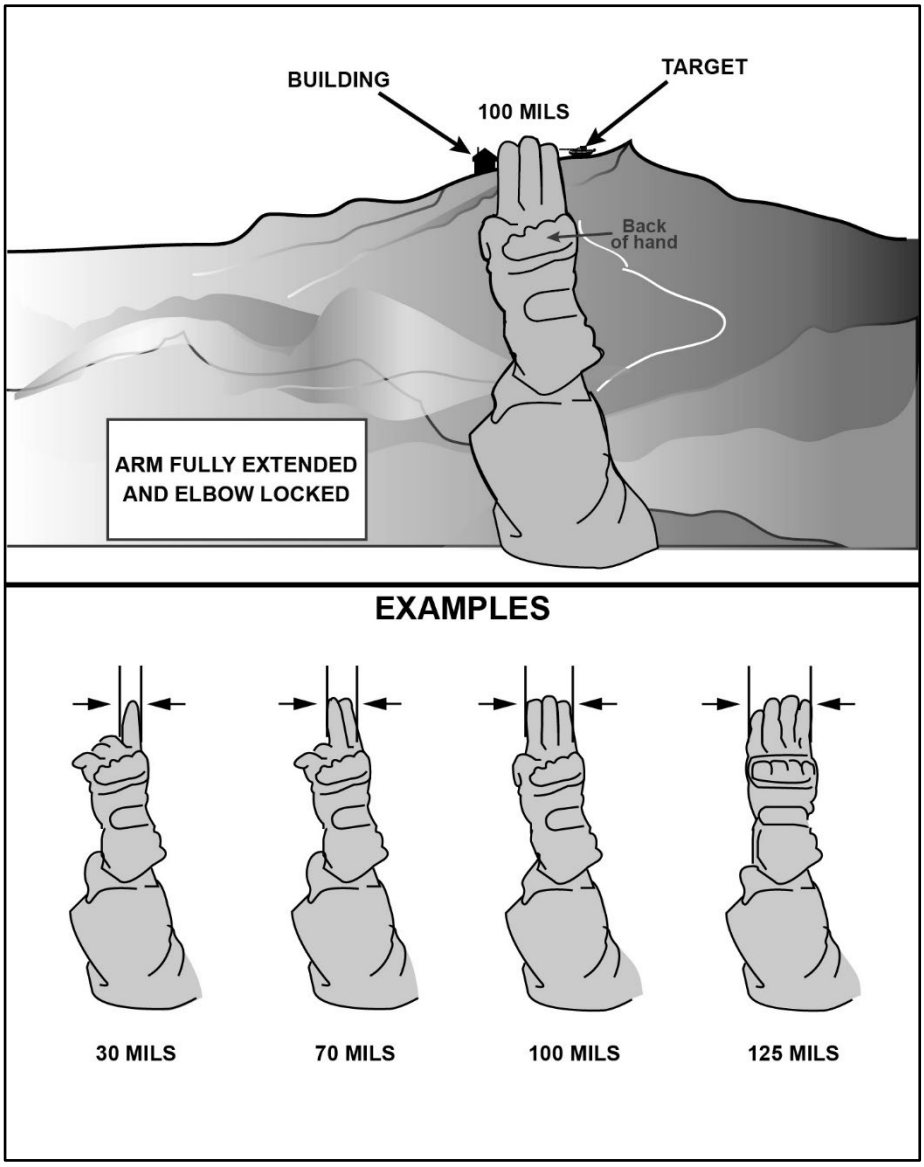

Figure B-4. Use of hand and fingers method to determine deviation

B-68. A burst on the OT line is spotted as ON LINE. Deviation to the left or right should be measured to the nearest 5 mils for area targets, with measurements taken from the center of the burst. Deviation for a destruction mission (precision fire) is estimated to the nearest mil. (Figure B-5 shows the adjusting point at the center of the binoculars' horizontal scale.)

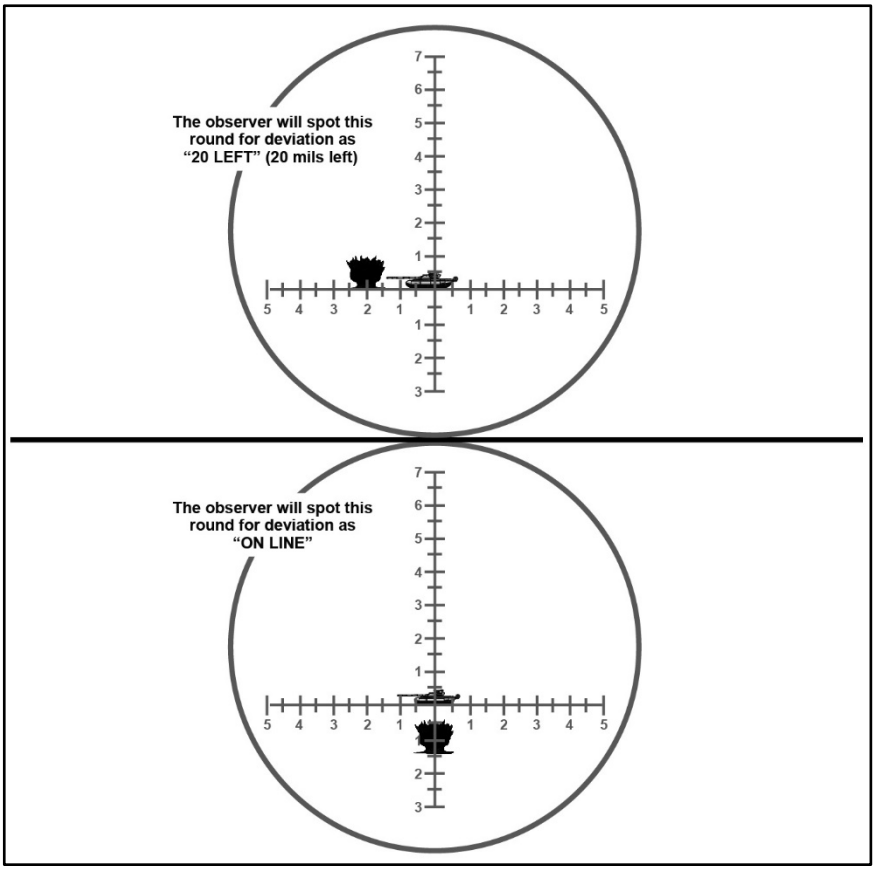

Figure B-5. Deviation spotting with binoculars

Deviation Correction

B-69. Once the observer determines the observed deviation (in mils), the observer must convert it into a deviation correction (in meters). Deviation correction is the distance in meters the burst must be moved to be on line between observer and target. It is sent, with the range correction, to the FDC for the next adjusting round or when calling for fire for effect.

B-70. The first step in determining deviation correction is to calculate the OT factor, the distance from the observer to the target in kilometers. The observer calculates the distance to the target in meters and divides by 1,000. (See table B-4, page 300 for examples of this process.) The precise correction is determined by multiplying the observed deviation by the OT factor; it is expressed to the nearest 10 meters. (See figure B-6, page 301.)

Table B-4. Determining the observer target factor

Guide for Determining the OT (observer-target) Factor
OT distance greater than 1,000 meters. Round to the nearest thousand and express in thousands of meters.
EXAMPLES: OT distance, 4,200 meters – OT factor, 4.0 OT distance, 2,700 meters – OT factor, 3.0
OT distance is less than 1,000 meters. Round to the nearest 100 meters and express in thousands of meters.
EXAMPLES: OT distance, 800 meters – OT factor, 0.8

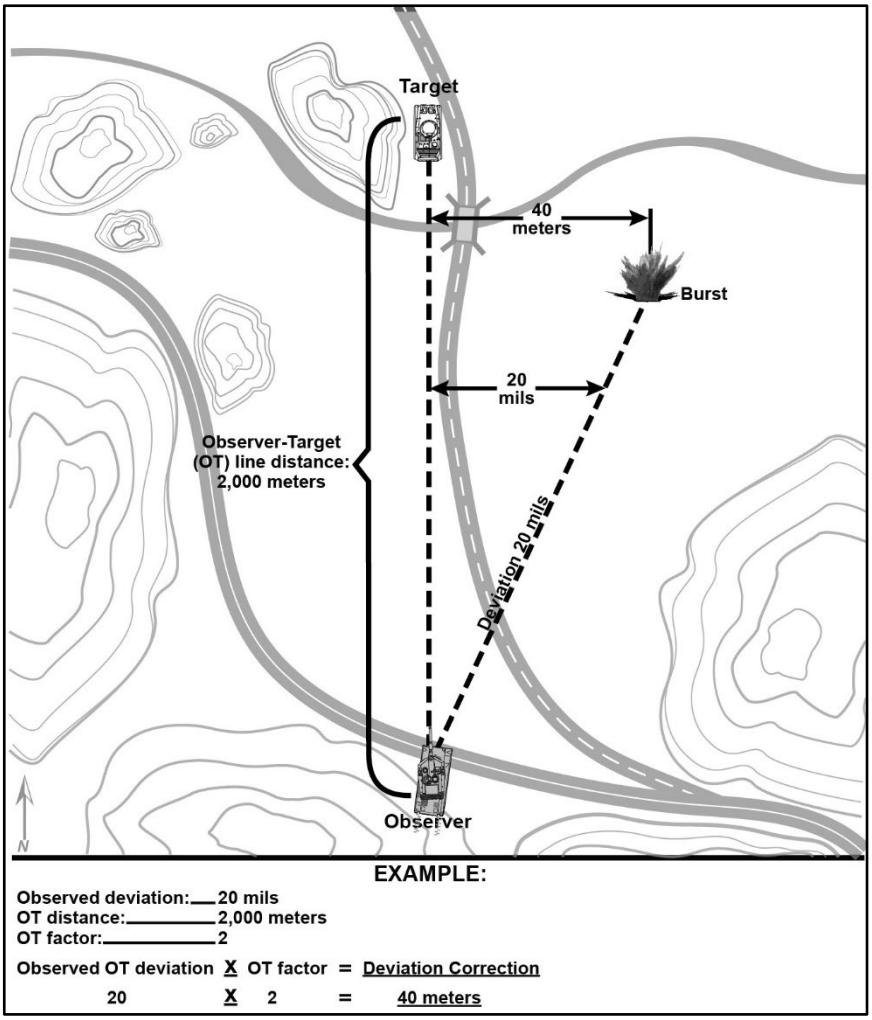

Figure B-6. Converting mil deviation to deviation correction

B-71. The observer's goal in making the correction is to move the adjusting rounds close enough to the OT line so that range spotting can be made accurately. Minor deviation corrections (10 to 20 meters) are necessary in adjustment of precision fire. In adjustment of area fire, however, small deviation corrections (20 meters or less) should be ignored except when such a small change is necessary to determine a definite range spotting.

Range Spotting

B-72. Range spotting is the second type of adjustment required to get fire on the target. (See figure B-7, page 302.) Any range spotting other than DOUBTFUL, LOST, or UNOBSERVED, is definite. Usually, an adjusting round's burst that is on or near the OT line will give a definite range spotting. However, even experienced observers use caution and good judgements when range spotting.

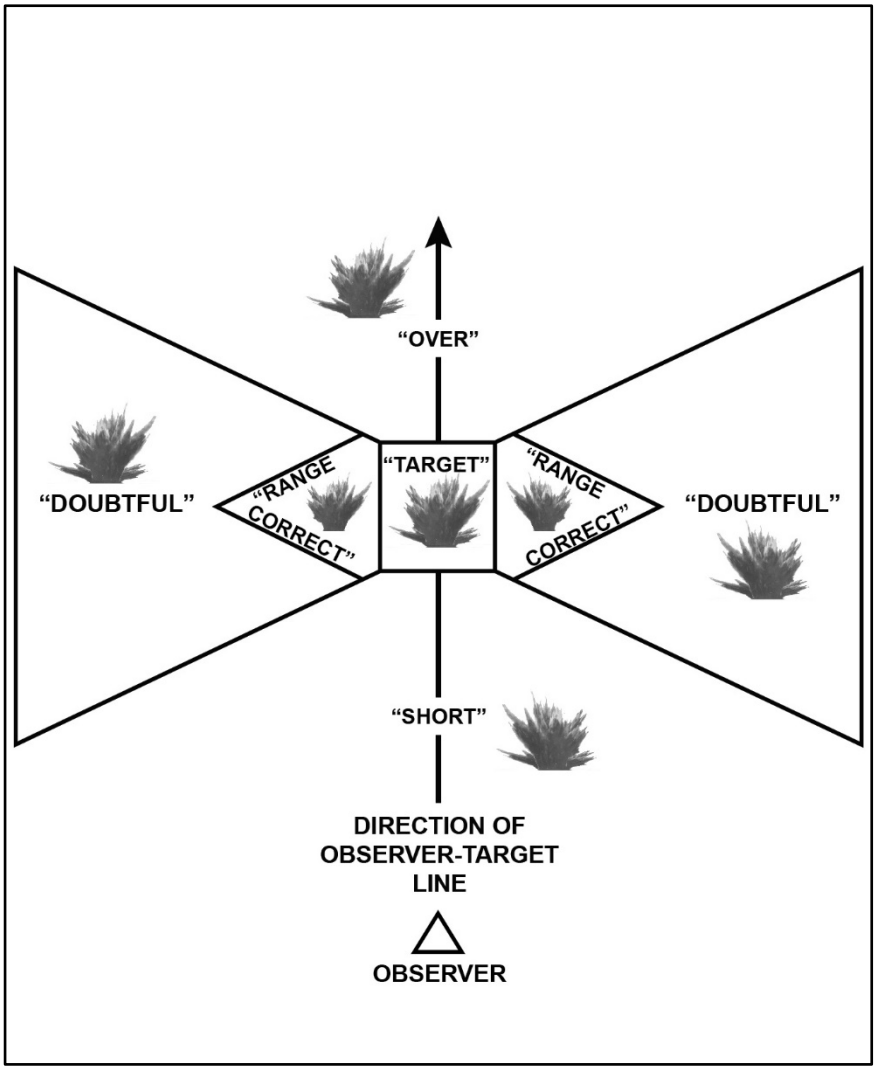

Figure B-7. Range spotting

B-73. The observer can sometimes make a definite range spotting even when the burst is not on or near the OT line. The observer uses personal knowledge of the terrain or wind and observes debris scattered by the explosion. Possible range spottings are—

- OVER—a round that impacts beyond the adjusting point.
- SHORT—a round that impacts between the observer and the adjusting point.
- TARGET—a round that impacts on the target. Which are used in precision fire (registration or destruction missions).
- RANGE CORRECT—a round that impacts at the correct range.
- DOUBTFUL—a round that can be observed but cannot be spotted as OVER, SHORT, TARGET, or RANGE CORRECT.

- LOST—a round whose location cannot be determined by sight or sound.
- UNOBSERVED—a round not observed but known to have impacted (usually heard).
- UNOBSERVED OVER or UNOBSERVED SHORT—a round not observed but known to have impacted over or short.

Range Correction

B-74. The observer gives range corrections so that, with each successive correction, the adjusting round intentionally lands over or short of the adjusting point, closing on the target.

Successive Bracketing

B-75. Successive bracketing is best when observers are inexperienced or when precise adjustment is required, such as precision registrations and destruction missions. It mathematically ensures fire-for-effect rounds are within 50 meters of the target.

B-76. After the first definite range spotting is determined, the observer should send a range correction to the FDC to establish a range bracket of known distance (one round over and one round short). Once the observer establishes the bracket, they successively split the bracket until confident that the rounds will impact within 50 meters of the adjusting point when requesting fires for effect. Normally, range changes of 100, 200, 400, or 800 meters make splitting the bracket easier. The observer enters fire for effect when the rounds impact within 50 meters of the adjusting point. (See figure B-8, page 304.)

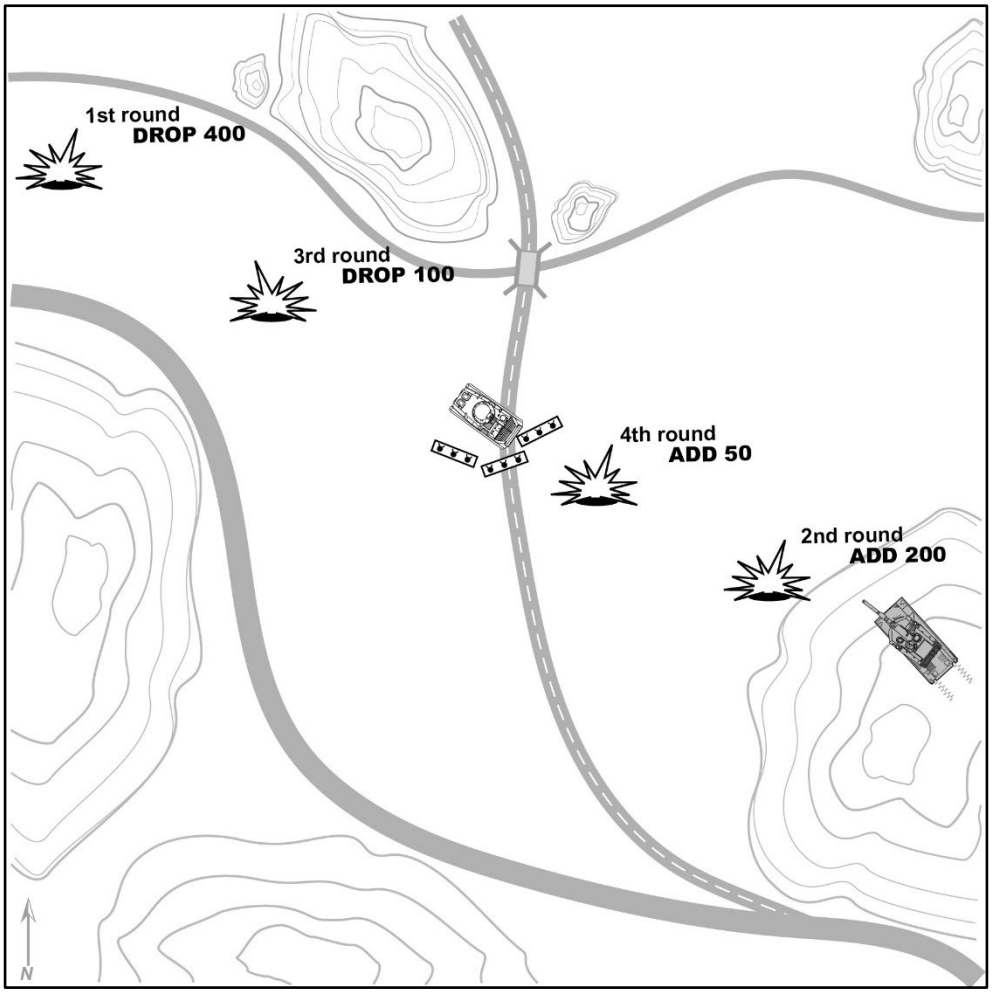

Figure B-8. Successive bracketing

Hasty Bracketing

B-77. Hasty bracketing is best when responsive fires are required, and the observer is experienced in the adjustment of fire. Experience has shown that effectiveness on the target decreases as the number of rounds used in adjustment increases. An alternative to successive bracketing is hasty bracketing. While successive bracketing mathematically ensures that the fire-for-effect rounds will strike within 50 meters of the adjusting point, it is a relatively slow and unresponsive technique. Therefore, if the nature of the target dictates that effective fires are needed faster than successive bracketing can provide them, hasty bracketing should be used.

B-78. The observer gets a bracket on the first correction much as in the successive bracketing technique. The observer uses this initial bracket as a yardstick to determine

the subsequent correction. The observer sends the FDC the correction to move the rounds to the target and FIRE FOR EFFECT. (See figure B-9.)

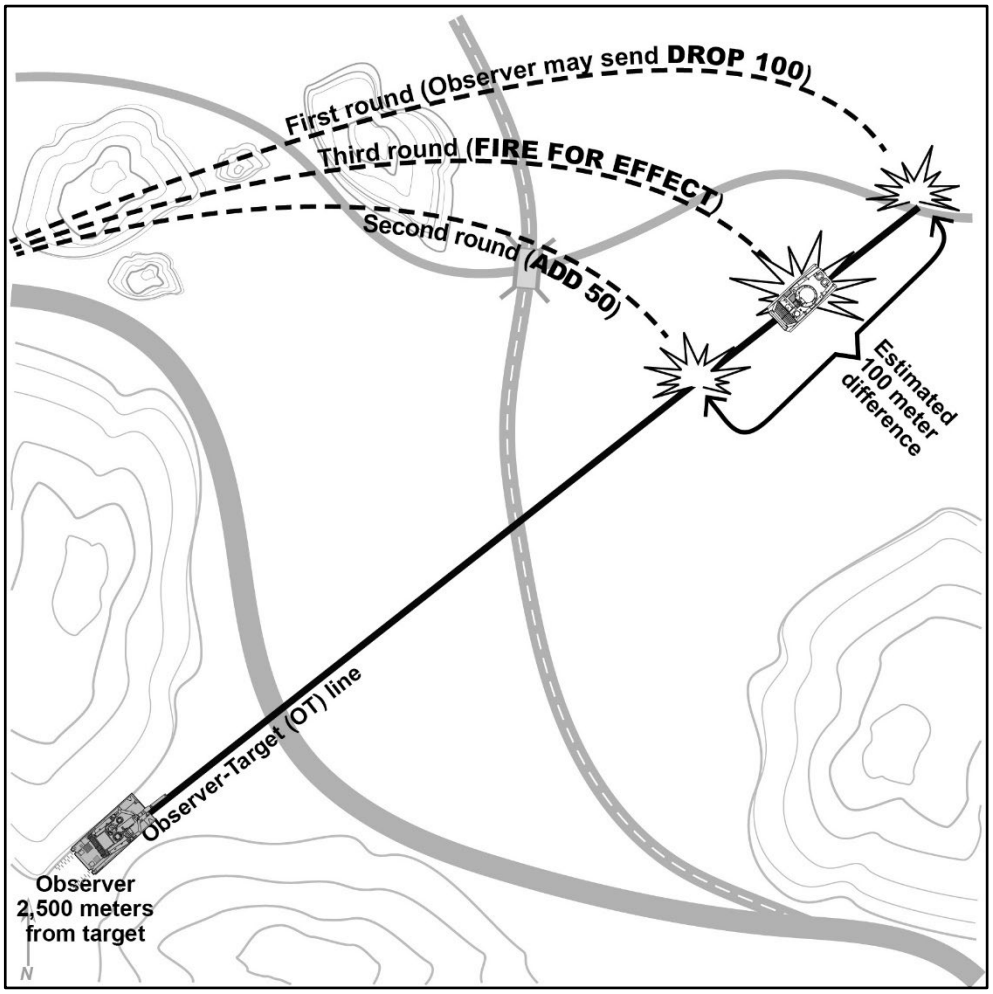

Figure B-9. Hasty bracketing

Creeping (DANGER CLOSE)

B-79. The creeping method of adjustment is used in DANGER CLOSE situations. The initial round is fired beyond the target. Adjusting rounds are moved closer to the target, 50 meters or less at a time, until the target is engaged. (See figure B-10, page 306.) This method is slow and tends to use more ammunition than other adjustments; therefore, it should be used only when Service member safety is a major concern.

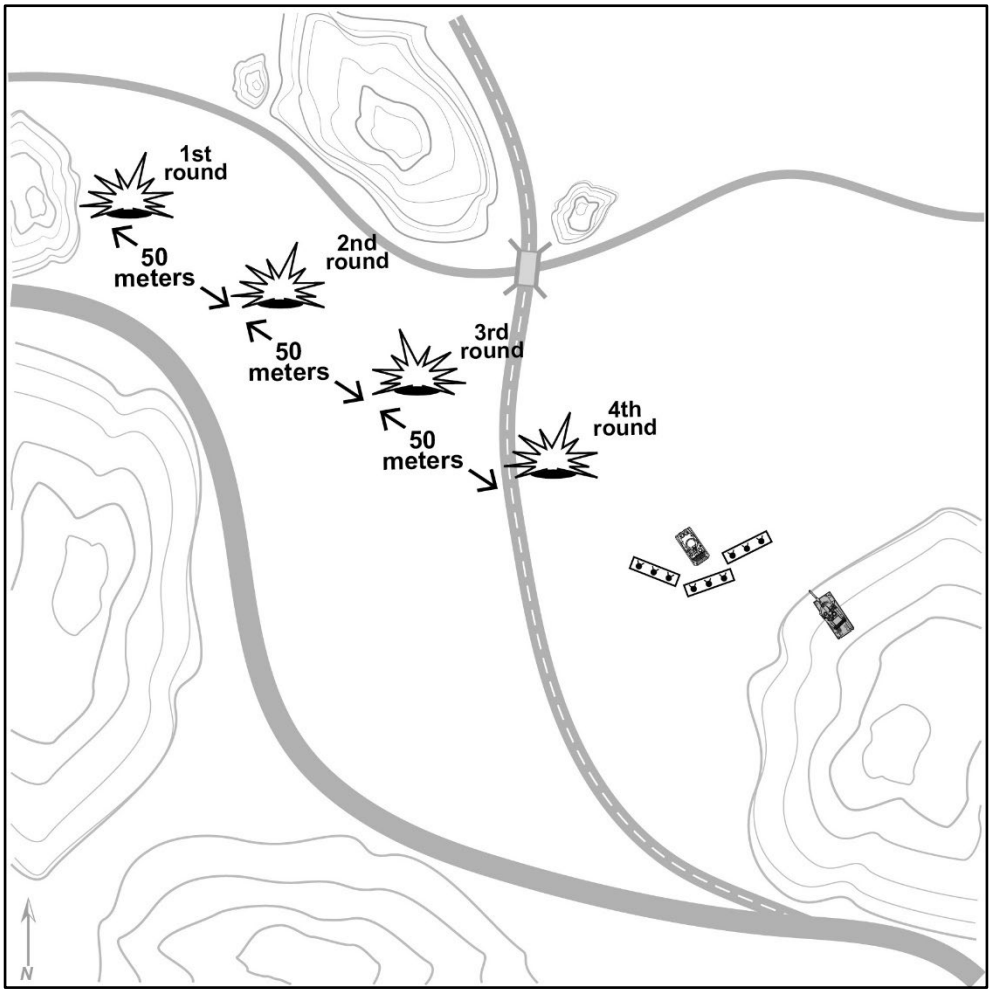

Figure B-10. Creeping method of adjustment

Refinement and Surveillance

B-80. The observer notes the results of the fire for effect. (Table B-5 illustrates various alternatives available to the observer after fire-for-effect rounds have been fired.)

Table B-5. Results and observer actions

RESULTS OF FIRE FOR EFFECT	*OBSERVER'S ACTIONS (RADIO TRANSMISSION IN PARENTHESES)*
Accurate and sufficient	End of mission, surveillance (END OF MISSION, RPG SILENCED, OVER)
Accurate, sufficient, target replot desired	Requests replot, end of mission, surveillance (RECORD AS TARGET, END OF MISSION, BMP NEUTRALIZED, OVER)
Inaccurate and sufficient	Refinement, end of mission, surveillance (RIGHT 20, ADD 20, END OF MISSION, RPG SILENCED, OVER)
Inaccurate, sufficient, target replot desired	Refinement, request replot, end of mission, surveillance (RIGHT 10, RECORD AS TARGET, END OF MISSION, BMP NEUTRALIZED, OVER)
Inaccurate and insufficient	Refinement, repeat and reenter, adjust fire (RIGHT 10, ADD 50, REPEAT, or RIGHT 10, ADD 100, ADJUST FIRE, OVER)
Accurate and insufficient	Repeat (REPEAT, OVER)

TANK PLATOON FIRE SUPPORT PLANNING

B-81. The company commander and FIST plan indirect fires; however, the platoon leader may plan and request more targets if needed.

B-82. After receiving the company offensive fire plan, the platoon leader checks it to ensure that targets are planned on all known or suspected enemy positions. The platoon's defensive fire plan should list planned targets in front of, on, behind, and to the flanks of BPs. The likely areas for these targets include observed choke points, avenues of approach, obstacles, and likely enemy support by fire positions. If more targets are necessary for either the offensive or defensive plan, the platoon leader coordinates them with the commander and the FIST.

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Appendix C

Chemical, Biological, Radiological, or Nuclear Defensive Operations

Chemical, biological, radiological, or nuclear environment is an operational environment that includes probable chemical, biological, radiological, or nuclear threats and hazards and their resulting effects (JP 3-11). Operationally, CBRN passive defense enables the unit to conduct military operations in a CBRN environment by minimizing the vulnerability of the force to the degrading effects of CBRN threats and hazards. CBRN doctrine is organized around the core functions of assess, protect, and mitigate and the integrating activity of hazard awareness and understanding. (See FM 3-11 for a detailed discussion of operations in CBRN environment.)

SECTION I – ASSESS CHEMICAL, BIOLOGICAL, RADIOLOGICAL, OR NUCLEAR THREATS AND HAZARDS

C-1. The goal of the integrating activity of hazard awareness and understanding is gathering and interpreting data on CBRN hazards and using it to comprehend the implication of CBRN hazards and their impact on the OE, mission, and force. A basic understanding of the CBRN threats and hazards will aid in understanding associated risks and survivability in CBRN environments.

C-2. *Chemical hazards* are any chemical manufactured, used, transported, or stored that can cause death or other harm through toxic properties of those materials, including chemical agents, chemical weapons prohibited under the Chemical Weapons Convention, and toxic industrial chemicals (JP 3-11). Chemical hazards may include chemical warfare agents, military chemical compounds, toxic industrial chemicals, and nontraditional chemical agents.

C-3. Biological hazard is an organism, or substance derived from an organism, that poses a threat to human or animal health. (See JP 3-11.) Biological hazards may be biological weapons, naturally occurring endemic and zoonotic diseases, and natural emerging or reemerging disease outbreaks. Toxic industrial biological hazards include biological material manufactured, used, transported, or stored by industrial, agricultural, medical, or commercial processes which could pose a hazard. Biological hazards are difficult to detect due to lack of detectors. Therefore, the first indication of a biological hazard will likely be the onset of symptoms which may mimic a cold or flu.

C-4. Radiological hazards include any electromagnetic or particulate radiation that can produce ions to cause damage, injury, or destruction. Radiological hazards also include toxic industrial radiologicals. (See JP 3-11.) Protection against radiation depends on the type of radioactive particle. Various actions are required to keep radioactive exposure as low as reasonably achievable. Beta, gamma, and neutron radiation require external protection such as distance and shielding. Individual protective equipment also protects

against beta hazards. Alpha radiation is primarily an inhalation and ingestion hazard which can spread downwind. Efforts should be made to minimize alpha particle dispersion by protecting equipment including masks, minimizing movement that raises dust, avoiding contaminated areas, and wearing a mask when exposed to a particular hazard.

C-5. Nuclear hazards are dangers associated with the blast, thermal, and radiation effects from nuclear explosion. (See JP 3-11.) Nuclear detonations produce both prompt and residual radiation hazards. The nature and intensity of nuclear detonation effects are determined by the type of weapon, its yield, and the height of burst. Prompt thermal radiation causes severe burns and secondary fires. Ionizing radiation is a significant threat to personnel and materiel. Residual radiation from fallout may create a lingering, widespread radiological hazard that limits military operations.

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, OR NUCLEAR PROTECTION

C-6. CBRN protection measures mitigate the effects of CBRN threats and hazards on Soldiers, equipment, and facilities. Protecting Soldiers from CBRN hazards is essential to preserving combat power. Tasks that enable CBRN protection include the following:

- Employ individual protective equipment and other CBRN defense equipment.
- Establish CBRN alarm conditions.
- Implement the CBRN warning and reporting system.
- Exercise personal hygiene and force health protection programs.
- Utilize shielding and protective cover.

C-7. CBRN protection is an integral part of all operations. CBRN protection involves providing filtration and/or hardening positions, and facilities. Tank overpressure systems keep out contamination and armor shields against nuclear blast and heat. Protection against CBRN hazards also includes assuming appropriate MOPP levels (see table C-1), reacting appropriately to CBRN hazards, maintaining dispersion, overhead cover, employing alarms upwind, and having personnel trained to operate CBRN alarms, detection, and monitoring capabilities. Individual protective equipment includes a protective mask and suit, overboots, and gloves. (See ATP 3-11.32 for more details on CBRN protection.)

C-8. Generally, higher HQ establishes the minimum MOPP-level for subordinate units. Leaders can expect lower work rates in MOPP 4 than in MOPP 0. They reevaluate the ability to meet mission requirements and communicate impacts to higher HQ.

C-9. The joint service lightweight integrated suit technology provides protection for 45 days if laundered (up to 6 times) or up to 120 days if not laundered. The joint service lightweight integrated suit technology provides protection for up to 24 hours after it is contaminated.

Table C-1. Mission oriented protective posture levels

Level/ Equipment	*MOPP Ready*	*MOPP0*	*MOPP1*	*MOPP2*	*MOPP3*	*MOPP4*	*Mask Only*
Mask	Carried	Carried	Carried	Carried	Worn	Worn	Worn ***
JSLIST/ protective suite	Ready*	Avail**	Worn	Worn	Worn	Worn	
Overboots	Ready*	Avail**	Avail**	Worn	Worn	Worn	
Gloves	Ready*	Avail**	Avail**	Avail**	Avail**	Worn	
Helmet Cover	Ready*	Avail**	Avail**	Worn	Worn	Worn	

Notes. *Items available to Soldier within 2 hours with replacement available within 6 hours.

**Items must be positioned within arms-reach of the Soldier.

***Never "mask only" if nerve or blister agents are used in area of operation.

Legend: Avail—available; JSLIST—joint service lightweight integrated suit technology; MOPP—mission-oriented protective posture

DETERMINING APPROPRIATE MISSION ORIENTED PROTECTIVE POSTURE LEVEL

C-10. Leaders determine the appropriate MOPP level by assessing mission variables and the impact of increased protection levels. The higher-level commander establishes the minimum level of protection for subordinate elements. Subordinate units may increase the MOPP level but may not decrease it. Regardless of the directed MOPP level, in the event of an actual or suspected chemical, biological, and some radiological hazards, Soldiers will immediately don their protective mask and then the remainder of their individual protective equipment to attain MOPP 4. (See ATP 3-11.32 for more information.)

C-11. When a CBRN hazard is recognized, everyone in the platoon must be warned and assume the directed MOPP level. Warning methods include automated alarms, vocal alarms, nonvocal alarms (horn blasts or banging of metal-to-metal objects), and visual alarms. The most common are a show of GAS with the appropriate hand-and-arm signals.

C-12. If a CBRN hazard is located, the contaminated area should be marked. The CBRN warning and reporting system and standardized contamination markers contribute to effective warning procedures.

C-13. The M1 series of tanks overpressure system protects the crew from chemical, biological, and radiological hazards. The tactical situation determines whether open- or closed-hatch operations are more appropriate. Steps for placing this system into operation are found in the following technical manuals:

- TM 9-2350-264-10-2.
- TM 9-2350-388-10-1.

C-14. Many factors may influence MOPP reduction decisions. Factors may include how the threat has changed if no attack has occurred, or what contamination mitigation measures have been completed if an attack did occur. Commanders must evaluate the situation and mission objectives. For example, the commander must assess the criticality of the current mission, potential effects of personnel exposure, and the impact on the casualty care system.

SECTION II – ACTIONS BEFORE, DURING, AND AFTER AN ATTACK

C-15. The tank platoon may face multiple CBRN hazards. If the platoon cannot avoid a CBRN hazard, it must be prepared to protect personnel and equipment from exposure and mitigate its effects. The key to operations in a CBRN environment is the tank platoon's proficiency in rapidly and correctly implementing CBRN defense SOPs.

CHEMICAL DEFENSE

C-16. Before and during the attack, give the alarm. If enough warning is received, have personnel move inside tanks and cover critical equipment prior to exposure. All Soldiers don MOPP 4. In most cases, close hatches to prevent contamination from entering the tank. Vehicles that are equipped with CBRN over pressurization turn the system on. After an attack, conduct immediate decontamination of exposed skin and critical equipment Use M256 chemical agent detector kits to determine the type of agent and forward a CBRN-1 chemical report.

C-17. Tactical and safety considerations (such as observation of the terrain, enemy disposition, and how much contamination may enter the vehicle) may outweigh the need to keep the tank's hatches closed. Depending on the tactical situation and unit SOP, platoon members may need to keep their hatches in the open or open-protected position.

BIOLOGICAL DEFENSE

C-18. A biological attack may be difficult to determine, the first indication may be the onset of symptoms. Immunizations and good hygiene practices are the best defense. After a biological attack, crewmen must assume that all surfaces have been exposed to the biological agent. Do not eat exposed 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 exposed water must be boiled for at least 15 minutes before drinking it.

NUCLEAR DEFENSE

C-19. This discussion focuses on defensive measures the platoon must be prepared to take to protect tank crewmen, whether they are in their vehicle or have dismounted.

MOUNTED DEFENSIVE ACTIONS

C-20. If time permits, the platoon should take the following actions:

- Position each vehicle behind the best available cover with the front of the vehicle toward the blast.

- Point the gun 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.
- Take action to protect the head and eyes, and as necessary, wear helmets and eye protection whenever possible.

DISMOUNTED DEFENSIVE ACTIONS

C-21. Immediately drop flat on the ground (face down) or to the bottom of a fighting position, facing away from the fireball, never run for cover. Cover as much exposed skin as possible. Keep eyes tightly closed. 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.

DEFENSE AFTER A NUCLEAR ATTACK

C-22. Once the attack has ended, the observer forwards a CBRN-1 nuclear report, organizes survivors, secure and inspects equipment, repairs and reinforces the BP, treats casualties, improve protection against possible fallout, and begin continuous monitoring. If the radiation dose rate reaches a hazardous level after fallout has ended, be prepared to move, on order, to a less hazardous area.

C-23. When operating in or crossing radiologically contaminated areas, vehicles should be closed tightly, with over pressurization on. Crewmen wear their protective masks to prevent inhalation of radiological particles; 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 decontaminated, if necessary.

C-24. At a minimum, each crew should monitor their total dose using total dose equipment such as the UDR-13 or DT-236. Crews should monitor and report total dose and dose rates to the company to comply with operational exposure guidance and track of crew radiation exposure.

MARKING CONTAMINATED AREAS

C-25. Contamination must be marked so unsuspecting personnel are not exposed. When platoon monitoring teams detect a CBRN hazard, they mark all likely entry points into the area and report the contamination to higher HQ. 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.

TYPES OF MARKERS

C-26. U.S. forces use North Atlantic Treaty Organization standard markers to enable allies to recognize the hazards. The colors and inscriptions on a marker indicate the type of hazard. Additional information is written on the front of the sign.

MARKING PROCEDURES

C-27. Markers face away from the contamination. For example, if markers are placed on the edge of a contaminated area to mark a radiological hot spot, they face away from the point of the highest contamination reading. Markers are placed along roads and trails and at other likely points of entry. When time and mission permit, additional markers should be emplaced. The distance between signs varies. In open terrain, they can be placed 25 to 100 meters apart. In hilly or wooded areas, they should be placed more frequently. An observer should be able to stand in front of a marker and see the markers to the left and right of it.

C-28. 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 HQ.

SECTION III – UNMASKING PROCEDURES

C-29. During an actual or suspected chemical attack, Soldiers will go to MOPP 4. Once masked, Soldiers will not unmask until there is no remaining chemical threat, and only under the approval of their commander Use the procedures outlined in the following paragraphs C-30 through C-31 to determine if unmasking is safe.

UNMASKING WITH M256/M256A1/A2 KIT

C-30. If an M256/M256A1/A2 detector kit is available, use it to supplement the 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 a crewmember per tank:
  - Selected crewmembers start the unmasking procedures.
  - Disarm and if possible, they move to a shady place because bright, direct sunlight can cause pupils in the eyes to constrict, giving a false symptom.
- The selected personnel unmask for 5 minutes, then clear and reseal their masks.
- Observe the personnel for 10 minutes and if no symptoms appear, request permission from company HQ to signal ALL CLEAR.
- Watch all crewmembers for possible delayed symptoms and always have first aid treatment immediately available in case it is needed.

Note. Time to complete the M256/M256A1/A2 detector kit, including using M8 detector paper for liquid, takes approximately 20 minutes. Two kits completed simultaneously along with unmasking procedures with the M256/M256A1/A2 detector kit will take approximately 35 minutes to complete.

UNMASKING WITHOUT M256/M256A1/A2 KIT

C-31. If an M256/M256A1/A2 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 the following procedures:

- The senior Soldier selects a crewmember per tank.
- Selected crewmembers take a deep breath and break their mask seal, keeping their eyes wide open.
- After 15 seconds, the crewmembers clear and reseal their masks.
- Crewmembers are observed for 10 minutes.
- If no symptoms appear, the same crewmembers break the seal, take two or three breaths, and clear and reseal their masks.
- Crewmembers are observed for 10 minutes.
- If no symptoms appear, the same crewmembers unmask for 5 minutes, and then redon their masks.
- If no symptoms appear in 10 minutes, senior Soldier requests permission from company HQ to signal ALL CLEAR.
- Once ALL CLEAR signal is given, continue to observe all crewmembers in case delayed symptoms develop.

ALL-CLEAR SIGNAL

C-32. Units pass the all-clear signal by word of mouth through their chain of command. Leaders initiate the signal 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.

SECTION IV – DECONTAMINATION

C-33. During continuous operations in areas of contamination, decontamination is essential to prevent casualties and severe combat degradation. The tank platoon gains maximum benefit from the available time and decontamination resources by observing the following principles:

- Speed—the platoon should execute decontamination as soon as possible to minimize absorption and transfer.
- Need—decontaminate only contaminates areas that are necessary.
- Priority—decontaminate the most essential capabilities first.

- Limited area—decontaminate as far forward as possible, near the contaminated area to limit the spread of contamination.

C-34. These principles are consistent with doctrine that places the burden of decontamination at BN or company level. For this reason, the tank platoon must develop a thorough SOP covering decontamination methods and priorities, using all available assets to the maximum extent possible. (See table C-2.) (See ATP 3-11.32 for a more detailed examination of CBRN decontamination procedures.)

Table C-2. Immediate and operational levels of decontamination tasks

Levels	*Purpose*	*Tasks*	*Best Start Time*	*Performed By*
Immediate	- Saves lives - Stops agent from penetrating - Limits agent spread	Skin decontamination	Before 1 minute	Individual
		Personal wipe down	Within 15 minutes	Individual or buddy
		Operators wipe down	Within 15 minutes	Individual or crew
		Spot decontamination	Within 15 minutes	Individual or crew
Operational	- Continues operations in a contaminated environment - Removes gross contamination - Limits agent spread	MOPP gear exchange	Within 6 hours	Contaminated unit
		Vehicle wash down	Within 6 hours (CARC)	
			Or within 1 hour (non-CARC)	Battalion or decontamination unit
Legend: CARC—chemical agent resistance coating; MOPP—mission-oriented protective posture				

IMMEDIATE DECONTAMINATION

C-35. Immediate decontamination minimizes casualties and limits the spread or transfer of contamination. This action is carried out by the contaminated individual and the purpose is to save lives and reduce penetration of agents into surfaces. This may include decontamination of personnel, clothing, and equipment. Immediate decontamination should help prevent casualties and permit the use of individual equipment and key systems.

SKIN DECONTAMINATION

C-36. Skin decontamination is a basic survival skill and should be performed within 1 minute of being contaminated. Decontaminate the eyes by flushing with water as soon as possible following contamination. During skin decontamination and personal wipe down, each Service member carries their own skin decontamination kit. The skin

decontamination kit should be stored in the individual's mask carrier or if issued, in the individual equipment carrier bag. Personal wipe down is also done with these kits.

PERSONAL WIPE DOWN

C-37. Personal wipe down decontamination is the most effective when performed within 15 minutes. Use detector paper or a chemical monitor to locate chemical contamination. Use the individual equipment decontamination kit, decontamination kit, or an expedient device such as a stick or brush to remove gross contamination from skin and clothing. Use a radiation detection, indication, and computation set to locate radiological contamination; and then brush, wipe, or shake it off.

C-38. Teams and crews use joint chemical agent detectors to locate chemical contamination. In the event of chemical or biological contamination of optics, crews conduct decontamination of vision blocks and optics including machine guns and close combat missile system optics, using the M334 Decontamination Kit Individual Equipment which augments the M295. The M334 may be used on all surfaces to include sensitive equipment, while the M295 is less suited for sensitive equipment. If the company issues the M100 Sorbent Decontamination System, it can also be used to wipe down chemically contaminated surfaces

OPERATOR WIPE DOWN

C-39. Operator wipe down decontamination is most effective when done within 15 minutes of contamination to surfaces that operators need to touch or contact to operate the equipment. Radiological contamination in the form of dust particles may be scraped or brushed off. During operator wipe down, the unit should use individual equipment decontamination kits.

OPERATIONAL DECONTAMINATION

C-40. Operational decontamination allows a force to continue fighting and sustain momentum after being contaminated and eliminating or reducing the duration that MOPP gear must be worn. It limits the transfer of contamination by removing gross contamination on equipment personnel. Operational decontamination coupled with weathering may alleviate the requirements for further decontamination.

C-41. Operational decontamination is carried out by the contaminated unit (with possible assistance from the CAB decontamination team or CBRN unit). Operational decontamination is restricted to the specific parts of contaminated, operationally essential equipment, material, and work areas to minimize contact and transfer hazards and to sustain operations.

MISSION ORIENTED PROTECTIVE POSTURE GEAR EXCHANGE

C-42. MOPP gear exchange should be performed as mission allows but is most effective when done within 24 hours of being contaminated. A MOPP gear exchange allows a unit to remove the gross contamination from personnel and equipment and return to an increased operational readiness in the pursuit of mission accomplishment.

C-43. Tank platoons can conduct MOPP gear exchange and MOPP drop to decontaminate personnel during operational decontamination. They can also conduct

tactical contamination of equipment and vehicle washdown. These operational decontamination operations are explained below. These operations typically require equipment and supplies from the company or external units.

C-44. MOPP drop removes contaminated MOPP gear and personnel do not replace it. MOPP drop is performed when a persistent contact hazard no longer exists. Selective unmasking always precedes MOPP drop. It is most effective within one to six hours of being contaminated, if the mission allows. It removes gross contamination from personnel and their individual combat equipment and increases operational readiness. IPE is systematically removed (dropped) and individuals are unmasked to rearm and refit and prepare for follow-on operations.

VEHICLE WASH DOWN

C-45. Vehicle wash down is conducted as far forward as possible by the BN decontamination specialist with a decontamination apparatus and assistance from the company or troop decontamination team. It is most effective if started within 1 hour after contamination. There are two steps in vehicle wash down as follows:

- Step 1. Button up the vehicle and secure equipment.
- Step 2. Wash down the vehicle and equipment with hot, soapy water (use joint general-purpose decontaminant if available) for 2 to 3 minutes.

C-46. Contamination will accumulate and be encapsulated in dirt between sprockets, road wheels, and between tracks. The air induction system from pre-cleaner to plenum may also be contaminated and may require replacement V-packs to prevent restricted or blocked air flow into the turbine.

C-47. Because speed is important, do not check vehicles for contamination after the vehicle has been washed down. Remove only gross contamination.

Appendix D

Infantry and Armor Integration

Tank platoons can be attached or assigned to Infantry rifle organizations. Infantry and tanks fight as part of a combined arms team to maximize their respective capabilities and minimize their limitations. The principles of offense, defense, and movement discussed in chapters 3, 4, and 5 are applicable. Open terrain such as desert, plains, and open countryside are conducive to the employment of tank formations. Infantry supports the forward movement of the tanks by providing local security, retaining key terrain, clearing dug-in enemy positions, and enhancing direct fires with organic small arms and AT fires. Restricted terrain (such as built-up areas, forests, and jungles) increases the vulnerability of tanks. In close terrain, it is more advantageous for tanks to take a supporting role in the forward movement of the Infantry. Tanks provide close-in direct fire support against hard and soft targets that could impede the Infantry's advance.

SECTION I – TASK ORGANIZATION

D-1. Task organized to support an Infantry BN, armor platoons generally perform in one of several ways: as the primary maneuver element (main effort); in a direct fire support role when Infantry is the primary maneuver element; or as part of the task force reserve, often in a reinforcing or counterattacking role in an antiarmor defense mission. The commander bases their decision on which method to use on METT-TC (I) factors.

Note. In some situations, the tank platoon also may be used as a separate special platoon, or it may be attached to one of the Infantry companies for direct support.

D-2. The platoon is the lowest level at which the armor leader must be trained to interact with a controlling HQ. The platoon leader must act as the armor force advisor to the BN commander. The tank platoon must rely on the Infantry staff for immediate logistical support; however, if the platoon's parent company is in the vicinity, they may be able to coordinate assistance through the company commander or company XO. Still, such planning and coordinating support may not be available.

INFANTRY RIFLE BATTALION

D-3. The Infantry BN has an HQ and HQ company; three Infantry rifle companies, each with three Infantry rifle platoons; and an Infantry weapons platoon. The combination of rifle companies, a weapons platoon, BN scouts, mortars, and snipers allow the commander to internally task-organize as needed. (See ATP 3-21.20 for more information.)

D-4. The Infantry rifle BN within the IBCT can deploy rapidly and can be sustained by an austere support structure. It conducts operations against conventional and unconventional enemy forces in all types of terrain and climate conditions. The BN's composition and training uniquely equip it to conduct its mission. In addition to its primary warfighting missions, the Infantry BN may be tasked to perform other types of operations semi-independently or as an integral part of a larger force.

D-5. The Infantry BN conducts entry operations by ground, airland, air assault, or amphibious assault (via surface and vertical) into austere areas of operations with little or no advanced notice. Airborne Infantry BNs can conduct vertical envelopment by parachute assault. The Infantry BN is particularly effective in urban terrain, where subordinate Infantry units can infiltrate and move rapidly to the rear of enemy positions.

D-6. When tank platoons are task organized throughout the Infantry brigade, Infantry BNs normally do not possess the required logistical redundancy to sustain them. To mitigate this gap, main and supporting efforts must be provided with corresponding sustainment packages and tank platoons must be given missions that do not exceed the sustainment capability that can be provided. Special consideration should be given to maintenance, recovery, and supply.

D-7. The Infantry BN support infrastructure is considered insufficient to support tanks during company/platoon sized operations. The FSCs must be task organized to support elements below the company.

INFANTRY RIFLE COMPANY

D-8. The Infantry rifle company has an HQ section, three rifle platoons, a mortar section, and a UAS team. (See figure D-1.) Habitual attachments to the Infantry rifle company include a FIST and combat medics. The company's composition and training uniquely equip it to conduct missions against conventional and hybrid threats in all types of terrain and climate conditions. In addition to the Infantry rifle company's primary warfighting mission, it performs company-level tasks in support of stability and defense support of civil authorities' tasks, semi independently or as an integral part of a larger force. (See ATP 3-21.10 for more information.)

D-9. The Infantry rifle company is an expeditionary formation optimized for dismounted operations in complex terrain. The rifle company conducts entry operations by ground, airland, air assault, or amphibious assault (via surface and vertical) into austere areas of operations with little or no advance notice. Airborne Infantry rifle companies can conduct vertical envelopment by parachute assault. The rifle company is particularly effective in urban terrain, where subordinate Infantry units can infiltrate and move rapidly to the rear of enemy positions. The commander can enhance tactical mobility using rotatory and fixed-wing airlift. The Infantry rifle company's capabilities and limitations include:

- Strategic and operational deploy ability (may be part of the dominant arm during initial entry phase).
- Entry operations to gain the initiative early, seize and hold ground, and mass fires to stop the enemy.
- Forcible entry operations, through Airborne assault (Airborne Infantry rifle companies), air assault, and amphibious operations.

- Offensive, defensive operations, and tactical enabling operations in all types of environments.
- Screen and guard missions against similarly equipped enemy forces.
- Dismounted operations in restrictive or severely restrictive terrain.
- Transportable by Army aviation brigades' cargo helicopters CH-47, UH-60, and tilt-rotor utility helicopters.

D-10. The Infantry company has the following organizational weapons capabilities:

- Three maneuver platoons with three rifle squads and a weapons squad.
- Weapons squads have two javelin or 84-mm M3 Multi-role Antiarmor Antipersonnel Weapon System (MAAWS) antiarmor weapons systems and two medium machine guns per platoon.
- A mortar section with two 60-mm mortar squads per company.
- A UAS team.

D-11. Infantry company limitations vary based on type of formation. While insertion means vary, all Infantry companies within the IBCT are comprised of foot-mobile Soldiers and require organic or supporting unit vehicles for increased mobility of troops. Other limitations include:

- Enhanced situational awareness, including a common operational picture, within the company HQ.
- Reduced logistics requirement compared to an Armor and mechanized Infantry company team and Stryker brigade combat team (SBCT) Infantry rifle company.

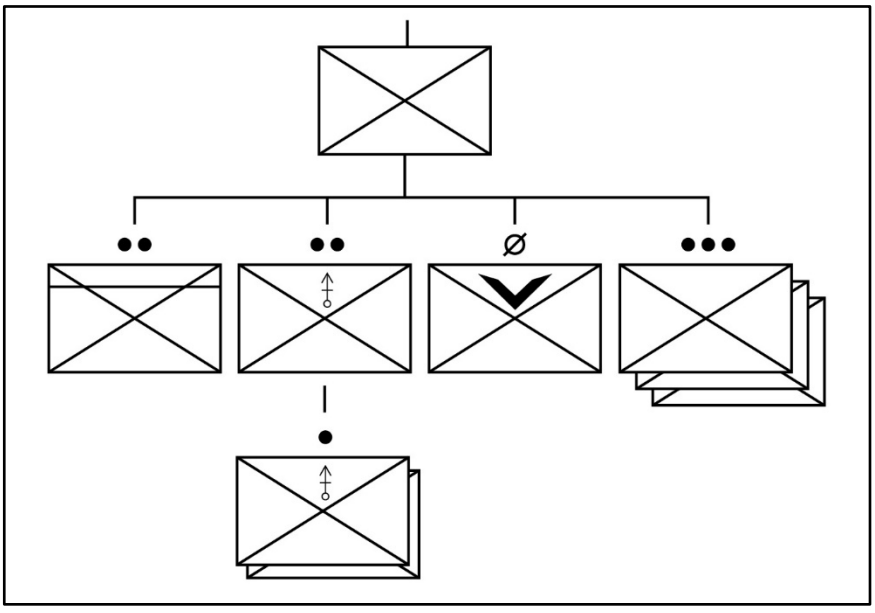

Figure D-1. Infantry rifle company

INFANTRY RIFLE PLATOON AND SQUAD

D-12. Infantry rifle platoon is organized with an HQ, three rifle squads and a weapons squad with two medium machine gun teams and two antiarmor javelin missile teams. (See figure D-2.) The platoon and squads can conduct offensive, defensive, and stability or defense support of civil authorities' tasks. The Infantry rifle platoon and squads can deploy worldwide and conduct large-scale combat operations. (See ATP 3-21.8 for more information.)

D-13. The mission of the Infantry rifle platoon is to close with the enemy using fire and movement to destroy or capture enemy forces, or to repel enemy attacks by fire, close combat, and counterattack. The Infantry rifle platoon leader exercises command and control and directs the operation of the platoon and attached units while conducting combined arms warfare throughout the depth of the platoon's AO. Platoon missions, although not inclusive, may include reducing fortified areas, infiltrating and seizing objectives in the enemy's rear, eliminating enemy force remnants in restricted terrain, securing key facilities and activities, and conducting operations in support of stability operations tasks. Reconnaissance and surveillance operations and security operations remain a core competency of the Infantry rifle platoon and squad. The following lists capabilities and limitations of the Infantry rifle platoon and squad:

- Offensive and defensive operations in all types of environments, day and night.
- Seize, secure, occupy, and retain terrain.
- Destroy, neutralize, suppress, interdict, disrupt, block, canalize, and fix enemy forces.
- Breach enemy obstacles.
- Feints and demonstration activities to deceive the enemy.
- Screen and guard friendly units.
- Reconnoiter, deny, bypass, clear, contain, and isolate. These tasks might be oriented to terrain and enemy.
- Small-unit operations such as an ambush or raid.
- Participate in a cordon and search or search and attack as part of a larger force.
- Air assault operations.
- Airborne operations (airborne units only).
- Operate with mounted forces.
- Operate with special operations forces.
- Amphibious operations.

D-14. The Infantry rifle platoon and squad have the following organizational weapons capabilities:

- Each platoon has three nine Soldier rifle squads and one nine Soldier weapons squad.
- Each weapons squad has two javelin or 84-mm M3 MAAWS antiarmor weapons systems and two medium machine guns per platoon.
- Each squad is equipped with two light machine guns and two M320 grenade launchers.

D-15. The Infantry rifle platoon and squad have the following limitations:

- Limited vehicle mobility, the foot speed of organic elements may establish the pace of operations.

- Vulnerable to enemy armor, artillery, and air assets when employed in open terrain.
- Vulnerable to CBRN hazard due to limited decontamination capability.

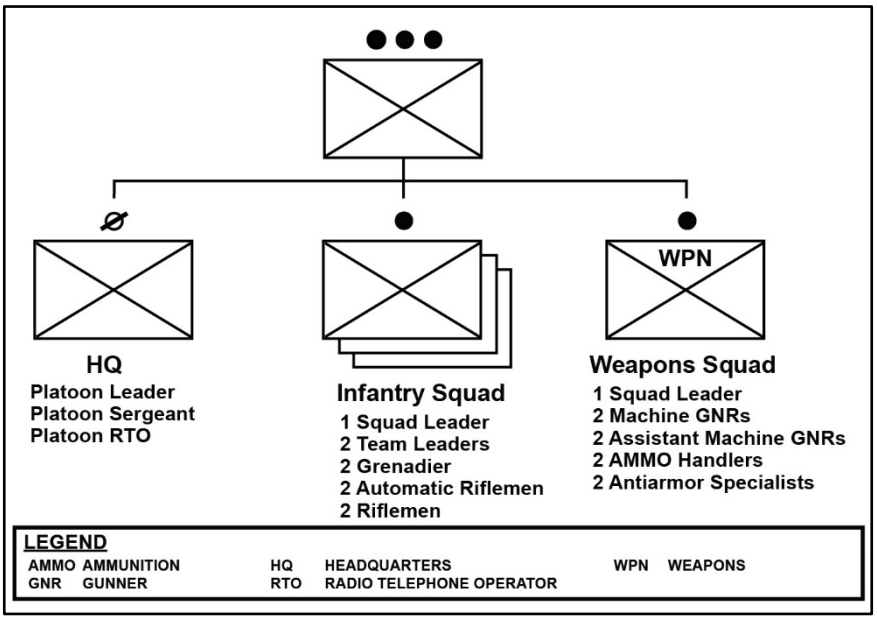

Figure D-2. Infantry rifle platoon

D-16. Infantry units can operate in all terrain and weather conditions. They are considered a dominant force because of rapid strategic deployment. In such cases, they can gain the initiative early, seize and retain or control terrain, and mass fires to stop the enemy. The fundamental considerations for employing Infantry units result from the missions, types, equipment, capabilities, limitations, and organization of units.

STRYKER BRIGADE COMBAT TEAM BATTALION

D-17. The SBCT Infantry BN is comprised of three Infantry rifle companies, and HQ company, and normally has an FSC attached from the brigade support BN. Its combat power resides mostly with its three rifle companies-each with three rifle platoons and a mortar section. The BN supports its combat power with its Scout platoon as the primary reconnaissance and security element, its mortar platoon to provide indirect fire support, its sniper squad, its communications sections, and it can be augmented with an FSC from the brigade support BN to conduct sustainment. (See ATP 3-21.21 for more information.)

D-18. The SBCT Infantry BN can task-organize within itself to meet specific missions based on METT-TC (I). It can attach platoons to different companies to support main efforts, split its BN mortar platoon into two sections, and attach the sniper squad to a subordinate company are some examples. The SBCT combines the mobility aspect of mechanized units while emphasizing and exploiting where the Infantry fight occurs.

STRYKER BRIGADE COMBAT TEAM INFANTRY RIFLE COMPANY

D-19. The SBCT Infantry rifle company within the SBCT Infantry BNs can deploy rapidly and be sustained by a minimal support structure. The company's composition and training uniquely equip it to conduct its mission against conventional and unconventional enemy forces in all types of terrain and weather conditions. The company can support offensive, defensive, and stability tasks semi-independently or as a part of a larger force. It can be task-organized as part of an Infantry BN, CAB, an Infantry BCT, Armored BCT, or a support BN or brigade. (See ATP 3-21.11 for more information.)

D-20. The SBCT Infantry rifle company is the SBCT's main effort when conducting combined arms maneuver. Employed correctly and in synchronization with other maneuver units they close with and finish the enemy force, seize, and occupy key terrain, or repel an enemy assault. In operations, the SBCT Infantry rifle company assignment is ultimately determined by the SBCT commander's orders.

D-21. The SBCT combines the capability of a full Infantry rifle company with tactical mobility aspect that can exploit where the Infantry fight occurs. The following list highlights the capabilities and limitations of the SBCT Infantry rifle company capabilities:

- Firepower from mounted and dismounted weapon systems with various ballistic capabilities.
- Increased tactical mobility for Infantry.
- Assortment of weapons that are carried to and employed into the fight with a mobile arms room concept.
- Organic 120-mm and 60-mm mortars.
- Self-sustainment for 72 hours or mission dependent fuel consumption rates.
- Capable of conducting offensive, defensive, and stability tasks in all types of environments.

D-22. The SBCT Infantry rifle company's combat power resides mostly in its three rifle platoons—each have three Infantry rifle squads, a weapons squad, and four Strykers. SBCT Infantry rifle companies deploy worldwide to support large scale combat operations. The SBCT Infantry rifle company can operate pure or as a task organized combined arms force based upon mission variables. Effective application of the SBCT Infantry rifle company as a combined arms force can capitalize on the strengths of the company's elements while minimizing their respective limitations.

STRYKER BRIGADE COMBAT TEAM INFANTRY RIFLE PLATOON AND SQUAD

D-23. The Stryker Infantry rifle platoon consists of four Strykers (variants will differ depending on unit), a platoon HQ, three Infantry squads, a weapons squad, and a mounted element. The typical platoon organization has an Infantry squad assigned to each vehicle with the weapons squad being assigned to the platoon leaders' Stryker. Squads, individual Soldiers, and enablers are assigned to vehicles based on mission variables. Examples of this are when the weapons squad is assigned to the PSG's vehicle

or split between the PSG and platoon leaders' vehicles. The Stryker Infantry rifle platoon has many flexible employment options, and its squads can be task organized alone or as part of a combined arms force. The platoon can fight in multiple mutually supporting maneuver elements. (See ATP 3-21.9 for more information.)

D-24. Stryker Infantry rifle squads are organized the same and have the same functions as those in Infantry BCTs with the addition of a Stryker vehicle, a VC, and a vehicle driver. The squad consists of a squad leader, two fire teams, and the mounted element. The fire team is designed to fight as an organic self-contained team consisting of a team leader, automatic rifleman, grenadier, and rifleman. The rifleman may be assigned the added duty of being either the squad's AT specialist or designated marksman.

D-25. The Stryker Infantry weapons squad consists of a Stryker, squad leader, two medium machine gun teams, and a mounted element. The medium machine gun teams consist of a machine gunner, assistant machine gunner, and a mounted element consisting of a VC and driver. Each machine gun team is equipped with a M240L 7.62-mm medium machine gun with an effective range of 800 meters. The weapons squad provides the primary base of fire for the maneuver of the platoon's rifle squads with accurate fires against enemy personnel and equipment. The platoon leader may provide additional security to the weapons squad when additional firepower and protection is required.

SECTION II – ARMOR SUPPORTING INFANTRY

D-26. The tank platoon's leaders must appreciate the tactical assets and liabilities of the Infantry. While Infantry elements move much more slowly than tanks over open or unrestricted terrain, they can use restricted terrain very effectively to gain positional advantage over the enemy. Restricted terrain often provides greater survivability to the Infantry. Armor and Infantry combined arms operations require leaders to account for terrain to maximize lethality and survivability given the inherent capabilities and limitations of mounted and dismounted formations.

LIAISON

D-27. Light/heavy operations demand effective coordination between the tank platoon and the Infantry unit it is supporting. The tank platoon leader's first responsibility is to have a thorough tactical and technical knowledge of the tank's capabilities and limitations, movement speeds, cross country mobility, weapon effects, and sustainment requirements. (See chapter 1.) Based on these factors, the platoon leader then works with the Infantry company commander and BN operations staff officer to inform plans to support the Infantry. They maximize use of the tank's capabilities for lethal firepower, enhanced target acquisition and effective armor protection; the most common limitations they must overcome are the tank's relative lack of mobility and the need for close-in security in restrictive terrain situations and urban environments.

D-28. The platoon leader must ensure the controlling Infantry HQ understands the considerations for positioning and control of the tank's crew-served direct fire weapon systems are the same as those for the Infantry's crew-served and AT weapons. In addition, the platoon leader must be able to anticipate the effects of tank weapon systems on both friendly and enemy forces; for example, the platoon leader must remember that

sabot ammunition cannot be fired over the heads or flanks of unprotected Infantry because of the danger created by the discarding sabot petals and the concussion of the main gun. (See paragraph D-45 for main gun hazards of the tank.)

COMBINED ARMS

D-29. Infantry/Armor operations emphasize the need for combined arms training. Tank and Infantry must train together, or they will not be able to execute combined arms operations smoothly in combat. Effective rehearsals and training enhance coordination and execution of Infantry/Armor integration. Additionally, habitual training between Armor and Infantry forces helps to establish and reinforce SOPs, enhance interoperability and communication, ensuring seamless coordination during operations. Armor and Infantry forces must take advantage of every combined arms training opportunity.

D-30. Armor and Infantry forces must take advantage of every opportunity to train on the integration and familiarity between a tank platoon, Infantry company and platoon members. Such as, how to approach the vehicle, where to mount, how to communicate, hand and arm signals, along with the stated technical knowledge of weapon systems, optics, maximum effective ranges, combat loads, crew duties, berm drill movements, and SDZ cones, and other safety/hazards operating near a tank.

D-31. Infantry forces should incorporate the tank platoon into their direct fire planning, establishing fire control measures and SDZs. Additionally, the leader must consider whether their primary threat will be armored vehicles or Infantry. Their plan should address both mounted and dismounted threats.

D-32. Infantry protects tanks during combat operations by providing local area security over dead space and blind spots that weapon systems on combat vehicles cannot cover. Infantry can protect obstacles or flank positions that are tied into severely restricted terrain. Infantry can retain or deny key terrain if employed in strong points or well-covered positions.

SECTION III – OPERATIONAL CONSIDERATIONS

D-33. This section covers command and control, movement and maneuver, use of indirect and direct fire, current tank capabilities and limitations, sustainment, SDZs and safety. Using a scenario of a combined Infantry/Armor attack the following considerations apply when the tank platoon operates in support of Infantry.

COMMAND AND CONTROL

D-34. As discussed, the tank platoon leader becomes the principal advisor regarding the employment of the tanks. The supported Infantry unit may consolidate the tank platoon under BN control or task organize the platoon (or subordinate element) to a company.

Note. A tank section may be tactical control to a company for only a limited time to accomplish a specific task.

D-35. The tank platoon leader and PSG maintain communications with the controlling Infantry HQ. When attached at lower levels, they maintain contact with the company commander and other platoon leaders on the company net. Individual tanks and Infantry communicate with each other using one of these techniques:

- Infantry can use the troop phone, if installed on the rear of tank.
- Use of digital systems provides situational understanding at the platoon or company level and above.
- Use of the Infantry platoons FM radios. The Infantry platoon leader uses signal operating instructions information and contacts supporting tanks on the tank platoon frequency.
- Use of Infantry platoon and squad hand-held radios that are compatible with the tanks' FM radio systems.
- Visual signals. Visual signals, either prescribed by SOP or coordinated during the linkup, will facilitate simple communications.
- Wire. Tank crewmen can route WD-1 wire from the VIC-3 through the loader's hatch or vision block.

D-36. The ability to communicate during operations is essential. Communications activities such as digital, FM radio, and visual signals are established and rehearsed. The platoon leader must develop a plan and be prepared to operate with digital networks. Leaders are responsible for ensuring proper connectivity of digital systems, which enhance their ability to send and receive OPORDs and FRAGORDs, friendly graphics, locations of adjacent units, and known and templated threat locations. FM radio communications are effective in providing close-in protection for the tank; Infantrymen can observe for enemy activity while limiting exposure to enemy fires directed against the tank. During periods of degraded communications messengers and visual signals are excellent means of communication when in static positions.

D-37. In an environment where every transmission is potentially targeted, the PACE communications plan enables both mission success and survivability. To be effective, the PACE plan must be understood and rehearsed by every participant. The PACE plan is a communication plan that exists for a specific mission or task, not a specific unit, as the plan considers both internal and external unit sharing of information. The platoon leader's ability to exercise command and control during an operation can suffer due to communication systems not working properly or may be jammed, compromised, or otherwise interfered with by enemy activities.

D-38. When the platoon does not have four viable methods of communication, it is appropriate to issue a PACE plan that may only have two or three systems listed. If the platoon cannot execute the full PACE plan to the company, the platoon leader must inform the company commander with an assessment of shortfalls, gaps, and possible mitigations as part of the mission analysis process during TLPs.

MOVEMENT AND MANEUVER

D-39. When operating with Infantry, the tank platoon may execute missions either on its own or as part of a tank company. In either situation, the platoon executes reserve/reaction force missions, attacks separate objectives, or supports the advance of Infantry with close-in direct fires. Either the tanks or the Infantry can lead. The following

discussion of moving with Infantry covers a scenario in which terrain dictates the Infantry leads, and the tank platoon can be employed in one of three ways:

- It can remain stationary at the BN or company CP until requested.
- It can follow and support the Infantry, staying close enough to provide direct fire support when requested.
- During company-level tactical movement, it can overwatch the forward movement of the infantry from stationary positions.

D-40. Infantrymen conduct tactical movement until they identify an enemy force that halts their progress. (See figure D-3.) They deploy into positions that suppress enemies with direct and indirect fires, and request tank support to destroy the enemy. The tanks move forward and link up with the Infantry. (See figure D-4, page 330.) At the linkup point, the tank platoon or section leader (depending on the size of the supporting tank element) coordinates the following information with the Infantry leader:

- Enemy disposition.
- Friendly disposition.
- The tentative maneuver plan.
- Control of direct and indirect fires.
- Communications and signal information.
- Close-in protection for the tanks.
- Use of guides.
- Any additional tactical information not already covered in the OPORD or scheme of maneuver.

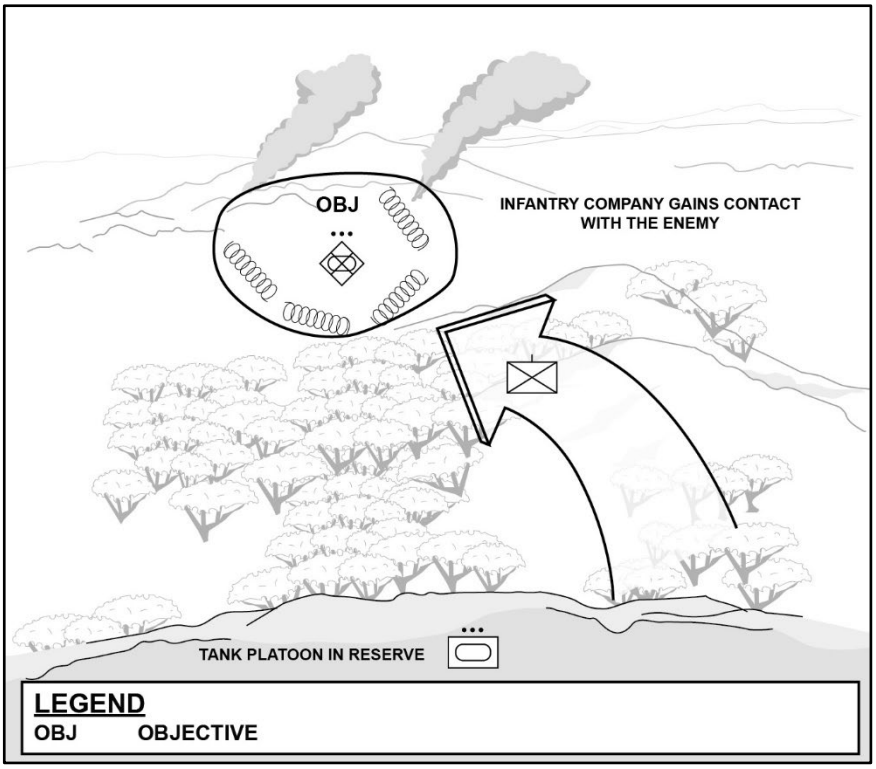

Figure D-3. Infantry leads while tank platoon remains stationary

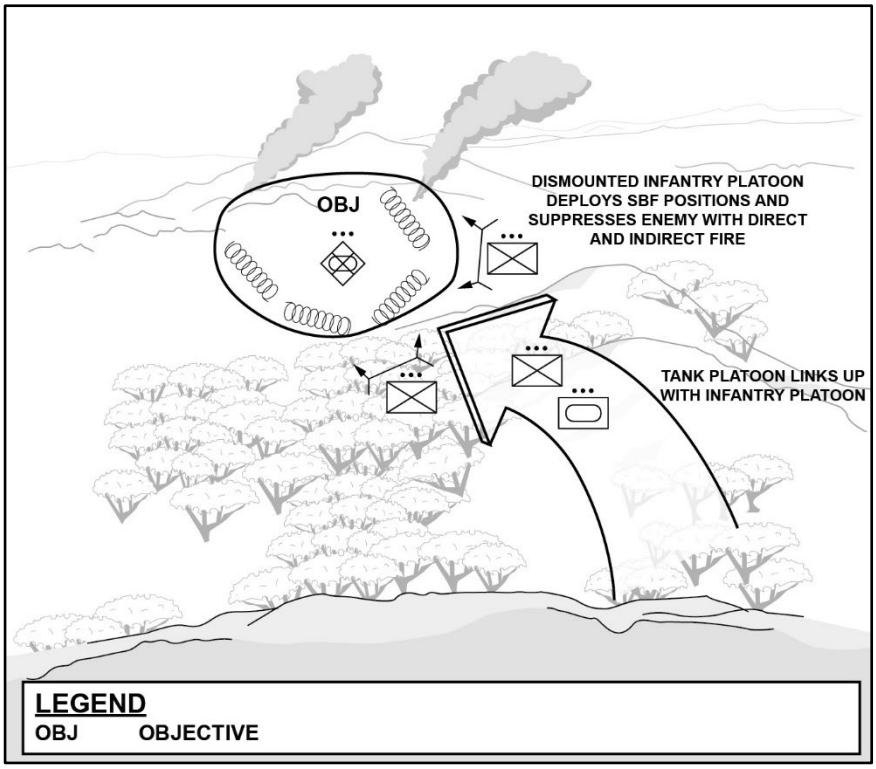

Figure D-4. Tanks move forward to linkup with Infantry

D-41. The tank platoon or section leader conducts a ground reconnaissance of the route to the final firing position and finalizes the plan with the Infantry leader. The tank platoon or section leader then returns to the platoon or section and briefs the plan to the crewmen.

D-42. Depending on task organization and terrain factors, the platoon or section moves forward to the firing position, using guides provided by the Infantry. (See figure D-5.) If the entire platoon is involved the platoon conducts bounding overwatch movement technique. If a single section is used, the trail vehicle must overwatch the movement of the lead vehicle to the firing position.

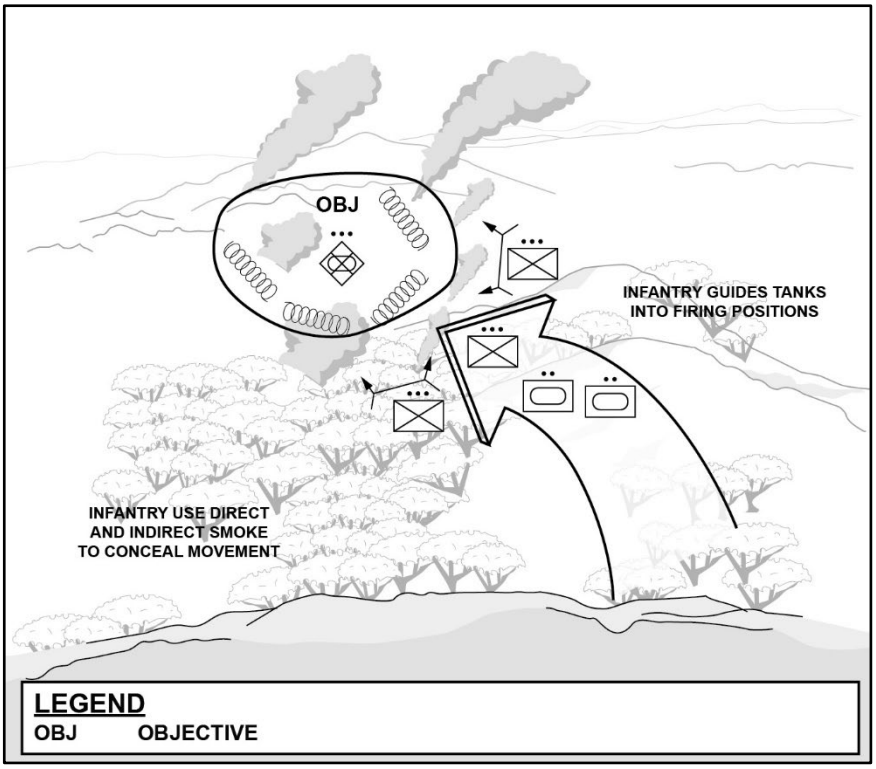

Figure D-5. Infantry guides tanks into firing position

D-43. The tank has advanced optics that provide the crew with the ability to identify targets not identified by the infantry forces. Maintaining close coordination with the Infantry for target identification is essential to for a detailed common operating picture. If tank crews cannot immediately identify targets when they reach the firing position, the Infantry designates each target using tracers, smoke grenades, or grenades fired from the M320 grenade launcher. Tank crews acquire and provide precise and overwhelming direct fire on enemy positions using main gun or machine gun fire. Only order cease fire when all enemy targets are destroyed or shift fire to a TRP if Infantry assaults the objective. (See figure D-6, page 332.)

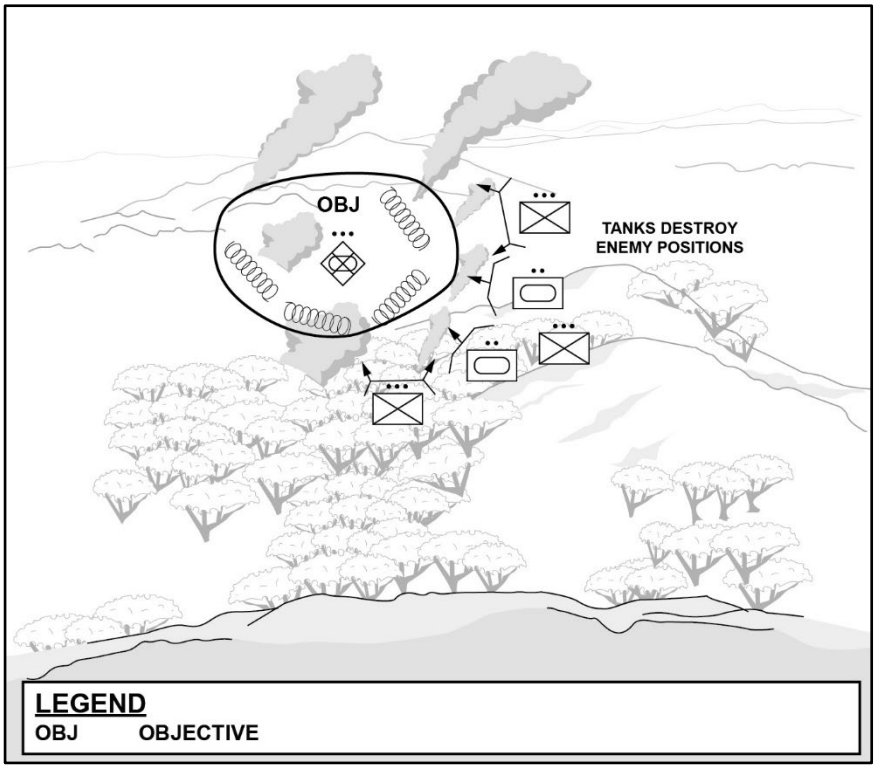

Figure D-6. Tanks destroy enemy targets

D-44. Certain situations may require that tanks lead the Infantry; this is, however, the least preferred method of light/heavy employment. Tanks must move very slowly when they lead Infantrymen (approximately 2 1/2 miles per hour). This hinders their ability to use speed as a survivability tool.

D-45. In addition, restrictive terrain severely limits the mobility of the tank platoon. It further increases the platoon's vulnerability by limiting visibility for tank crews. Without the aid of Infantrymen serving as guides and providing security, tanks have a much greater chance of becoming stuck in close terrain or of being the target of enemy fires. In these situations, the Infantry must provide close-in protection and early warning against dismounted and mounted threats.

D-46. Tanks crews can engage in a dismounted threat using their coaxial machine guns or an armored threat with their main gun. Tank crews must maintain constant communication with the Infantry, so they do not outrun the ground force. The Infantry AT assets should position themselves to overwatch tanks during tactical movement. The Infantry maintains a standoff distance to prevent injury from the splash and ricochet of enemy AT weapons and small arms fire aimed at the tanks. Additionally, the light/heavy force can expect tanks to attract the attention of mortar and artillery gunners. The enemy will use indirect fires to destroy supporting Infantry and to force tank crews to button

up, further reducing their ability to acquire targets. All armor and Infantry leaders must plan actions to counter the effects of these fires.

INDIRECT AND DIRECT FIRES

D-47. The use and control of indirect and direct fires are critical to the effective employment of armor with Infantry. Indirect fires are used to suppress enemy armor, AT weapon systems, and dismounted Infantry around the AO.

INDIRECT FIRES

D-48. The tank platoon uses its optics to detect targets and its communications systems to initiate calls for fire in support of Infantry. In addition, the noise of mortar and artillery fires, combined with the use of smoke, helps to conceal the movement of tanks moving forward, adding the element of surprise to the operation.

DIRECT FIRES

D-49. One of the primary assets of armor in working with Infantry is its ability to provide accurate, lethal direct fires from a mobile, survivable platform. The weapon systems on the tank offer unique capabilities and limitations that must be considered in relation to Infantry support. The tank commander's caliber .50 machine gun is effective against both personnel and materiel. The coaxial machine gun is an effective antipersonnel weapon. The capabilities of the main gun vary depending on the vehicle. All current tanks fire sabot, HEAT, and MPAT rounds. These have great penetrating power against armored vehicles but may not have the destructive capability necessary to destroy prepared fighting positions or penetrate walls in built-up areas.

ARMOR CAPABILITIES

D-50. Current tanks fielded in ABCTs and light Infantry divisions are the M1 Abrams series tanks. Each type of tank provides a unique capability to the maneuver BN and has the following firepower capabilities and limitations.

M1 ABRAMS SERIES

D-51. M1 series has limited ammunition storage capacity of 42 rounds of 120-mm main gun ammunition. They can fire armor-piercing fin-stabilized discarding sabot (APFSDS-T), HEAT-T, and MPAT ammunition. The tank commander can fire the M2 caliber .50 without being exposed.

SUSTAINMENT

D-52. When attached to Infantry, tank platoons must be prepared to operate under austere conditions. The key to effective sustainment support in this situation is to maintain a constant flow of reports updating the platoon's supply status and requirements. In the Infantry task force, the tank platoon leader and PSG will do much of their logistical coordination directly through the BN staff. They coordinate reporting procedures within the platoon and notify the staff when classes of supply fall below the levels of 80 percent (identified by the code word AMBER), 70 percent (RED), and 60 percent (BLACK). When a class of supply falls below 70 percent, the platoon leader

or PSG requests a resupply. Tank platoons can assist the Infantry with sustainment by carrying additional supplies on the tanks.

D-53. Fuel, ammunition, recovery, and maintenance are the primary concerns of the attached platoon. Other logistical needs are usually handled through the normal Sustainment functions of the BN. (See chapter 6 for more information on sustainment operation.)

D-54. Fuel. Fuel conservation must always be a priority. Engines should be shut down whenever possible. REDCON status should be used to help regulate engine start-up requirements and to assist in operational preparations. The tank platoon can normally support Infantry operations for 24 hours is METT-TC (I) before refueling. M1 series consumes fuel at a high rate, and their mobility is limited in terrain that does not support heavy tanks.

D-55. Ammunition. The tank platoon's ammunition requirements present a unique challenge for the Infantry BN. The type of rounds requested should be based on the S-2's analysis to fit the needs for direct fire support of the light/heavy mission. A basic load of ammunition should be located at the combat trains CP to provide for emergency resupply during periods of heavy contact.

D-56. Recovery and maintenance. When a tank is disabled, the platoon should first attempt self-recovery. If this is not possible, the crew makes the necessary coordination to secure the vehicle until recovery and maintenance personnel reach it.

D-57. Infantry personnel can be employed to provide local security during recovery operations or to protect the vehicle as the attack progresses. Recovery and maintenance assets may be part of the Infantry BN's attachments within the brigade support BN, or they may be on call from the tank platoon's parent company HQ.

HAZARD AREAS AND SAFETY

D-58. The overpressure from the main gun can kill a dismounted Infantryman within a 90-degree arc extending from the muzzle of the gun tube out to 200 meters. From 200 to 1,000 meters along the gun target line, on a frontage of approximately 400 meters, dismounted Infantry must be aware of the danger from discarding sabot petals, or fragments of the projectile body of high explosive rounds, which can kill or seriously injure personnel. (See figure D-7.)

Note. See AR 385-63 for a more detailed description of hazard areas and safety when determining safety of rounds when in proximity of Infantrymen.

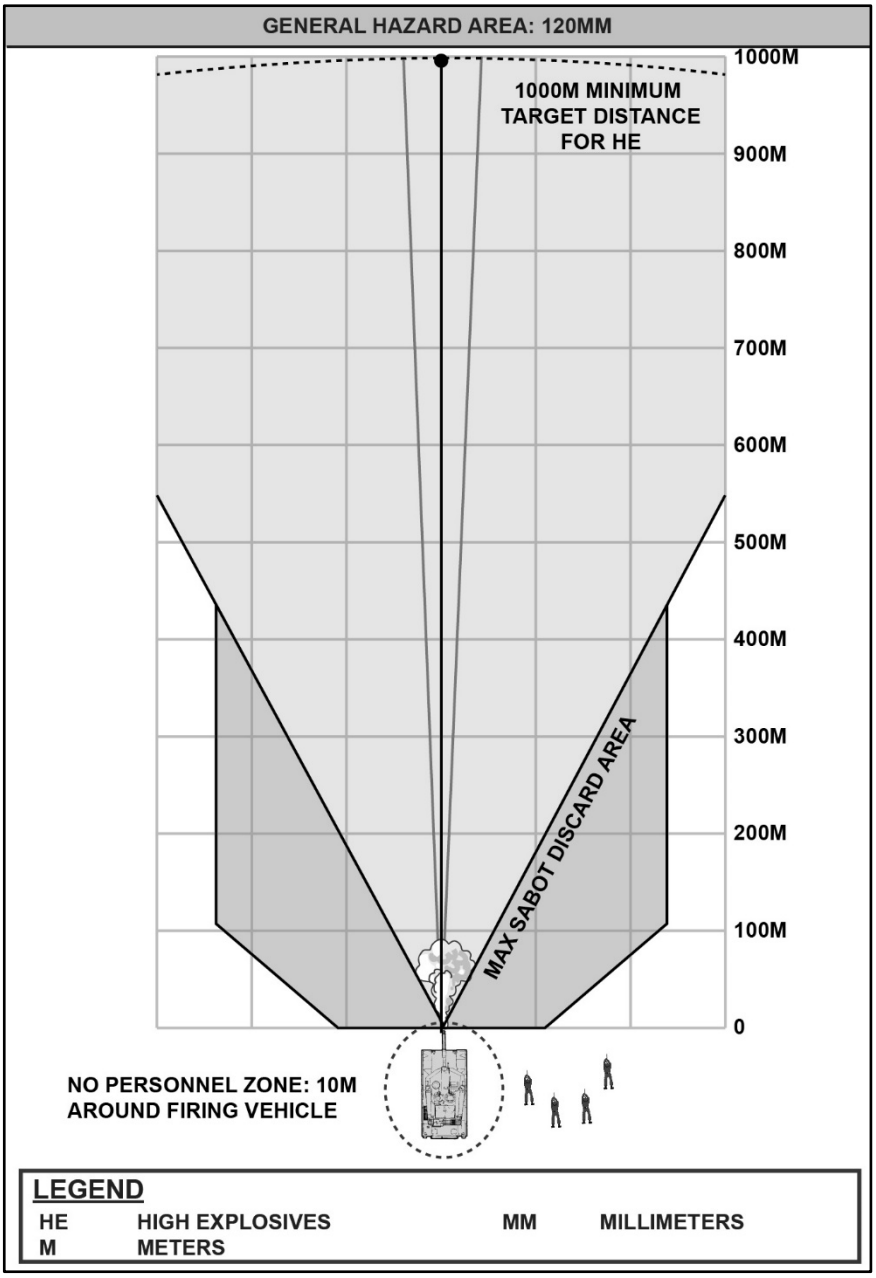

Figure D-7. Hazard area for M1 series

D-59. Tank and Infantry leaders at all levels must be aware of the safety considerations involved in Infantry/Armor operations. Leader awareness and involvement is particularly important if the Infantry unit has had little training with armored vehicles.

All personnel in both the Infantry and Armor units must be aware of these considerations to prevent unnecessary casualties.

D-60. Tank crewmen are often unable to see Infantry Soldiers operating close to their vehicle. This limitation is worse during limited visibility and when the hatches are closed; in these conditions, the crew is focused on the enemy or on potential enemy locations rather than any nearby Infantrymen. While the tank crews must be aware of the tanks surrounding, it is the Infantry's responsibility to stay alert and to maintain a safe position in relation to the vehicle. Under contact with enemy forces, tank crews execute survivability and move berm drills in between firing. The tank will move back and forth or to a nearby position to prevent enemy direct fire or AT guided missile (comparable to dismounted 3-to-5 second rush techniques). Infantrymen near the tank must be aware of sudden vehicle movements.

D-61. Infantry Soldiers operating near tanks are exposed to the effects of any fires the enemy directs against the vehicles. This is true whether the Infantry and vehicles are moving or stationary. Proximity also severely degrades the Infantry's to avoid detection by the enemy. It therefore becomes the responsibility of Infantry leaders to maintain sufficient distance to avoid the effects of fires directed against the tanks, even when they are required to provide security or close support.

D-62. The exhaust from an M1-series tank may reach more than 1,700 degrees. Dismounted Soldiers following behind the tank must position themselves either to the side of the exhaust grill or, if they are directly behind the vehicle, at a safe distance away. The use of the exhaust shield will overcome this problem. The shield is a critical element in tanks recovering other tanks and should be readily available in the tank platoons. Consideration should be given to fabricating enough for all tanks as a leader will not know when they will be working with the Infantry.

SECTION IV – TRANSPORTING INFANTRY

D-63. At times, the platoon leader may be required to transport Infantrymen on the tanks. (See figure D-8.) This is done only when contact is not expected. If the platoon is moving as part of a larger force and is tasked to provide security for the move, the lead section or element should not carry Infantry. Infantry and Armor leaders must observe the following procedures, precautions, and considerations when Infantrymen ride on tanks:

- Infantry squads should thoroughly practice mounting and dismounting procedures and actions on contact.
- Passengers must always alert the tank commander before mounting or dismounting and must follow the commands of the tank commander.
- Infantry platoons should be broken down into squad-sized groups, such as chalks.
- Platoon leaders, PSGs, or squad leaders should position themselves near the tank commander's hatch to talk to the tank commander and relay signals to the unit.
- Tank crewmen must remember that the vehicle cannot return fire effectively with Infantry onboard.

- Whenever possible, Infantry should mount and dismount over the left front slope of the vehicle, which ensures that the driver can see them and that they avoid the front of the coaxial machine gun.
- The Infantry must always have three points of contact with the vehicle.
- Infantry must remain behind the vehicle's smoke grenade launchers, which automatically keeps them clear of all weapon systems.
- If contact is made, wait for the vehicle to stop at the tank commander's command and dismount immediately.
- Move at least 5 meters to the sides of the vehicle, but do not move behind or forward of the vehicle.
- Do not dangle arms or legs, equipment, or anything else off the side of a vehicle that could get caught in the tracks, causing death, injury, or damage to the equipment or vehicle.

D-64. The organization shown below is an example of where an Infantry squad can ride safely on the M1-series tank. The Infantry platoon leadership will determine the task organization of what squad or team will ride on a particular tank in the order of movement.

WARNING

The blowout panels on the back of the turret are always kept clear when troops are being transported on top of the turret.

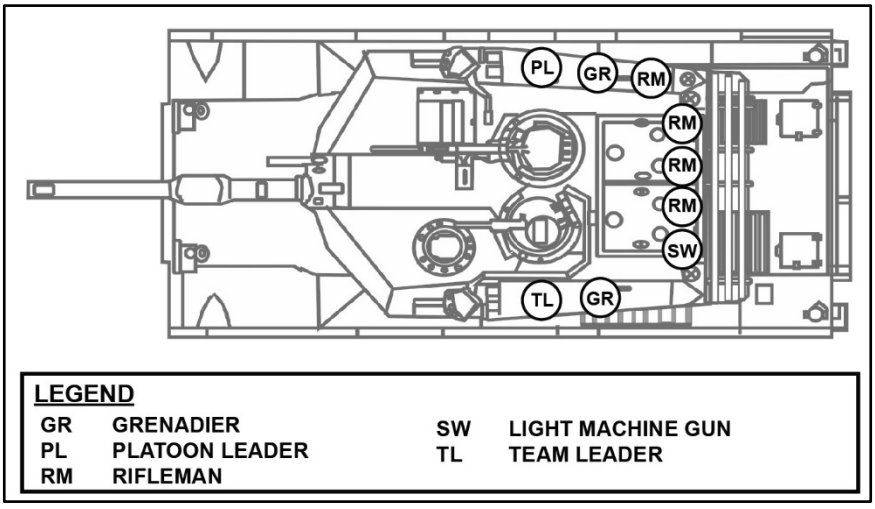

Figure D-8. Infantry riding on the M1 tank

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Appendix E
Urban Operations

The platoon may take part in large-scale urban operations as part of a larger force. This chapter examines the basic characteristics of urban operations as well as special planning considerations and techniques of offensive and defensive operations as well as employment of attack and assault/cargo helicopters.

SECTION I – URBAN OPERATIONS PLANNING CONSIDERATIONS

E-1. Units analyze and describe an OE in terms of eight interrelated operational variables: political, military, economic, social, information, infrastructure, physical environment, and time (operational variables). Many of these variables have a greater effect on operations in urban areas than in other environments; however, the intensity and types of operations are also relevant.

BUILT-UP AREAS

E-2. Built-up areas consist mainly of man-made features such as buildings, streets, and subterranean systems. (See ATP 3-06.11.) These features of urban terrain create a variety of tactical problems and possibilities. To ensure that the platoon can operate effectively in an urban environment, the platoon observation and direct-fire plans must address the ground-level fight (in streets and on the ground floor of buildings), the above-ground fight (in multistoried buildings), and the subterranean fight. The following considerations apply:

E-3. An important aspect of the urban environment is that built-up areas complicate, confuse, and degrade command and control.

E-4. 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 are usually more effective than those on roads in open terrain since they are more difficult to bypass.

E-5. Buildings offer cover and concealment and severely restrict movement of military elements, especially armored vehicles. They also severely restrict fire distribution and control, especially fields of fire. Every street corner and successive block becomes an intervisibility line, requiring careful overwatch. Thick-walled buildings provide ready-made, fortified positions. Subterranean systems found in some built-up areas can be easily overlooked, but they may prove critical to the outcome of urban operations.

VEHICLES, WEAPONS, AND MUNITIONS

E-6. Numerous factors related to vehicles and their organic weapons and munitions affect the tank platoon's urban operation planning and execution, including the following:

- The preferred main gun rounds in the urban environment are HEAT, MPAT (ground mode), MPAT-OR (obstacle-reducing) (M908), and canister (M1028). These all perform much better than sabot rounds against bunkers and buildings.
- HEAT ammunition will open a larger hole in reinforced concrete or masonry structures than MPAT or MPAT-OR (M908) (both MPAT and MPAT-OR, however, offer greater incapacitation capability inside the structure).
- HEAT ammunition arms approximately 60 feet from the gun muzzle (it loses most of its effectiveness against urban targets at ranges of less than 60 feet).
- MPAT and MPAT-OR rounds arm approximately 100 feet from the muzzle of the gun (because of the shape and metal components of the projectiles, however, this ammunition remains effective at ranges of less than 100 feet).
- Canister (M1028) ammunition is used primarily against troop formations from 100 to 500 meters but can be used effectively against light-skinned vehicles (technical) and to reduce simple obstacles at ranges of less than 200 meters.
- Sabot petals, including those on MPAT and MPAT-OR endanger accompanying Infantry elements (they create a hazard area extending 70 meters on either side of the gun-target line, out to a range of 1 kilometer).
- Hard, smooth, flat surfaces are characteristics of urban terrain (the effect of the rounds is reduced by their tendency to strike at an oblique angle and increase the threat of ricochets).
- Engagement ranges will tend to be less than 200 meters and could be as little as 35 meters when engaging enemy troops.
- There will tend to be large amounts of flammable material in the urban area, and leaders should understand that engagements have the chance of causing large fires.
- The tank's main gun can depress to -10 degrees and can elevate to +20 degrees (this creates considerable dead space for the crew at the close ranges that are typical in the urban environment).
- The external M2 HB (heavy barrel) machine gun can elevate to +36 degrees; however, the tank commander must be exposed to fire the M2 on the M1A2 or M1A2SEP.
- The M240 coaxial machine gun can effectively deliver suppressive fires against enemy personnel and against enemy positions that are behind light cover.
- The loader's M240 machine gun can effectively deliver suppressive fire against enemy personnel and against enemy positions that are behind light cover; however, the loader must be exposed to operate it (this weapon may be dismounted and used in a ground role if units are equipped with the M240 dismount kit).
- When operating with hatches closed, the tank crew has limited visibility to the sides and rear and no visibility to the top (see figures E-1 and E-2 that illustrate the dead space associated with tank operations in an urban environment).

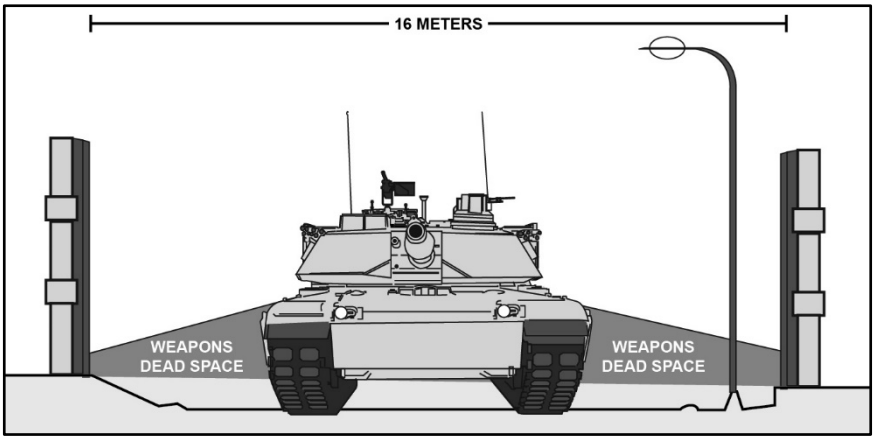

Figure E-1. Tank weapon dead space at street level

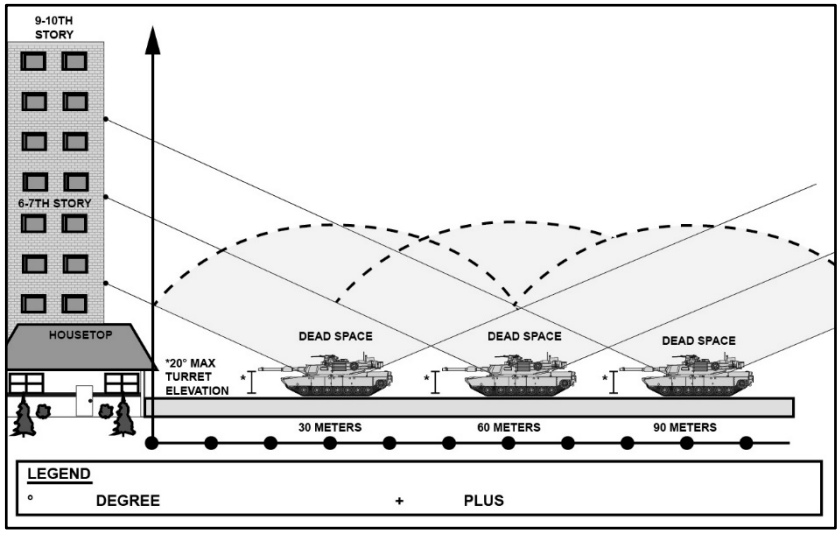

Figure E-2. Tank main gun and coaxial dead space above street level

MEDIUM AND HEAVY MACHINE GUNS

E-7. In the urban environment, the caliber .50 machine gun and the 7.62-mm M240 machine gun provides high-volume, long-range, automatic fires for the suppression or destruction of targets. They provide FPF along fixed lines and can be used to penetrate light structures; the caliber .50 machine gun is most effective in this role. Tracers from both machine guns are likely to start fires.

EMPLOYMENT

E-8. The primary consideration that impacts the employment of machine guns within urban areas is the limited availability of long-range fields of fire. The caliber .50 machine gun is often employed on its vehicular mount during both offensive and

defensive operations. The caliber .50 machine gun can be used as an accurate, long-range weapon and can supplement sniper fires.

E-9. The M240 machine gun is useful to suppress and isolate enemy defenders. The M240 is less effective against masonry targets than the caliber .50 machine gun because of its reduced penetration power.

COMMAND AND CONTROL

E-10. The complexity of the urban environment and its direct effects on communication systems make it difficult to command and maintain control effectively during operations. The following command and control considerations will affect the platoon's urban operations planning and execution:

E-11. Communications problems. The low-level task organization that may take place during urban operations will require elements to establish additional communications links, which can be disrupted by buildings and other urban terrain features.

E-12. Fire control. Extensive direct-fire planning and restrictive fire control measures are an absolute requirement in urban operations.

E-13. Proximity and visibility. Friendly elements often must operate in confined and restrictive areas during urban operations, and they may not be able to see other nearby friendly forces. These factors significantly increase the danger of fratricide.

E-14. The slow pace of urban operations. This will usually prevent the platoon from taking full advantage of the speed and mobility of its tanks. When buttoned up, the tank platoon's command and control and freedom of maneuver will be reduced due to limited visibility.

MANEUVER

E-15. The factors relating to maneuver that will affect the platoon's urban operations planning and execution are the need for detailed centralized planning and decentralized execution. Urban operations are usually executed as a deliberate attack, demanding extensive intelligence activities and rehearsals.

E-16. Urban operations are most successful when close cooperation is established between dismounted forces, armored vehicles, and aviation elements at the lowest level. Whereas task organization normally is done no lower than platoon level, urban operations may require task organization of squads and sections. The tank platoon may face a variety of organizational options, such as a tank section or an individual tank working with an Infantry platoon or squad. Leaders must strive to employ armored vehicles in sections at a minimum. When conducting operations as a two-tank section, armored vehicles must work together to overwatch movements and defeat threats outside the capabilities of dismounted forces.

E-17. Tanks can provide firepower to support accompanying Infantry squads effectively, but they are, in turn, vulnerable to attack from enemy infantry. The attacking force in urban operations must also guard against local counterattacks. Infantry squads are employed extensively during urban operations as part of the combined arms team. They can be employed against both enemy vehicles and dismounted enemy elements.

E-18. When conducting urban operations, it is imperative that leaders and units at all levels maintain all-around situational awareness and security. The ability of the enemy to move rapidly within an urban environment to gain positions above, behind, or below friendly forces necessitates an active and vigilant reconnaissance and intelligence preparation of the operational environment of the tank platoon's AO and area of interest. In addition, individual tanks, sections, and platoons must be extremely vigilant in conducting local security of their vehicles and formation as well as providing overwatch for attached mechanized or dismounted elements.

E-19. Additionally, the Infantry can help the tank platoon by locating targets for tanks to engage, destroying AT weapons, assaulting enemy positions and clearing buildings with tank support, and protecting tanks from AT fires. Tank crewmen should rehearse the mounting and dismounting of the security element from their vehicle, briefing the Infantrymen on safety procedures for the vehicle and weapon systems.

SECTION II – OFFENSIVE TECHNIQUES IN URBAN OPERATIONS

E-20. Offensive operations in an urban environment aim to destroy, defeat, or neutralize an enemy force. Leaders should use a combined arms approach for offensive urban operations.

E-21. The tank platoon may provide support by fire while other maneuver elements seize a foothold. The platoon then can provide overwatch or serve as a base of fire for the Infantry until the area has been secured. In house-to-house and street fighting, tanks move down the streets protected by the Infantry, which clears the area of enemy AT guided missile weapons. (See ATP 3-21.8 and ATP 3-06.11 for more information.)

E-22. The M1-series tank has excellent cross-country mobility, sophisticated communications, enhanced target acquisition, lethal firepower, and effective armor protection. The tank is effective at breaching reinforced doors, fences, or walls to create entry points by ramming. To breach structures, it is recommended that the turret is oriented over the back deck and that the front hull be used to make head-on contact with the structure.

E-23. During the attack of a built-up area, the commander must employ the tanks to take advantage of their long-range lethality. The tank platoon may provide support by fire while lead elements are seizing a foothold. The platoon then can provide overwatch or serve as a base of fire for the Infantry until the area has been secured.

E-24. The commander may position the platoon outside the built-up area, where it will 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 must be able to maneuver into overwatch or base-of-fire positions; this will normally require support from organic infantry weapons to suppress enemy strong points and AT guided missile assets.

E-25. Additionally, the tank platoon can conduct the following urban offensive operations:

- Overwatch large open areas.
- Neutralize enemy positions with machine gun fire.
- Destroy enemy strong points with main gun fire.
- Breach obstacles across the streets.
- Force entry of Infantry into buildings.
- Emplace supporting fires as directed by the Infantry.
- Establish roadblocks and barricades.
- Evacuate of casualties and detainees.

E-26. Integrating mounted and dismounted elements during movement allows each to mitigate the vulnerabilities of the other. The dismounted forces rely on the firepower and protection of the tanks to break enemy strong points, destroy enemy armor, breach obstacles and create holes in walls (often called mouse holes). The mounted element relies on dismounted support to protect against close threats and those engaging from high angles. Clearing buildings also requires a sizable, dismounted force.

E-27. Armored vehicles are critical for offensive operation for the protection they provide as well as their direct fire capability. They remain vulnerable despite their armor, especially to top down or bottom-up attacks. High-angle attacks may leave them without the means to return fire. Vehicles should operate in pairs, and mounted and dismounted elements must coordinate closely to ensure mutual protection.

E-28. Units should also employ aerial reconnaissance to identify threats before exposing combat platforms. Smoke can make fire from buildings or along streets less effective, but it can be difficult to place since it only covers a small area. Urban canyons concentrate the effects, but winds also tend to be higher which dissipates smoke faster.

SECTION III – DEFENSIVE TECHNIQUES IN URBAN OPERATIONS

E-29. Like offensive urban operations, defensive urban operations require thorough planning and precise execution based on METT-TC (I) and established doctrine. This section examines urban operations considerations that affect the platoon in the defense.

E-30. In the defense, tanks provide the urban operations 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 several 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.

E-31. Tanks are normally employed as a platoon. The commander also has the alternative of employing sections or individual vehicles with Infantry platoons and squads; this allows the tanks to take advantage of the close security provided by the infantry and to provide immediate direct-fire support to the Infantry.

FIGHTING POSITIONS AND FIRING POSITIONS

E-32. Careful selection of fighting positions and firing positions for tanks is 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 to fire directly down the streets. From these positions, the tanks are protected while retaining their ability to move rapidly to alternate positions. Buildings collapsing from enemy fires are a minimal hazard to tanks and their crews.
- Before moving into a position to engage the enemy, a tank can occupy a hide position for cover and concealment. Hide positions may be located inside buildings or underground garages, adjacent to buildings (using the buildings to mask enemy observation), or in culverts.
- Since the crew will not be able to see the advancing enemy from the hide position, an observer from the tank or a nearby Infantry unit must be concealed in an adjacent building to alert the crew. When the observer acquires a target, they signal the tank to move to the firing position and, at the proper time, to fire.
- After firing, the tank moves to an alternate position to avoid compromising its location.

EMPLOYMENT OF INFANTRY

E-33. Infantry are usually employed abreast so that they all can fire toward the expected direction of attack. In a company team defense, however, the limited number of available Infantrymen may require squad positions to be interspersed with tank positions for mutual support.

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Appendix F
Battle Drills

Battle drills are rehearsed and well understood actions made in response to common battlefield occurrences (ADP 3-90). Battle drills provide virtually automatic responses to situations in which the immediate and as appropriate, violent execution of an action is vital to the platoon's safety or to its success in combat. They allow the platoon leader to protect the platoon from the effects of enemy fires, to quickly mass the platoon's combat power and fires, or to move the platoon to a position of advantage over the enemy. In other words, battle drills enable the platoon to survive first contact, develop the situation, and generate options for the commander. Platoon leaders are responsible for training the platoon to execute lethal fires in conjunction with battle drills and platoon tactical tasks.

Battle drills can be found by searching for drill numbers in the Combined Arms Training Strategies within the Army Training Network, Digital Training Management System, and the Central Army Registry. (See websites under references section for link to the Army's definitive sources for Army training.)

F-1. When the tank platoon makes contact with the enemy, the platoon leader usually initiates a battle drill. Drills can be initiated following reports or observation of enemy activity or ordered upon receipt of enemy fires.

F-2. Drills are standardized collective actions, executed by each tank crew with minimal instruction and without application of a deliberate thought process. They can be carried out under almost any type of battlefield conditions and from any formation or movement technique although execution can be affected by the factors of METT-TC (I).

F-3. This appendix identifies essential battle drills that the tank platoon must train to ensure success. Contact drill, action drill, and change formation drill are also described in chapter 3, section III. They include the following:

- Battle Drill Alpha: Contact Drill.
- Battle Drill Bravo: Action Drill.
- Battle Drill Charlie: Change Formation Drill.
- Battle Drill Delta: React to Indirect Fire Drill.
- Battle Drill Echo: React to Air Attack While Mounted.
- Battle Drill Foxtrot: React to UAS While Mounted.
- Battle Drill Golf: React to CBRN Attack While Mounted.
- Battle Drill Hotel: React to Electromagnetic Attack.
- Battle Drill India: React to an Obstacle.

BATTLE DRILL ALPHA: CONTACT DRILL (17-PLT-D8005)

CONDITIONS

The platoon is conducting operations in a training/combat environment as part of a company or larger force. While moving, contact is made with small arms fire, non-armor-defeating weapons. (See chapter 3, section II for more information.)

TASK STEPS

1. A member of the platoon identifies enemy contact and provides the direction, distance, and description of the enemy's actions, capabilities (if able to determine), and composition.
2. The platoon leader executes the contact drill.
3. The platoon continues to move, engages and suppresses, reduces, or destroys the enemy.
4. The platoon leader reports the contact to higher HQ and continues mission, as directed.

BATTLE DRILL BRAVO: ACTION DRILL (17-PLT-D9437)

CONDITIONS

The platoon is conducting operations in a training/combat environment. Enemy contact is possible. The platoon is required to execute actions right, left, or rear while mounted. The platoon has communications with higher, adjacent, and subordinate elements. All the necessary personnel and equipment are available. (See chapter 3, section III, for more information.)

TASK STEPS

1. A member of the platoon alerts the platoon to enemy contact and communicates distance and direction by radio.
2. The platoon leader signals action right, left, or rear using radio, hand and arm signals or flags:
   a. The PSG maneuvers section to orient on the platoon leader's vehicle.
   b. Wingmen orient their vehicles on the platoon leader and PSG vehicles.

3 The drivers immediately execute a turn in the direction indicated while moving into a line formation.

4. The platoon leader orders VCs to seek covered positions or maneuvers to avoid enemy strengths or direct fire effectiveness, while moving along a direction or axis of advance.
   a. The VCs orient the main weapons system towards the enemy, while the gunner simultaneously searches for targets.
   b. The platoon leader directs the platoon to assault the enemy (if necessary), due to the platoon's inability to reach a covered and concealed position or achieve weapon standoff without being decisively engaged.

5. The platoon leader reports the situation to the higher HQ and continues mission, as directed.

BATTLE DRILL CHARLIE: CHANGE FORMATION DRILL (17-PLT-D9435)

CONDITIONS

The platoon is conducting movement in a training/combat environment and the situation requires a change to the formation as a result of METT-TC (I). (See chapter 3, section III, for more information.)

TASK STEPS

1. The platoon leader directs the formation change by giving the standard hand and arm signals, by flag signals, or by using the radio.
2. The tank commanders relay hand and arm or flag signals (if applicable).
3. The tank commanders' direct drivers into position in the new formation. The driver maintains the position in the formation based on the platoon leader and wingmen.
4. The tank commanders traverse the vehicle's main weapon system to provide the platoon with the maximum amount of protection possible.
5. If the vehicle is equipped with a CROWS, tank commanders traverse the CROWS toward likely enemy positions or assigned sectors and scan for targets in their sectors. The tank commanders scan the limits of their sectors using the CROWS (for example, scanning from 12 to 2).
6. The tank commanders report position status to platoon leader or sergeant and continue operations as directed.

BATTLE DRILL DELTA: REACT TO INDIRECT FIRE DRILL (17-PLT-D9504)

CONDITIONS

The platoon is conducting operations in a training/combat environment. The platoon is mounted while stationary or moving. The alert, INCOMING, comes over the radio or intercom, or rounds impact nearby.

TASK STEPS

1. A member of the platoon observes artillery impacting near the platoon and alerts the platoon with the alert INCOMING! The platoon member provides the distance, direction, and description of the artillery strike.
2. VCs repeat the alert over the radio.
3. VCs place their hatches in the open protected or closed position; other crewmen close their hatches and gunners' close ballistic doors (if necessary).
4. If the platoon is moving when it receives suppressive artillery fire, the platoon executes the following actions: (See figure F-1, page 350.)

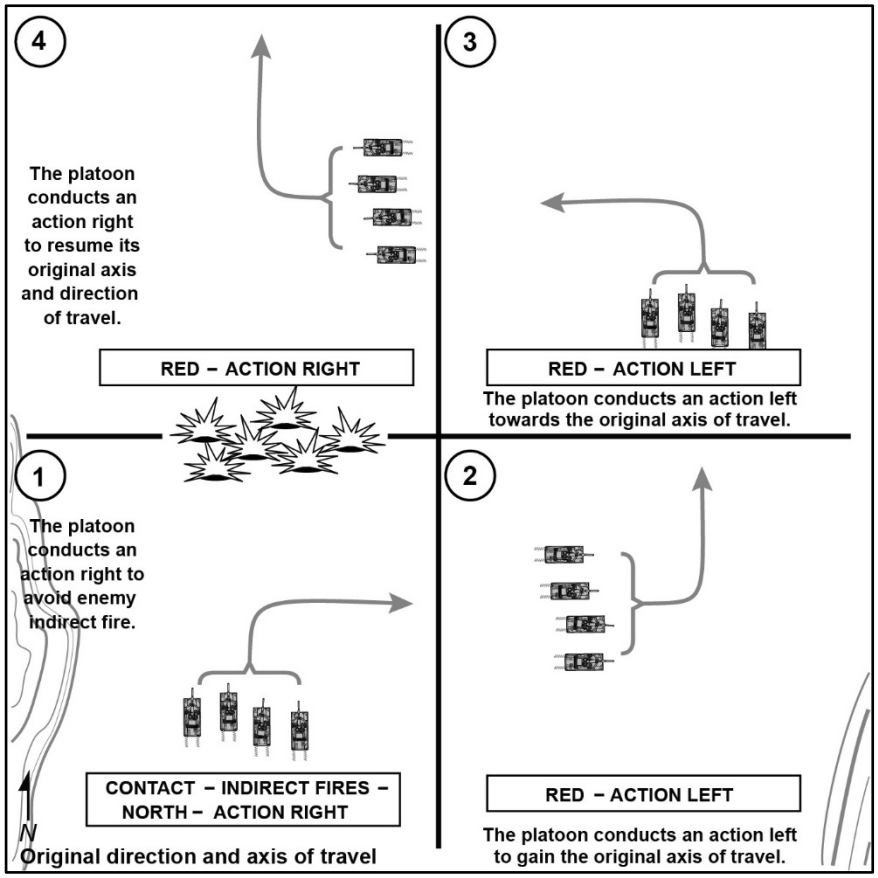

Figure F-1. React to indirect fire drill

5. The platoon leader orders an action drill (action left, right, or rear) to avoid the impact area and orders an increase in speed.
6. Once clear of the impact area, crews place their hatches in the appropriate position, open ballistic doors, and check antennas.
7. The platoon leader reports the contact to higher HQ.
8. If the platoon is stationary and its mission or situation allows it the option to move out of the impact area, the platoon leader and the platoon take the following action:
    a. The platoon leader provides a distance and direction for the platoon to link up.
    b. VCs rapidly maneuver their tanks (armored vehicles) to the location specified by the platoon leader.
    c. Once the artillery barrage is complete, individual crews place their hatches in the appropriate position, open ballistic doors, check antennas, and return to positions or continue the mission.
    d. The platoon leader reports the contact to higher HQ.

9. If the platoon is ordered to remain stationary, the platoon executes the following actions:
   a. Crews closed ballistic doors.
   b. Crews move the commander's independent thermal viewer to the shielded position.
   c. The platoon leader reports the contact to higher HQ.

BATTLE DRILL ECHO: REACT TO AIR ATTACK WHILE MOUNTED (17-PLT-D9515)

CONDITIONS

The platoon is conducting operations in a training/combat environment. The platoon identifies an enemy high-performance aircraft, helicopters, or UASs, which requires the platoon to take either passive or active air defense measures.

TASK STEPS

1. A platoon member identifies enemy aircraft and alerts the platoon (visually or audibly) with a contact report:
   a. Announces contact.
   b. Type of aircraft (identification if possible).
   c. Direction to aircraft: (specify: NORTH, SOUTH, EAST, or WEST).
2. VCs place their hatches in the open protected or closed position; other crewmen close their hatches.
3. The platoon leader analyzes the situation and determines whether the enemy aircraft is either a passive threat or an active threat:
   a. If the enemy aircraft is a passive threat, the platoon leader will order passive air defense measures when the platoon is not the target of the enemy aircraft.
   b. If the enemy aircraft is an active threat, the platoon leader will order active air defense measures when the platoon is the target of the enemy aircraft.
3. The platoon executes passive air defense measures as necessary:
   a. On order of platoon leader, platoon moves to covered and concealed positions, maintaining a minimum of 100 meters between vehicles, and halts.

Note. The company may order the platoon to continue movement.

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   b. Prepares to engage on order of platoon leader.
   c. Scans for follow-on aircraft.
4. The platoon executes active air defense measures as necessary. (See figures F-2 and F-3, pages 352 and 353.)

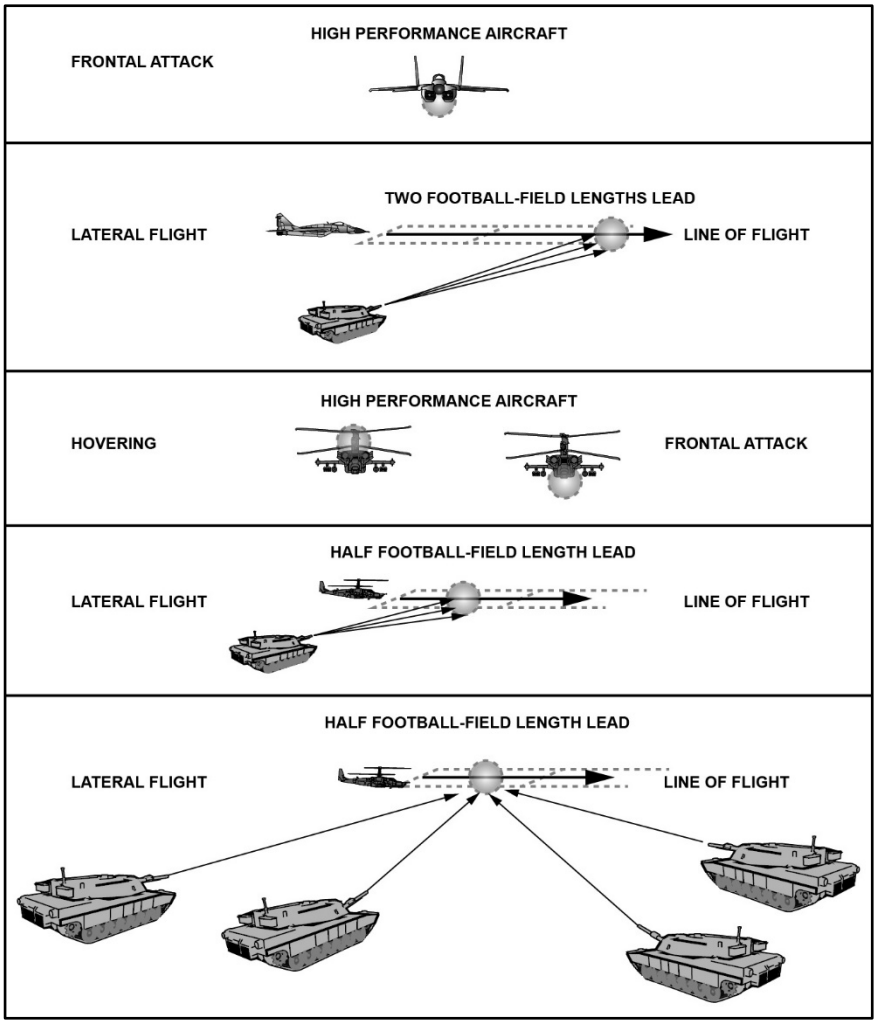

Figure F-2. Engaging aircraft

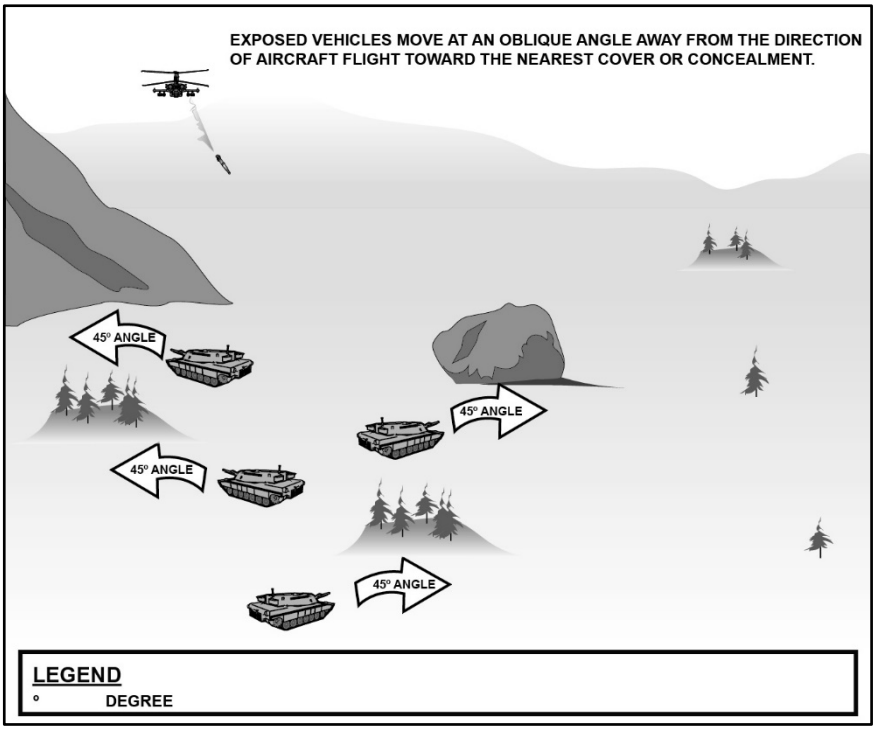

Figure F-3. Evading aircraft

a. The platoon initiates fire with the intent to force aircraft to take self-defense measures that alter their attack profile and reduce their effectiveness.

Note. The primary intent is to force aircraft to take self-defense measures that alter their attack profile and reduce their effectiveness. The platoon leader may use a burst of tracers to designate an aim point for platoon machine gun antiaircraft fires. Volume is the key to effectiveness of these fires; tanks (armored) throw up a wall of steel through which aircraft must fly. The main gun is effective against hovering attack helicopters. The platoon leader may also direct some vehicles to engage high performance aircraft with .50 caliber machine guns or MPAT main gun rounds.

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b. The platoon vehicles create a nonlinear target by moving as fast as possible at a 45-degree angle away from the path of flight and toward attacking aircraft. The platoon maintains an interval of at least 100 meters between vehicles, forcing aircraft to make several passes to engage the entire platoon.
c. The platoon vehicles move quickly to covered and concealed positions and freeze their movement for at least 60 seconds after the last flight of aircraft has passed.

d. The platoon vehicles remain in covered and concealed positions as required.
e. Scans for follow-on aircraft.

5. The platoon leader reports the situation to the company as necessary.

BATTLE DRILL FOXTROT: REACT TO UNMANNED AIRCRAFT SYSTEM WHILE MOUNTED (17-PLT-D9516)

CONDITIONS

The platoon is conducting operations in a training/combat environment. The designated air guard identifies a UAS which requires the platoon to take either passive or active air defense measures.

TASK STEPS

1. React to the threat.
2. Air guard detects the UAS.
3. Air guard alerts the platoon with a contact report containing these elements:
   a. "CONTACT."
   b. "ENEMY UAS."
   c. Announces cardinal direction. (Specify, "NORTH, SOUTH, EAST, or WEST.")
   d. Gives visual signal for air attack. (See figure F-4.)

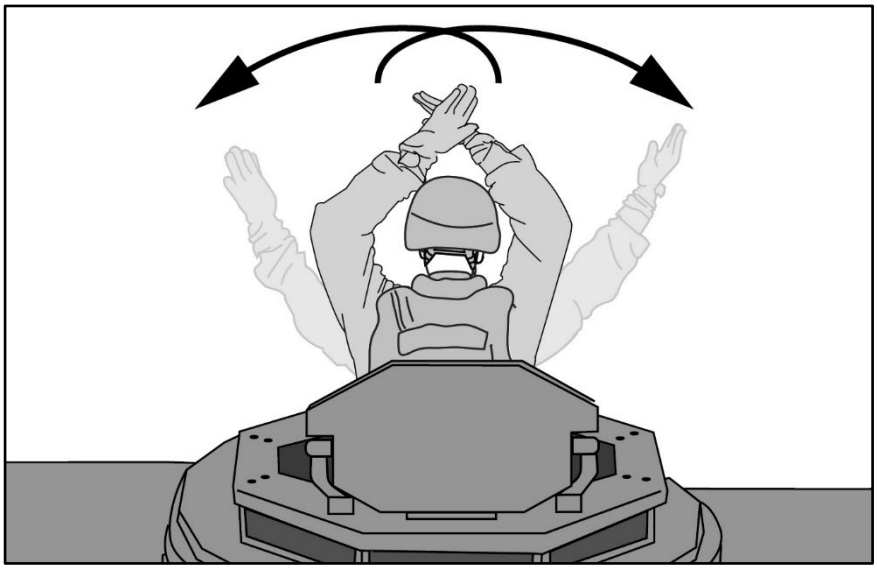


Figure F-4. Visual signal for air attack

4. VCs place their hatches in the open protected or closed position; other crewmen close their hatches.
5. Platoon leader/sergeant transmits contact report to higher HQ.

6. Platoon leader/sergeant gives visual or radio communication signal for the platoon to execute a herringbone. (See figure F-5.)

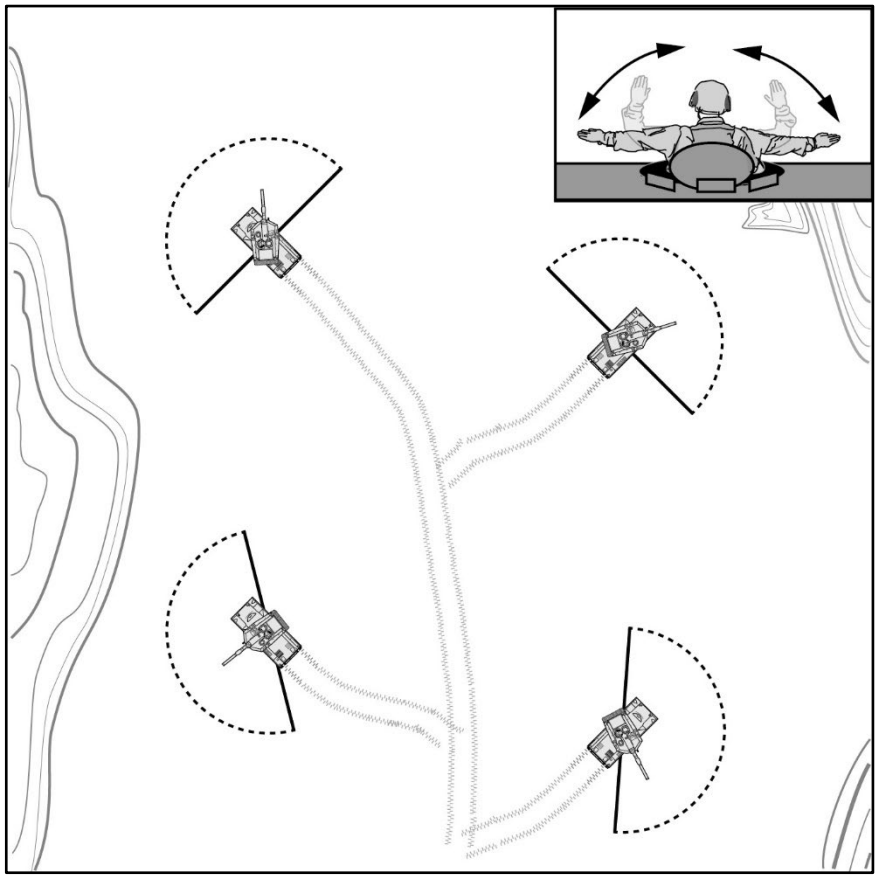


Figure F-5. Visual signal for herringbone

7. Platoon increases dispersion.

DEVELOP THE SITUATION

1. The platoon leader assesses what action is appropriate to counter the threat based on the following: (See figure F-6, page 356.)

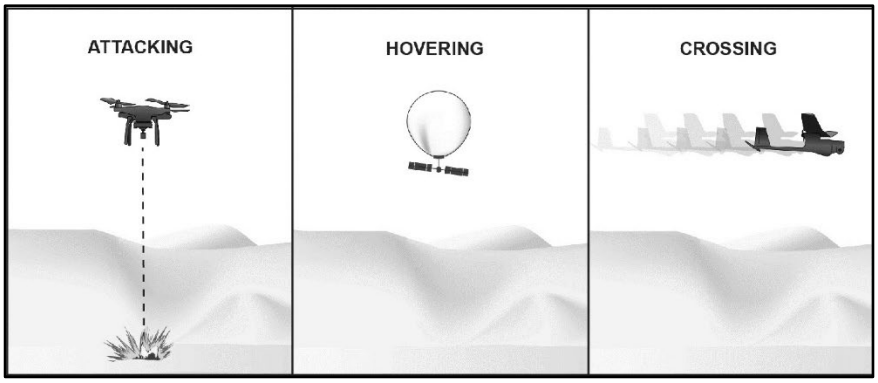


Figure F-6. Unmanned aircraft system actions

a. Distance and direction to UAS.
b. UAS activities. (Attacking, hovering, crossing.)
c. Air defense warning, weapon control status, and engagement criteria given in OPORD.

2. Dismounted Soldiers immediately remount their vehicle or seek best available cover.
3. Vehicle crewmembers secure all hatches, doors, and ramps.

CHOOSE A COURSE OF ACTION

1. Continue mission.

Note. Higher HQ may order the platoon to continue mission.

2. Seek cover and concealment. (See figure F-7.)

Note. Vehicles can create a nonlinear target by moving as fast as possible at a 45-degree angle away from the path of flight and toward attacking aircraft. The platoon maintains an interval of at least 100 meters between vehicles, forcing aircraft to make several passes to engage the entire platoon.

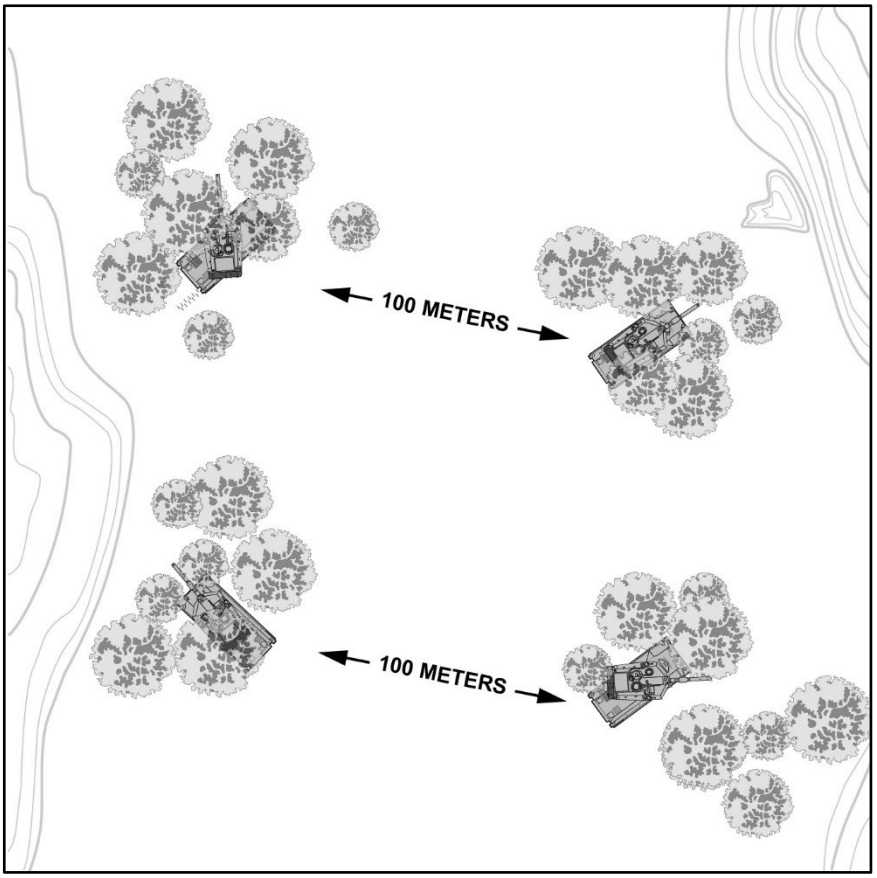
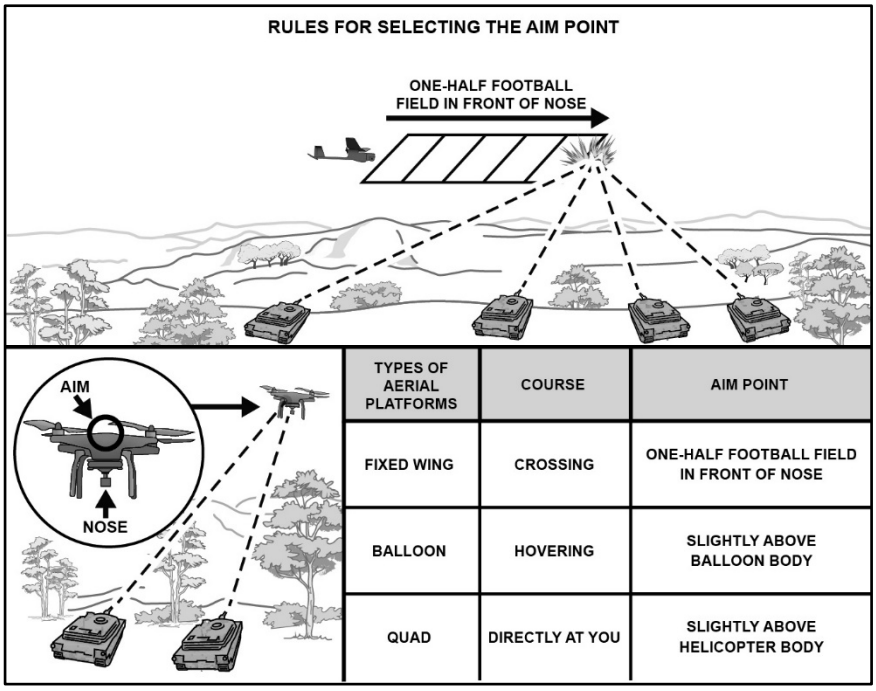


Figure F-7. Disperse and Seek cover/concealment

3. Engage threat UAS by: (see figure F-8, page 359).

Note. Low, slow, SUASs can fly extremely low underneath traditional radar detection zones. UAS fly very slowly and can even hover in place preventing current sensors from detecting them. UAS are very difficult to defeat using direct fire weapons.



TYPES OF AERIAL PLATFORMS	COURSE	AIM POINT
FIXED WING	CROSSING	ONE-HALF FOOTBALL FIELD IN FRONT OF NOSE
BALLOON	HOVERING	SLIGHTLY ABOVE BALLOON BODY
QUAD	DIRECTLY AT YOU	SLIGHTLY ABOVE HELICOPTER BODY

Figure F-8. Point of aim

a. Direct vehicles to aim based on type and course of UAS.
b. Direct vehicles to engage with all machine guns or 120-mm canister rounds.
c. Direct cease fire when aircraft is destroyed or no longer a threat.

4. Execute and report to higher HQ.
   a. Execute selected COA until the threat is defeated or withdraws.
   b. Platoon leader/sergeant transmits SPOTREP to higher HQ.
5. The platoon leader reports the platoon's status then continues operations according to the order and the commander's guidance.

BATTLE DRILL GOLF: REACT TO CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR ATTACK WHILE MOUNTED (17-PLT-D8006)

CONDITIONS

The platoon is conducting operations in a training/combat environment. Enemy forces have the capability to employ CBRN weapons. CBRN monitoring equipment alarm sounds, chemical agent detector paper changes color, or a Service member displays symptoms of chemical/biological agent poisoning.

TASK STEPS

1. Platoon members recognize and react to the hazard, taking these actions: (See figure F-9.)

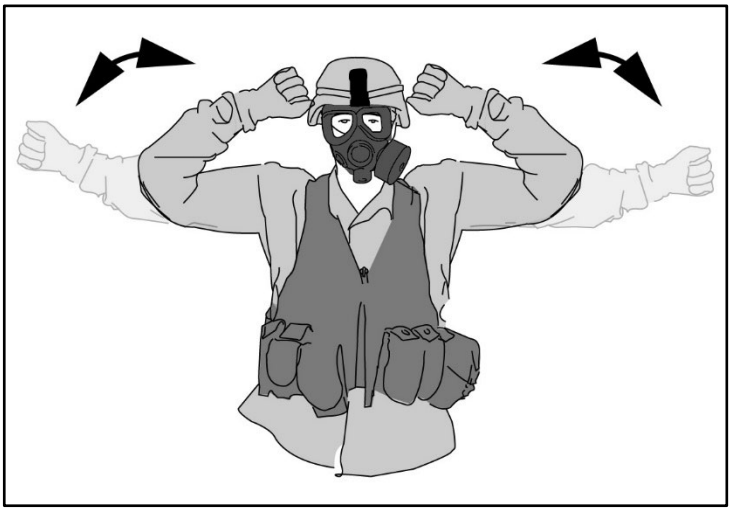


Figure F-9. Hand and arm signal for Gas, Gas, Gas

   a. Put on a protective mask within 9 seconds (15 seconds with hood).
   b. Alert the remainder of the platoon and company.

Note. Appropriate alarms include vocal alarms (shout of GAS), the M8A1/M22/JCAD alarm, nonverbal alarms (horn blast or banging metal-to-metal objects), and visual alarms (most commonly, hand-and-arm signals). The tactical situation may not allow for audible alarms; therefore, the platoon SOP should clearly detail visual signals.

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   c. Close and lock all hatches and activate the vehicle over pressurization system (if equipped).
   d. Conduct decontamination, as necessary.
   e. Within 8 minutes, assume MOPP 4.
2. Implement SOPs in these areas:
   a. Administer self-aid and buddy-aid to platoon members with symptoms of chemical/biological agent poisoning.
   b. Ensure individual crewmen decontaminate their skin.
   c. Conduct operator's spray down and decontamination of equipment, as necessary.
   d. Initiate continuous monitoring with chemical detection kits.
3. The platoon leader submits CBRN-1 report and provides a situation report to higher HQ.
4. The platoon leader directs a tank commander within the platoon to initiate the M256 kit.

5. Monitor for chemical/biological agents; as the situation warrants, initiate actions to reduce MOPP levels and discontinue agent monitoring.
6. Platoon continues mission as directed by the company commander.

BATTLE DRILL HOTEL: REACT TO ELECTROMAGNETIC ATTACK (17-PLT-D9738)

CONDITIONS

The platoon is conducting operations in a training/combat environment when they encounter degradations in their mission equipment requiring them to recognize and react to non-intentional or intentional electromagnetic interference. (See chapter 5, section X for more information.)

TASK STEPS

1. Platoon members recognize and react to attack indicators such as random noise or no response to radio transmissions. The platoon takes the following actions:
   a. Reduce or increase radio power setting.
   b. Verify timing for communication platforms.
   c. Troubleshoot communication platforms.
   d. Minimize radio transmissions in case of jamming or silence listening.
   e. Execute PACE plan to include radio silence.
   f. Switch radio frequencies.
   g. Terrain masking (if possible).
   h. Use hand and arm signals, or runners or pyrotechnics for routine communications.
2. Platoon members recognize and react to attack indicators such as loss of GPS signal, loss or incorrect time, wrong location displayed on screen. The platoon takes the following actions:
   a. Verify location using map.
   b. Verify encryption fill.
   c. Terrain masking (if possible).
3. The platoon leader reports the platoon's status to higher.

BATTLE DRILL INDIA: REACT TO AN OBSTACLE (17-CW-D8008)

CONDITIONS

The crew is conducting operations in a training/combat environment. The crew has communications with the platoon leader and PSG. The crew makes contact with an obstacle. The crew may or may not have countermine equipment. Enemy contact is possible.

TASK STEPS

1. The VC directs the driver to seek a covered and concealed position.
2. The crew identifies the obstacle and alerts the platoon with a contact report.
3. In out of contact situations (crew identifies obstacles from a position of advantage), crew takes immediate protective actions.

a. VC directs the crew to deploy to a covered and concealed location.
b. Crew with visual contact with obstacle establishes an overwatch position.
c. As applicable, crew employs direct fire to obscure and suppress the enemy forces overwatching the obstacle.

4. The VC takes actions to develop the situation and report to the platoon leadership.
   a. Sends contact report (FM or digital) to the platoon leader/PSG.
   b. Sends obstacle report (FM or digital) to the platoon leader/PSG describing type, width, length, effect, and location of the obstacle.
   c. Sends updated situation reports (FM or digital) to the platoon leader/PSG, as necessary.
5. If a bypass is possible, VC reports the location of the bypass to the platoon leader/PSG (FM or digital) and recommends bypassing the obstacle.

Note. Once ordered to bypass, any of the platoons' dismounts, return and load their vehicles and the platoon executes steps to bypass the obstacle.

or

If a bypass is not possible, VC reports to the platoon leader/PSG and recommends, based on obstacle composition, a point of breach to the company commander.

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Appendix G

Platoon Tactical Tasks and Graphic Control Measures

This appendix describes the tactical tasks and graphic control measures that apply to the tank platoon. The commander may direct the platoon to execute one of the tactical tasks as part of the company's planned scheme of maneuver. In addition, the platoon can use tactical tasks as COAs when it executes actions on contact.

The graphic control measures are used to illustrate the commander's intent and the scheme of maneuver. In addition, they provide clarity when an order is issued and assist in the command and control process once the tank platoon begins executing the operation.

SECTION I – PLATOON TACTICAL TASKS

G-1. The platoon tactical tasks need to be rehearsed at every opportunity. Each task can be executed as a COA during actions on contact. Just like battle drills, the platoon must become proficient in the execution.

DESTROY AN INFERIOR FORCE

G-2. To maintain the tempo of an attack, the commander may order the platoon to destroy an inferior force, based either on the original plan or on recommendation of the platoon leader. The platoon leader usually employs maneuver techniques (fire and tactical movement) in executing this task or COA. When the platoon is in contact with the enemy, the platoon leader designates one section to overwatch or support by fire to suppress and/or destroy the enemy while the other section moves.

G-3. The moving element uses appropriate movement techniques as well as covered and concealed routes to move to a position of advantage over the enemy. This position may offer dominating terrain that allows the platoon to attack enemy positions by direct fire, or it may provide covered routes that enable the section to close with and assault the enemy.

G-4. After the platoon leader designates the route to the next possible overwatch position, the overwatch leader identifies graphic control measures and assigns responsibility for suppression of identified enemy positions. Crosstalk among sections and vehicles is important in ensuring mutual support while the overwatch is providing supporting fires during the other section's movement to the position of advantage.

G-5. After successfully destroying the inferior enemy force, the platoon positions itself where it can most effectively prepare for subsequent actions. Figure G-1 and figure G-2, page 364 illustrates two potential situations in which a platoon is ordered to destroy an inferior force.

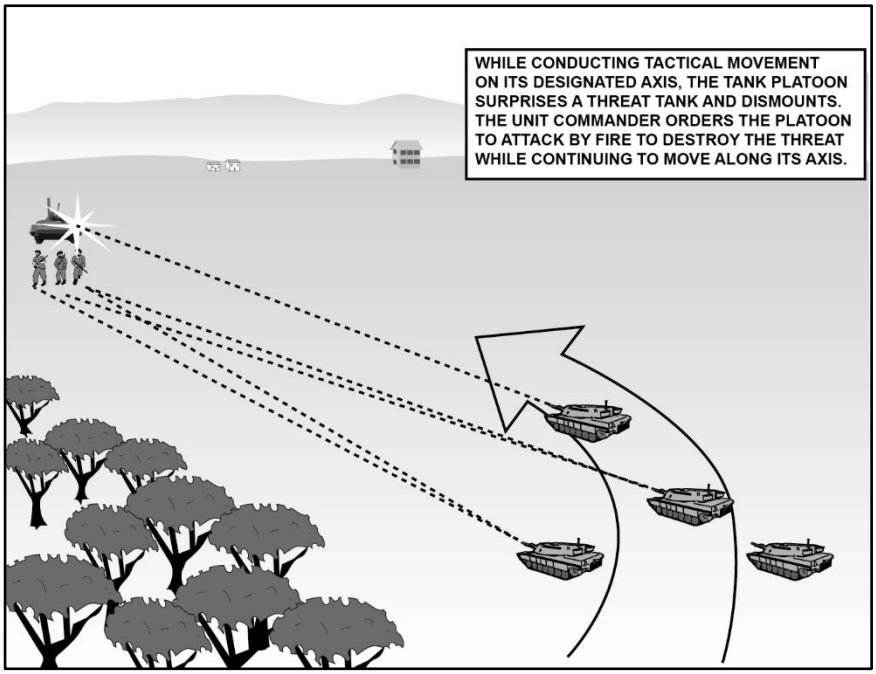

Figure G-1. Scenarios for destruction of an inferior enemy force

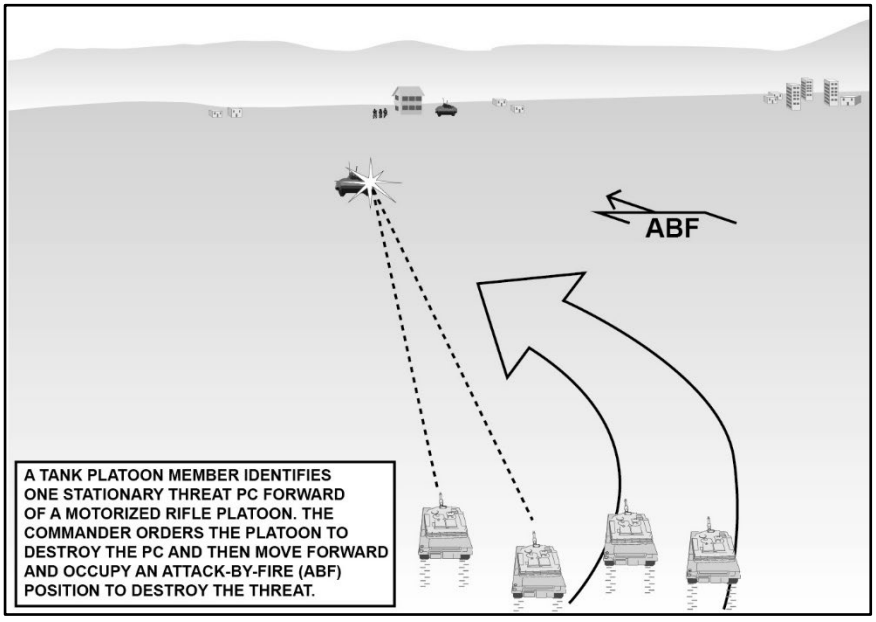

Figure G-2. Scenarios for destruction of an inferior enemy force (continued)

ATTACK BY FIRE

G-6. The commander may order the platoon to execute this task, either as specified in the original plan or on the recommendation of the platoon leader. The purpose is to destroy the enemy using long-range fires from dominating terrain or using standoff of the main gun. The platoon can use an attack by fire to destroy inferior forces when the platoon leader does not desire to close with the enemy or when the platoon is part of a company-level effort. In addition, the platoon may occupy an attack by fire position as part of a company-level hasty defense with the goal of destroying a superior force.

G-7. In executing this task, the platoon uses tactical movement to move to a position that allows it to employ weapon standoff or that offers cover for hull-down firing positions. It also must be ready to move to alternate firing positions for protection from the effects of enemy direct and indirect fires.

G-8. As time permits, the platoon leader designates TRPs and signs sectors of fire and tentative firing positions for individual tanks. The platoon leader issues a platoon fire command specifying the method of fire, firing pattern, and rate of fire the platoon must sustain to accomplish the task in support of the company. A successful attack by fire destroys the enemy force. Figures G-3 and G-4, page 366 illustrate attack by fire situations.

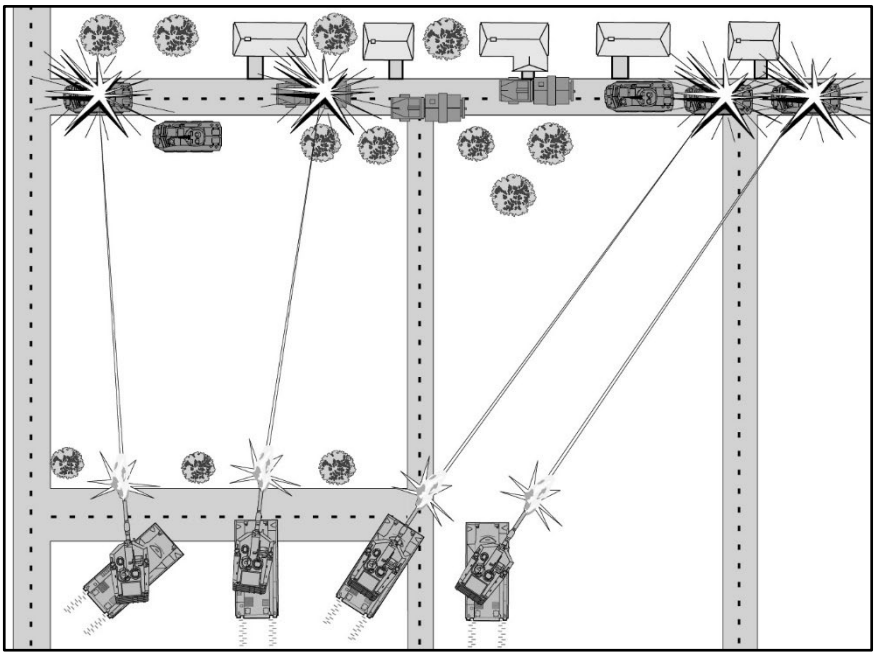

Figure G-3. Platoon employs attack by fire against a convoy

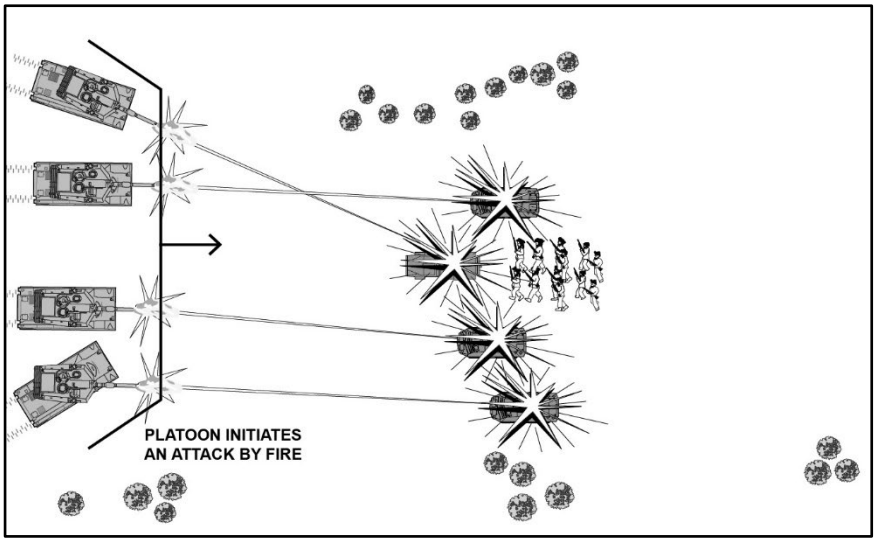

Figure G-4. Platoon uses attack by fire against an enemy reconnaissance platoon as part of a hasty defense

OVERWATCH/SUPPORT BY FIRE

G-9. Either as specified in the original plan or on recommendation of the platoon leader, the commander may order the platoon to provide overwatch or support by fire during the movement of a friendly force. The purpose is to suppress the enemy using long-range direct and indirect fires from a dominating piece of terrain or using the standoff of the main gun. This support sets the conditions that allow moving (supported) friendly elements to engage and destroy the enemy.

G-10. The techniques involved in occupying an overwatch or support by fire position and in focusing and controlling fires are like those for an attack by fire. Some specific considerations exist, however. As noted, the overwatch/support by fire task is always tied directly to the movement and/or tactical execution of other friendly forces. In executing overwatch or support by fire, the platoon must maintain a high level of situational understanding relative to the supported force so it can lift and shift direct and indirect fires as required to prevent fratricide. Throughout this type of operation, the supporting platoon maintains cross talk with the moving force on the company net. In addition to reducing fratricide risk, cross talk allows the platoon to provide early warning of enemy positions it has identified and to report battle damage inflicted on the enemy force.

G-11. A successful overwatch/support by fire operation suppresses the enemy, permitting the moving (supported) force to conduct tactical movement, breaching operations, or an assault. Figure G-5 illustrates a support by fire situation in support of an assault.

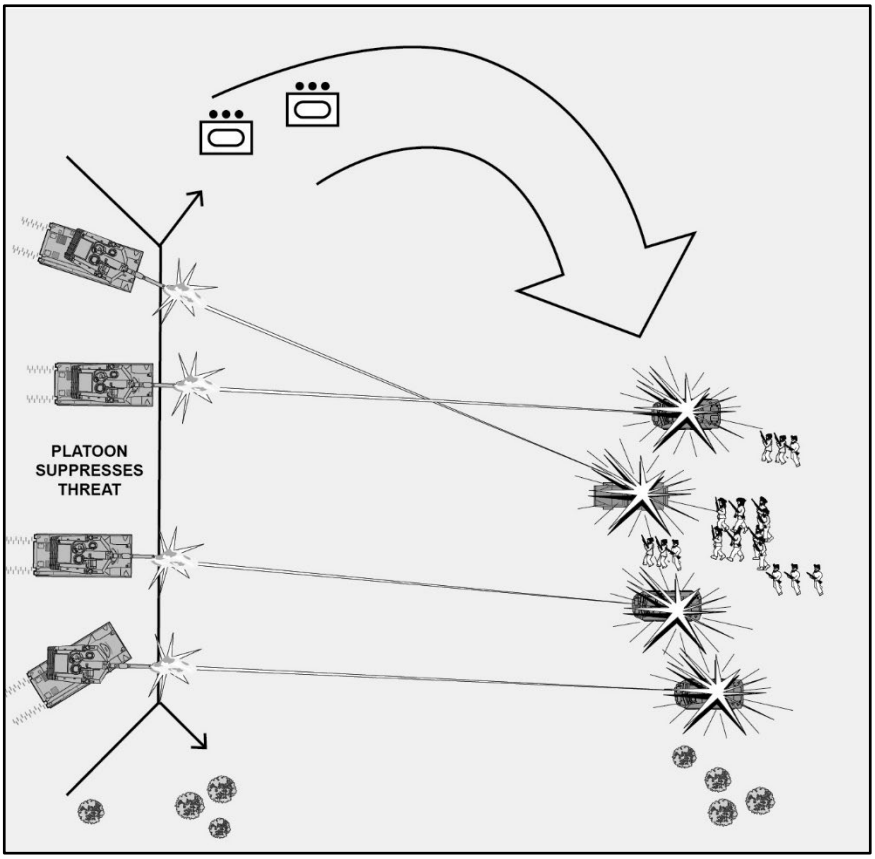

Figure G-5. Platoon supports by fire to suppress an enemy element during a company assault

ASSAULT

G-12. The commander may direct the platoon to execute an assault, either on its own or as part of a larger assault force. The purpose of the assault is to seize key terrain or to close with and destroy the enemy while seizing an enemy-held position. Designation of the platoon as the assault force may be made as part of the commander's original plan or on recommendation of the platoon leader.

G-13. The platoon usually assaults the enemy while receiving supporting fires from an overwatch element. If supporting fire is not available, the platoon conducts tactical movement to a position of advantage over the enemy and then conducts the assault. A successful assault destroys the enemy elements or forces them to withdraw from the objective.

G-14. To prepare for the assault, the assault force occupies or moves through an assault position. This should be a predetermined covered and concealed position that provides weapon standoff from the enemy. The platoon leader receives updated enemy

information from support by fire elements. The platoon leader assigns targets or weapons orientations and confirms the axis of advance and the LOA for the assault. On order, the platoon assaults on line, moving and firing as quickly as possible to destroy the enemy and seize the objective.

G-15. The assault must be extremely violent, and the platoon must fire with all appropriate weapons systems. If the platoon assaults buttoned up, machine gun fire from the support force or wingman tanks can provide close-in protection against dismounted enemy elements on the objective. If tanks are unbuttoned, the tank commanders and loaders use personal weapons, hand grenades, and machine guns to provide close-in protection.

G-16. Following a successful assault, the assault force occupies a defensible position, either on the objective or on the far side of it and begins consolidation and reorganization procedures. Figures G-6 and G-7 illustrate two assault situations.

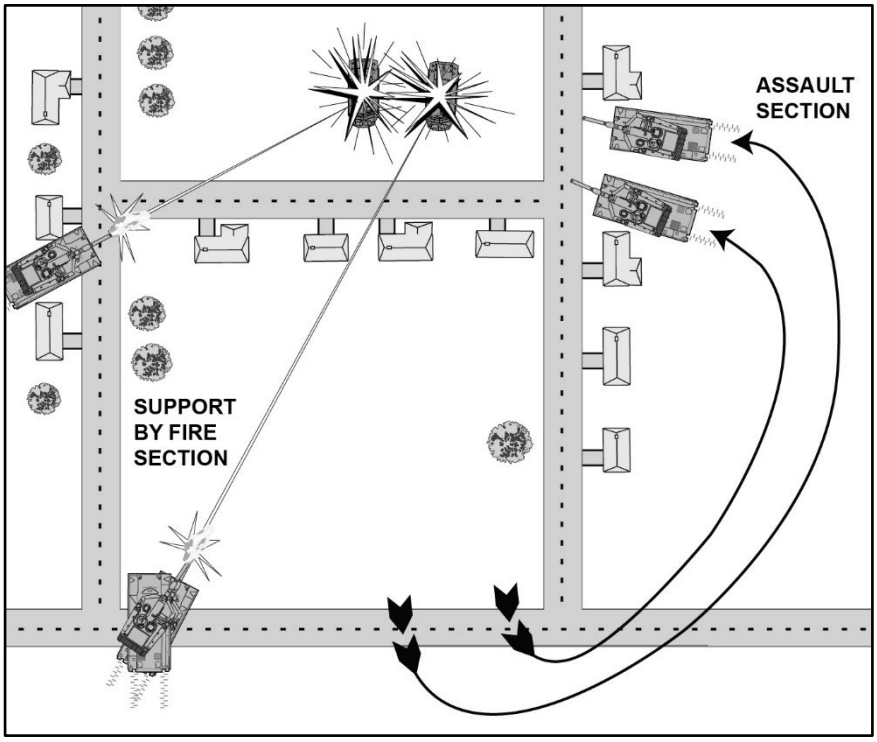

Figure G-6. Tank section assaults an inferior force as another section supports by fire

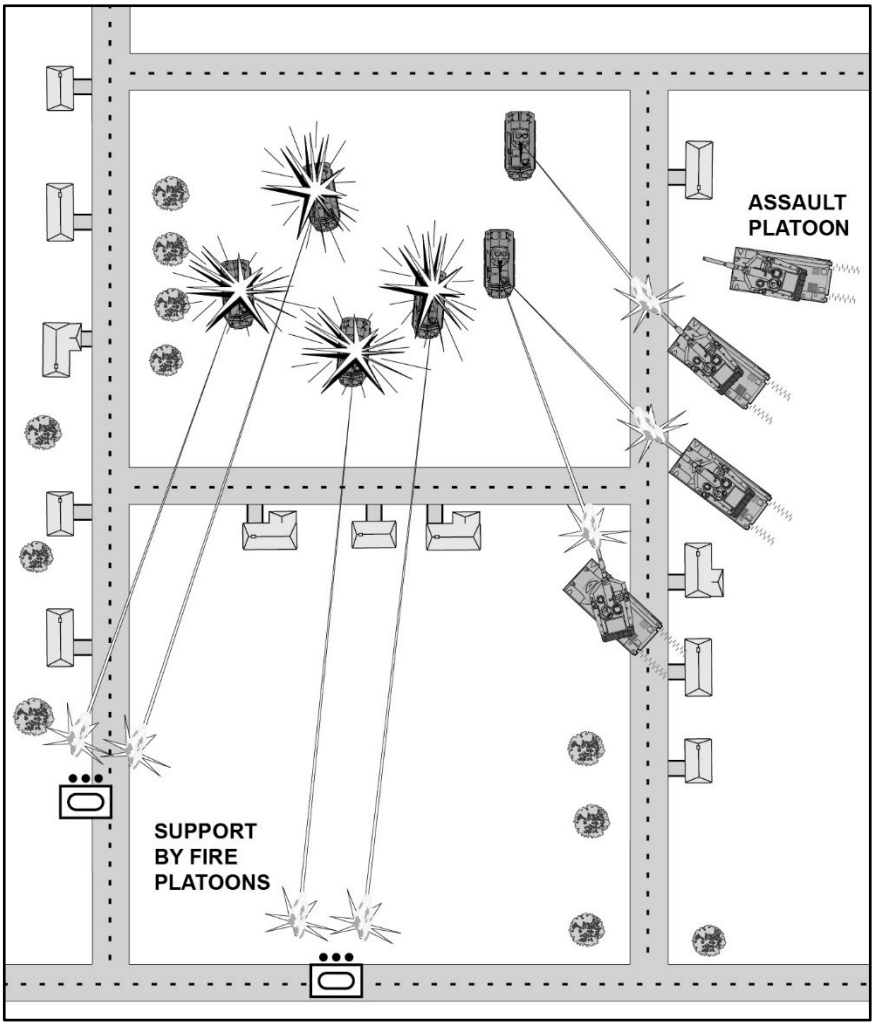

Figure G-7. Platoon executes an assault as two other platoons support by fire

BYPASS

G-17. As part of the original plan or on recommendation of the platoon leader, the commander may order the platoon to bypass the enemy to maintain the tempo of the attack. This COA can be taken against either an inferior or superior force. The commander may designate one platoon to suppress the enemy, allowing the other platoons to use covered and concealed routes, weapon standoff, and obscuration to bypass known enemy locations.

Note. Units may have to execute contact drills while conducting the bypass.

G-18. Once clear of the enemy, the supporting platoon hands the enemy over to another force, breaks contact, and rejoins the company. If necessary, the platoon leader can employ tactical movement to break contact with the enemy and continue the mission; the platoon leader can also request supporting direct and indirect fires and smoke to suppress and obscure the enemy as the platoon safely breaks contact. (See figures G-8 and G-9 for an example of a bypass.)

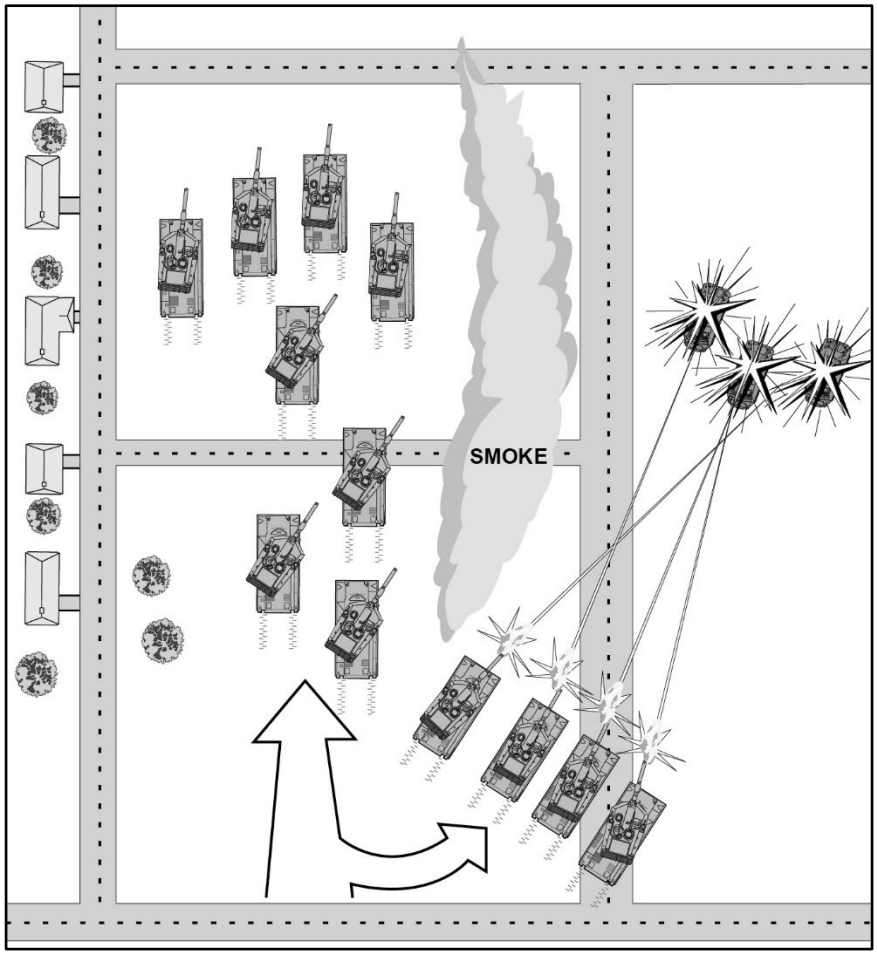

Figure G-8. Bypass

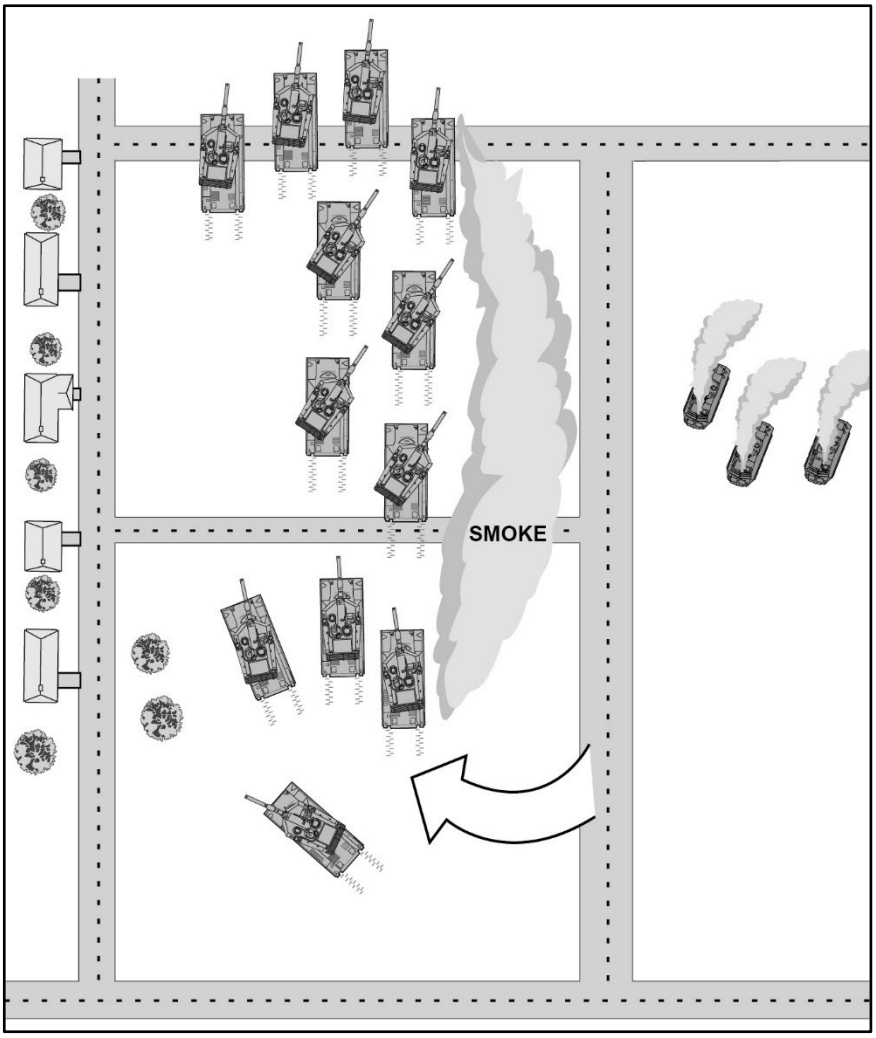

Figure G-9. Bypass (continued)

RECONNAISSANCE BY FIRE

G-19. Based on the original plan or a recommendation from the platoon leader, the commander may direct the platoon to execute reconnaissance by fire when enemy contact is expected or when contact has occurred, but the enemy situation is vague. The platoon then conducts tactical movement, occupying successive overwatch positions until it makes contact with the enemy or reaches the objective.

G-20. At each overwatch position, the platoon leader may designate TRPs. The platoon leader then either requests indirect fires or employs direct fires on likely enemy locations to cause the enemy force to return direct fire or to move, thus compromising its positions.

The platoon leader directs individual tanks or sections to fire their caliber .50 and/or coaxial machine guns into targeted areas.

Note. In some situations, main-gun fire can also be used.

G-21. Individual tanks and sections not designated to reconnoiter by fire observe the effects of the firing tanks and engage enemy forces as they are identified. Focus of the reconnaissance by fire is on the key terrain that dominates danger areas, on built-up areas that dominate the surrounding terrain, and on wooded areas not yet cleared.

Note. A disciplined enemy force may not return fire or move if it determines that the pattern or type of fires employed will be nonlethal. The platoon leader must analyze the situation and direct the use of appropriate fires on suspected positions. For example, the platoon leader would use small-arms fire against suspected dismounted elements but employ main guns to engage bunkers or other fortified positions.

SECTION II – GRAPHIC CONTROL MEASURES

G-22. Unless they are specified as such, graphic control measures are not considered rigid and unchangeable. For example, if the map location of a support by fire position does not allow the platoon leader to mass direct fires on the enemy, the platoon leader can, in most situations, inform the commander and adjust the position as needed to accomplish the platoon mission. Control measures do not restrict the platoon's battle space; instead, they assist the platoon leader in identifying the necessary coordination that must be accomplished with adjacent platoons.

ASSAULT POSITION

G-23. An *assault position* is a covered and concealed position short of the objective from which final preparations are made to assault the objective (ADP 3-90). This is the last covered and concealed position short of the objective from which the tank platoon conducts final preparations to assault the objective. (See figure G-10.)

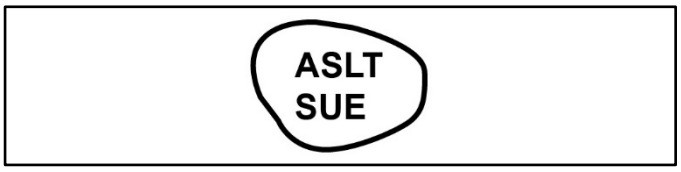

Figure G-10. Assault position

ATTACK BY FIRE POSITION

G-24. An *attack by fire position* designates the general position from which a unit performs the tactical task of attack by fire (ADP 3-90). The purpose of these positions is to mass the effects of direct fire systems for one or multiple locations toward enemy forces. (See figure G-11.)

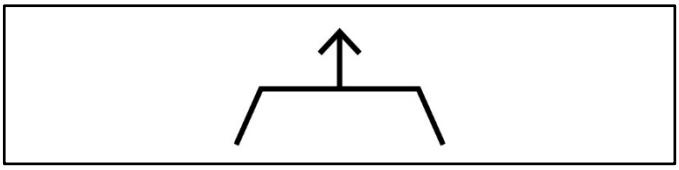

Figure G-11. Attack by fire position

ATTACK POSITION

G-25. The *attack position* is the last position an attacking force occupies or passes through before crossing the line of departure (ADP 3-90). An attack position facilitates an attacking force's deployment and lastminute coordination before it crosses the LD. (See figure G-12.)

Figure G-12. Attack position

AXIS OF ADVANCE

G-26. An *axis of advance* designates the general area through which the bulk of a unit's combat power must move (ADP 3-90). (See figure G-13.) An axis of advance is used for three primary reasons:

- To direct the bypass of locations that could delay the progress of the advancing force, such as known contaminated areas.
- To indicate that the unit is not required to clear the entire assigned area as it advances. The force will be required to clear the axis based on specified bypass criteria.
- To indicate to a unit involved in offensive encirclement, exploitation, or pursuit operations the need to move rapidly toward an objective.

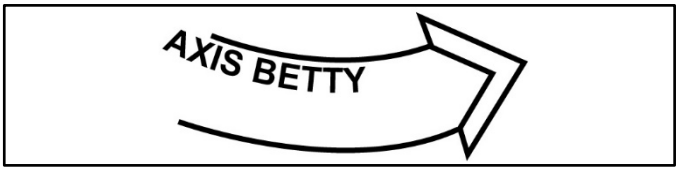

Figure G-13. Axis of advance

BATTLE HANDOVER LINE

G-27. The *battle handover line* is a designated phase line where responsibility transitions from the stationary force to the moving force and vice versa (ADP 3-90). (See figure G-14, page 374.)

Figure G-14. Battle handover line

BOUNDARIES

G-28. A *boundary* is a line that delineates surface areas for the purpose of facilitating coordination and deconfliction of operations between adjacent units, formations, or areas (JP 3-0). Boundaries are normally drawn along identifiable terrain features and are used to delineate responsibility between adjacent units and between higher and lower echelon HQ. Boundaries should not split responsibilities for key or decisive terrain, roads, rivers, or railways. Boundaries by themselves or with other control can be used to define a unit's assigned area: AO, zone, or sector.

CONTACT POINT

G-29. A *contact point* is a point on the terrain, easily identifiable, where two or more units are required to make contact (JP 3-50). Leaders establish a contact point where a PL crosses a lateral boundary or another identifiable terrain feature as a technique to ensure coordination between two units. The leader provides a date-time group to indicate when to make that physical contact. (See figure G-15.)

Figure G-15. Contact point

COORDINATION POINT

G-30. A *coordination point* is a point that indicates a specific location for the coordination of tactical actions between adjacent units (FM 3-90). It is used when a PL crosses a lateral boundary between two units or whenever a boundary crosses the forward edge of the battle area. The difference between a contact point and a coordination point is that the establishing HQ does not dictate the exact time when contact is required. (See figure G-16.)

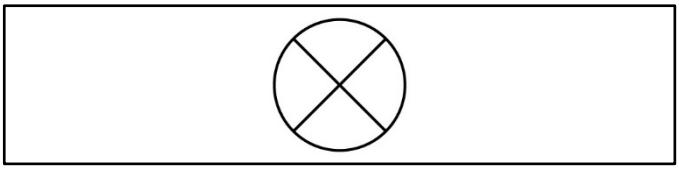

Figure G-16. Coordination point

DISENGAGEMENT LINE

G-31. A *disengagement line* is a phase line located on identifiable terrain that, when crossed by the enemy, signals to defending elements that it is time to displace to their next position (ADP 3-90). Commanders establish criteria, either time or condition based, for disengagement, such as number of enemy vehicles by type, friendly losses, or enemy movement to flanking locations.

LIMIT OF ADVANCE

G-32. The *limit of advance* is a phase line used to control forward progress of the attack (ADP 3-90). An LOA is a restrictive control measure because the attacking unit does not advance any of its elements or assets beyond the LOA, but the attacking unit can push its security forces to that limit. (See figure G-17.)

Figure G-17. Limit of advance

LINE OF DEPARTURE

G-33. The *line of departure* is a line designated to coordinate the departure of attack elements (JP 3-31). The purpose of the LD is to coordinate the advance of the attacking force so that its elements strike the enemy in the order and at the time desired. The LD also marks where the unit often transitions from movement to maneuver. (See figure G-18.)

Figure G-18. Line of departure

OBJECTIVE

G-34. *Objective* is a location used to orient operations, phase operations, facilitate changes of direction, and provide for unity of effort (ADP 3-90). Objectives should be easily identifiable on the ground to facilitate their recognition. (See figure G-19.)

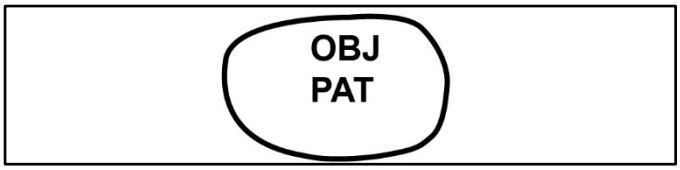

Figure G-19. Objective

POINT OF DEPARTURE

G-35. *Point of departure* is a point where the platoon crosses the LD and begins movement along the direction of attack (ADP 3-90). Like the LD, it marks the point where the unit transitions from movement to maneuver under conditions of limited visibility. (See figure G-20.)

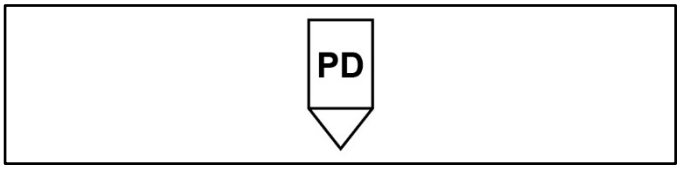

Figure G-20. Point of departure

PROBABLE LINE OF DEPLOYMENT

G-36. A PLD is a PL that designates the location where the leader intends to deploy the platoon into assault formation before beginning the assault. (See figure G-21.)

Figure G-21. Probable line of deployment

ROUTE

G-37. A *route* is the prescribed course to be traveled from a point of origin to a destination (FM 3-90). Routes can have different functions. Commanders can add those functions as adjectives to specify different types of routes. (See figure G-22.)

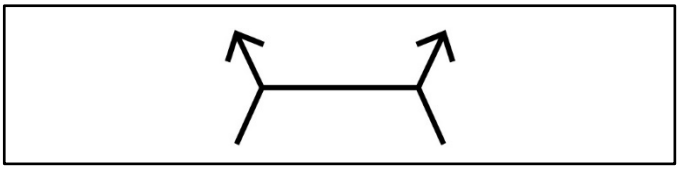

Figure G-22. Route

SUPPORT BY FIRE POSITION

G-38. A *support by fire position* designates the general position from which a unit performs the tactical mission task of support by fire (ADP 3-90). The purpose of this position is to increase the supported force's freedom of maneuver by placing direct fires on an objective that a friendly force is going to assault. (See figure G-23.)

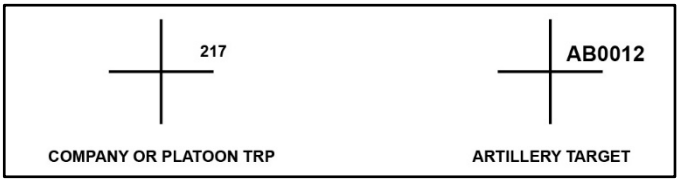

Figure G-23. Support by fire position

TARGET REFERENCE POINT

G-39. A *target reference point* is a predetermined point of reference, normally a permanent structure or terrain feature that can be used when describing a target location (JP 3-09.3). A TRP is an easily recognizable point on the ground, either natural or manmade used to initiate, distribute, and control fires. (See figure G-24, page 379.)

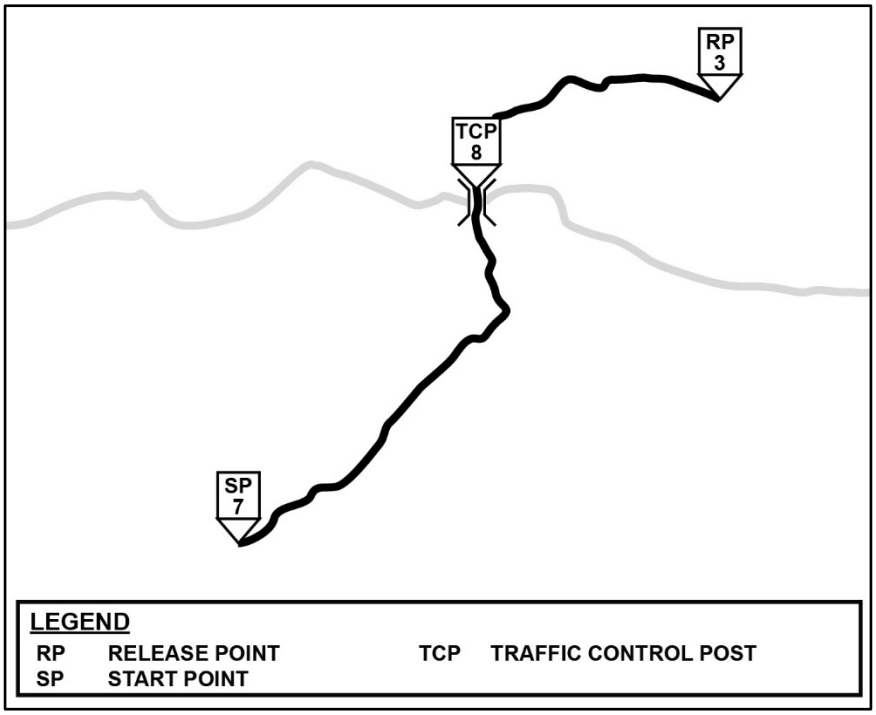

Figure G-24. Target reference point

TRIGGER LINE

G-40. A *trigger line* is a phase line used to initiate and mass fires into an engagement area or an objective at a predetermined range for all or like weapon systems (FM 3-90). Event or time-oriented criteria are used to initiate planned actions directed toward achieving surprise and inflicting maximum destruction on the enemy.

Appendix H

Tactical Mission Tasks

The tactical mission tasks in the appendix describe the effects or results that the leader wants to achieve. While that tank platoon may not be capable of achieving each, must understand what each means and how they relate to the mission statement.

H-1. Tactical mission tasks are the what of a mission statement. Many of the words and terms used to describe the what of a mission statement do not have special connotations. However, units must have a shared understanding of the what of the operation to include the following: (See FM 3-90 for more information.)

- Attack by fire is a tactical mission task using direct and indirect fires to engage an enemy from a distance.
- Block is a tactical mission task that denies the enemy access to an area or an avenue of approach.
- Block is also an obstacle effect that integrates fire planning and obstacle effort to stop an attacker along a specific avenue of approach or prevent the attacking force from passing through an EA.
- Breach is a tactical mission task in which a unit breaks through or establishes a passage through an enemy obstacle.
- Bypass is a tactical mission task in which a unit deliberately avoids contact with an obstacle or an enemy force.
- Canalize is a tactical mission task in which a unit restricts enemy movement to a narrow zone.
- Clear is a tactical mission task in which a unit eliminates all enemy forces within an assigned area.
- Contain is a tactical mission task in which a unit stops, holds, or surrounds an enemy force.
- Control is a tactical mission task in which a unit maintains physical influence over an assigned area.
- Counterreconnaissance is a tactical mission task that encompasses all measures taken by a unit to counter enemy reconnaissance and surveillance efforts.
- Destroy is a tactical mission task that physically renders an enemy force combat-ineffective until it is reconstituted.
- Disengage is a tactical mission task in which a unit breaks contact with an enemy to conduct another mission or to avoid becoming decisively engaged.
- Disrupt is a tactical mission task in which a unit upsets an enemy's formation or tempo and causes the enemy force to attack prematurely or in a piecemeal fashion.
- Disrupt is also an obstacle effect that focuses fire planning and obstacle effort to cause the enemy to break up its formation and tempo, interrupt its timetable, commit breaching assets prematurely, and attack in a piecemeal effort.

- Exfiltrate is a tactical mission task in which a unit removes Soldiers or units from areas under enemy control by stealth, deception, surprise, or clandestine means.
- Fix is a tactical mission task in which a unit prevents the enemy from moving from a specific location for a specific period.
- Fix is also an obstacle effect that focuses fire planning and obstacle effort to slow an attacker's movement within a specified area, normally an EA.
- Follow and assume is a tactical mission task in which a committed force follows and supports a lead force conducting an offensive operation and continues the mission if the lead force cannot continue.
- Follow and support is a tactical mission task in which a committed force follows and supports a lead force conducting an offensive operation.
- Interdict is a tactical mission task where a unit prevents, disrupts, or delays the enemy's use of an area or route in any domain.
- Isolate is a tactical mission task in which a unit seals off an enemy, physically and psychologically, from sources of support and denies it freedom of movement.
- Neutralize is a tactical mission task in which a unit renders the enemy incapable of interfering with an operation.
- Occupy is a tactical mission task in which a unit moves into an area to control it without enemy opposition.
- Reduce is a tactical mission task in which a unit destroys an encircled or bypassed enemy force.
- Retain is a tactical mission task in which a unit prevents enemy occupation or use of terrain.
- Secure is a tactical mission task in which a unit prevents the enemy from damaging or destroying a force, facility, or geographical location.
- Seize is a tactical mission task in which a unit takes possession of a designated area by using overwhelming force.
- Support by fire is a tactical mission task in which a unit engages the enemy by direct fire in support of another maneuvering force.
- Suppress is a tactical mission task in which a unit temporarily degrades a force or weapon system from accomplishing its mission.
- Turn is a tactical mission task in which a unit forces an enemy force from one avenue of approach or movement corridor to another.
- Turn is also an obstacle effect that integrates fire planning and obstacle effort to divert an enemy formation from one avenue of approach to an adjacent avenue of approach or into an EA.

Appendix I

Tank Platoon in Cavalry Squadron

With the addition of an Armor company to the ABCT Cavalry squadron modified table of organization and equipment, an Armor platoon leader must be prepared to employ a tank platoon in an organization that has a different mission than a standard CAB. Tank platoons must fully understand their task, purpose, and commander's intent to facilitate the mission of the Cavalry squadron. Tank platoons must be prepared to provide direct-fire support to help Cavalry elements in destroying enemy forces or allow the Cavalry units to retrograde and rejoin in the defense.

CAVALRY SQUADRON

I-1. Besides understanding the tank platoons' capabilities and limitations, the platoon leader must appreciate the tactical assets and liabilities of the mounted and dismounted capabilities of the Cavalry squadron. The platoon leader must realize that dismounted scout elements move much more slowly than armored vehicles, but that they can use terrain very effectively to gain a positional advantage over the enemy and that terrain has a direct impact on survivability for the scout.

I-2. Cavalry squadrons conduct reconnaissance and security tasks in close contact with enemy organizations and civilian populations consistent with the fundamentals of reconnaissance and security. Squadrons help the BCT commander in identifying gaps or weaknesses in the plan and identify opportunities to exploit and improve the situational understanding. Reconnaissance and security tasks answer PIRs. Reconnaissance and security tasks enable the commander to make decisions and direct forces to achieve mission success. Reconnaissance and security tasks enable successful offense, defense, and stability operations. (See ATP 3-20.96 for more information.)

I-3. The ABCT Cavalry squadron is composed of an HQ and HQ troop, three Cavalry troops, and one Armor company. (Figure I-1, page 382 illustrates the organization of an ABCT Cavalry squadron.)

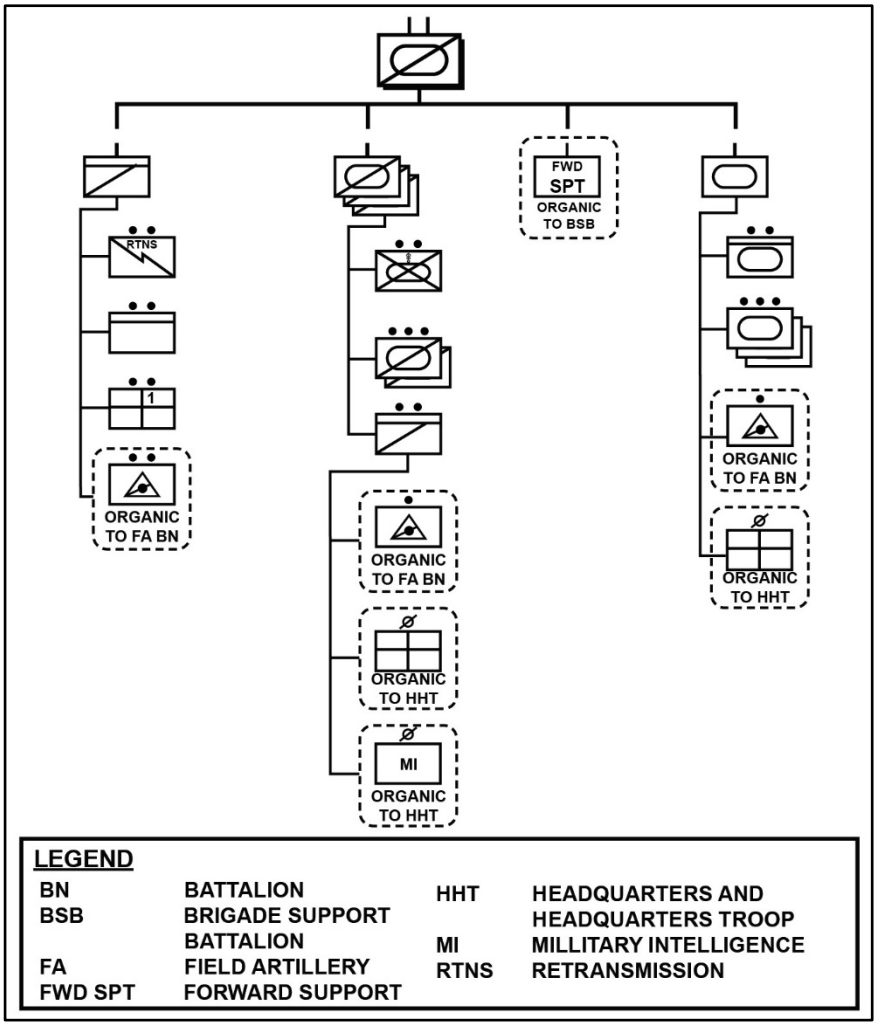

Figure I-1. Armored brigade combat team Cavalry squadron organization

I-4. As the eyes and ears of the squadron commander, the Cavalry troop is the squadron commander's primary reconnaissance and security asset. Cavalry troops provide the information the commander needs to conduct better-informed planning, to direct operations, and to visualize the assigned area. The Cavalry troop skillfully conducts reconnaissance and security tasks to collect information about the threat's location, disposition, and composition. As part of the squadron, the Cavalry troop provides reaction time and maneuver space for the BCT commander. In turn, these operations allow the BCT commander to shape the assigned area proactively and to accept or initiate contact at times and places of the commander's choosing. Cavalry troops conduct reconnaissance and security tasks throughout the squadron and BCT assigned area.

ARMORED BRIGADE COMBAT TEAM CAVALRY TROOP

I-5. The ABCT Cavalry troop is organized, equipped, and trained to conduct reconnaissance and security tasks throughout the squadron and BCT assigned area. The ABCT Cavalry troop organization includes an HQ section, two scout platoons, and a mortar section. (See ATP 3-20.97 for more information.) (Figure I-2 illustrates the organization of an ABCT Cavalry troop.)

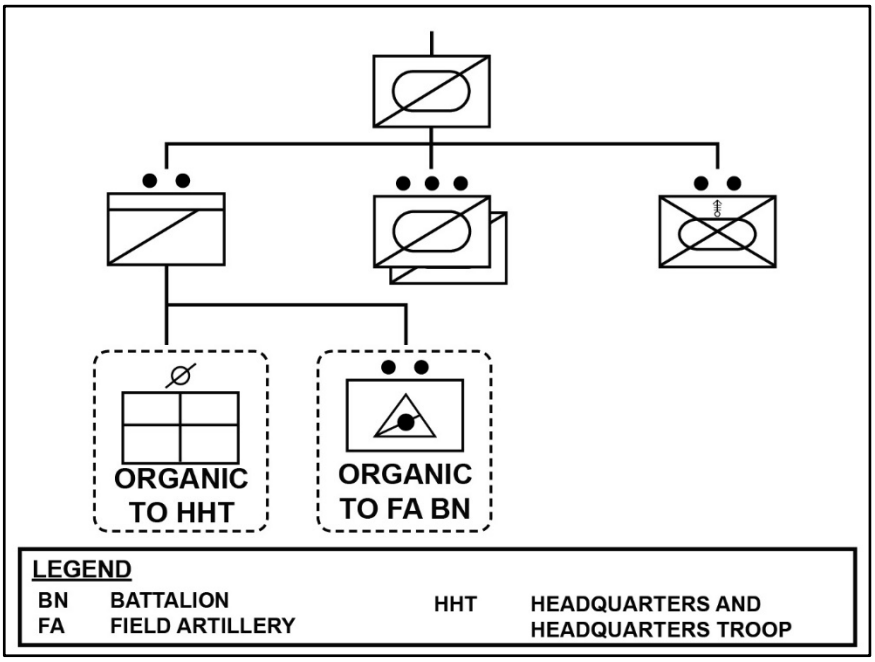

Figure I-2. Armored brigade combat team Cavalry troop organization

I-6. The ABCT Cavalry troop capabilities include survivability in large-scale combat operations and fighting for information. The BFV, armed with a 25-mm cannon, 7.62-mm coaxial machine gun, and tube launched, optically tracked, wire-guided missile system provides firepower.

I-7. The ABCT Cavalry troop limitations include limited maneuverability in urban environments and other types of complex terrain. The troop's heavier vehicles create sustainment consideration for resupply, refueling, and maintenance despite the ABCT's enhanced sustainment capability.

I-8. Tank platoons are organic to the Armor company, but they can be task organized in many ways at the company, platoon, or section level. The task organization used impacts which mission the tank platoon receives and what they can expect to happen. Three task organization possibilities include the following:

- Pure (no task organization): the Armor company is retained as a single maneuver element.
- Augmented:

  - One tank platoon is task organized to a Cavalry troop.
  - The Armor company (-) is retained as a maneuver element.
- Balanced:
  - Two Cavalry troops each receive one tank platoon.
  - The Armor company (-) receives one scout platoon.

I-9. Tank platoons provide a mobile, protected direct-fire capability that allows forward Cavalry units to be aggressive in the execution of their reconnaissance and security tasks and operate with greater audacity. Follow and support roles for tank platoons are common and as such, tank platoon leaders must be prepared to conduct all tactical tasks associated with any tank platoon. In addition, tank platoons must be prepared to operate at the platoon and section level over wide areas in support of scout sections, scout platoons, or the Cavalry troop. Planning and rehearsing forward and rearward passage of lines is vital for this to happen. (See chapter 5.)

I-10. When attached to a Cavalry troop, tank platoon leaders and PSGs must understand Cavalry troop capabilities and the unit SOP. The tank platoon leaders should address tank platoon and section specific capabilities and requirements. Considerations include mobility, lethality, available personnel to perform dismounted tasks, operations in proximity to dismounted scouts, local security, and unique resupply (Classes III [Bulk], III [Package], and V), recovery, battle damage assessment, and repair requirements.

Glossary

The glossary lists acronyms and terms with Army or joint definitions. Where Army and joint definitions differ, (Army) precedes the definition. Terms for which ATP 3-20.15 is the proponent are marked with an asterisk (*). The proponent publication for other terms is listed in parentheses after the definition.

SECTION I – ACRONYMS AND ABBREVIATIONS

1SG	first sergeant
AA	assembly area
ABCT	Armored brigade combat team
AAR	after action review
ADP	Army doctrine publication
AO	area of operations
APFSDS	armor-piercing fin-stabilized discarding sabot
AR	Army regulation
ASCOPE	areas, structures, capabilities, organizations, people, and events
AT	antitank
ATP	Army techniques publication
BAS	battalion aid station
BCT	brigade combat team
BFV	Bradley fighting vehicle
BHL	battle handover line
BN	battalion
BP	battle position
CAB	combined arms battalion
CAS	close air support
CASEVAC	casualty evacuation
CBRN	chemical, biological, radiological, or nuclear
CCP	casualty collection point
CITV	commander’s independent thermal viewer
COA	course of action
CP	command post

CROWS	Common Remotely Operated Weapon Station
C-UAS	counter-unmanned aircraft system
DA	Department of the Army
DA Pam	Department of the Army pamphlet
DD	Department of Defense
DFCM	direct fire control measure
EA	engagement area
EMCON	emission control
EW	electromagnetic warfare
FA	field artillery
FDC	fire direction center
FIST	fire support team
FM	frequency modulation/field manual
FMT	field maintenance team
FO	forward observer
FPF	final protective fire
FRAGORD	fragmentary order
FSC	forward support company
FSO	fire support officer
GPS	Global Positioning System
GTA	graphic training aid
GTAO	graphic terrain analysis overlay
HEAT	high-explosive antitank
HEMP-T	high explosive multi-purpose with tracer
HOPE-LW	higher echelon's timeline, operational, planning and preparation, enemy timeline, light and weather
HQ	headquarters
IPOE	intelligence preparation of the operational environment
IR	infrared
JP	joint publication
LD	line of departure
LOA	limit of advance
LOGPAC	logistics package
MAAWS	Multi-role Antiarmor Antipersonnel Weapon System
MCP	maintenance collection point
MEDEVAC	medical evacuation

METT-TC (I)	mission, enemy, terrain and weather, troops and support available, time available, civil considerations, and informational considerations
mm	millimeter
MOPP	mission oriented protective posture
MPAT	multi-purpose antitank
MTC	movement to contact
MTF	medical treatment facility
NCO	noncommissioned officer
OAKOC	observation and fields of fire, avenues of approach, key terrain, obstacles, and cover and concealment
OE	operational environment
OP	observation post
OPORD	operation order
OPSEC	operations security
OR	obstacle-reducing
OT	observer target
PACE	primary, alternate, contingency, and emergency
PCC	precombat check
PCI	precombat inspection
PD	point of departure
PIR	priority intelligence requirement
PK	probability of kill
PL	phase line
PLD	probable line of deployment
PMCS	preventive maintenance checks and services
POSNAV	position navigation system
PSG	platoon sergeant
REDCON	readiness condition
RFL	restrictive fire line
ROE	rules of engagement
ROM	refuel on the move
RP	release point
SBCT	Stryker brigade combat team
SDZ	surface danger zone
SOP	standard operating procedure

SOSRA	suppress, obscure, secure, reduce, and assault
SP	start point
SPOTREP	spot report
SUAS	small unmanned aircraft system
S-2	battalion or brigade intelligence staff officer
TC	training circular
TCCC	tactical combat casualty care
TLP	troop leading procedures
TM	technical manual
TRP	target reference point
UAS	unmanned aircraft system
U.S.	United States
VC	vehicle commander
WARNORD	warning order
WCS	weapons control status
WP	white phosphorous
XO	executive officer

SECTION II – TERMS

actions on contact

A process to help leaders understand what is happening and to take action. (FM 3-90)

alternate position

A defensive position that the commander assigns to a unit or weapon system for occupation when the primary position becomes untenable or unsuitable for carrying out the assigned task. (FM 3-90)

approach march

The advance of a combat unit when direct contact with the enemy is intended. (FM 3-90)

area defense

A type of defensive operation that concentrates on denying enemy forces access to designated terrain for a specific time rather than destroying the enemy outright. (ADP 3-90)

area of interest

That area of concern to the commander, including the area of influence, areas adjacent to it, and extending into enemy territory. (JP 3-0)

area reconnaissance

A form of reconnaissance operation that focuses on obtaining detailed information about the terrain or enemy activity within a prescribed area. (FM 3-90)

area security

A type of security operation conducted to protect friendly forces, lines of communications, and activities within a specific area. (ADP 3-90)

assembly area

An area a unit occupies to prepare for an operation. (FM 3-90)

attack

A type of offensive operation that defeats enemy forces, seizes terrain, or secures terrain. (FM 3-90)

avenue of approach

(Army) An air or ground route leading to an objective (or to key terrain in its path) that an attacking force can use. (ADP 3-90)

battle position

A defensive location oriented on a likely enemy avenue of approach. (ADP 3-90)

breach

A synchronized combined arms activity under the control of the maneuver commander conducted to allow maneuver through an obstacle. (ATP 3-90.4)

breach area

A defined area where a breach occurs. (ATP 3-90.4)

casualty evacuation

The movement of casualties aboard nonmedical vehicles or aircraft without en route medical care. (FM 4-02)

chemical, biological, radiological, or nuclear environment

An operational environment that includes chemical, biological, radiological, or nuclear threats and hazards and their resulting effects. (JP 3-11)

chemical hazard

Any chemical manufactured, used, transported, or stored that can cause death or other harm through toxic properties of those materials, including chemical agents, chemical weapons prohibited under the Chemical Weapons Convention, and toxic industrial chemicals. (JP 3-11)

column formation

A movement formation with elements arranged one behind another. (FM 3-90)

combat outpost

A reinforced observation post capable of conducting limited combat operations. (FM 3-90)

combat power

The total means of destructive and disruptive force that a military unit/formation can apply against an enemy at a given time. (JP 3-0)

combined arms

The synchronized and simultaneous application of arms to achieve an effect greater than if each element was used separately or sequentially. (ADP 3-0)

commander's intent

A clear and concise expression of the purpose of an operation and the desired objectives and military end state. (JP 3-0)

consolidate

To organize and strengthen a captured position to use it against the enemy. (FM 3-90)

constraint

(Army) A restriction placed on the command by a higher command.. (FM 5-0)

contact point

In land warfare, a point on the terrain, easily identifiable, where two or more units are required to make contact. (JP 3-50)

control measure

A means of regulating forces or warfighting functions. (ADP 6-0)

cover

(Army) A type of security operation done independent of the main body to protect them by fighting to gain time while preventing enemy ground observation of and direct fire against the main body. (ADP 3-90)

cyberspace operations

The employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace. (JP 3-0)

decisive point

Key terrain, key event, critical factor, or function that, when acted upon, enables commanders to gain a marked advantage over an enemy or contribute materially to achieving success. (JP 5-0)

decisive terrain

Key terrain whose seizure and retention is mandatory for successful mission accomplishment. (ADP 3-90)

defensive operation

An operation to defeat an enemy attack, gain time, economize forces, and develop conditions favorable for offensive or stability operations. (ADP 3-0)

delay

When a force under pressure trades space for time by slowing down the enemy's momentum and inflicting maximum damage on enemy forces without becoming decisively engaged. (ADP 3-90)

deliberate breach

The systematically planned and executed creation of a lane through a barrier or obstacle. (ATP 3-90.4)

deliberate operation

An operation in which the tactical situation allows the development and coordination of detailed plans, including multiple branches and sequels. (ADP 3-90)

disengagement line

A phase line located on identifiable terrain that, when crossed by the enemy, signals to defending elements that it is time to displace to their next position. (ADP 3-90)

domain

A physically defined portion of an operational environment requiring a unique set of warfighting capabilities and skills. (FM 3-0)

echelon formation

A movement formation with elements arranged on an angle to the left or to the right of the direction of attack (echelon left, echelon right). (FM 3-90)

electromagnetic protection

Division of electromagnetic warfare involving actions taken to protect personnel, facilities, and equipment from any effects of friendly or enemy use of the electromagnetic spectrum that degrade, neutralize, or destroy friendly combat capability. (JP 3-85)

electromagnetic warfare

Military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. (JP 3-85)

emission control

The selective and controlled use of electromagnetic, acoustic, or other emitters to optimize command and control capabilities while minimizing, for operations security: a. detection by enemy sensors, b. mutual interference among friendly systems, and/or c. enemy interference with the ability to execute a military deception plan. (JP 3-85)

enabling operation

An operation that sets the friendly conditions required for mission accomplishment. (FM 3-90)

engagement area

An area where the commander masses effects to contain and destroy an enemy force. (FM 3-90)

envelopment

A form of maneuver in which an attacking force avoids an enemy's principal defense by attacking along an assailable flank. (FM 3-90)

essential task

(Army) A specified or implied task that must be executed to accomplish the mission. (FM 5-0)

exploitation

(Army) A type of offensive operation following a successful attack to disorganize the enemy in depth. (FM 3-90)

far side objective

A defined location oriented on the terrain or on an enemy force that an assaulting force seizes to eliminate enemy direct fires to prevent the enemy from interfering with the reduction of the obstacles and allows follow-on forces to move securely through created lanes. (ATP 3-90.4)

final protective fire

An immediately available, prearranged barrier of fire designed to impede enemy movement across defensive lines or areas. (JP 3-09.3)

final protective line

A selected line of fire where an enemy assault is to be checked by interlocking fire from all available weapons and obstacles. (FM 3-90)

fire support

Fires that directly support land, maritime, amphibious, space, cyberspace, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives. (JP 3-09)

fire support officer

Is the operational to tactical level field artillery officer responsible for advising the supported commander or assisting the fire support coordinator on fires functions and fire support. (FM 3-09)

fire support planning

The continuous process of analyzing, allocating, integrating, synchronizing, and scheduling fires to describe how the effects of fires facilitate maneuver force actions. (FM 3-09)

fire support team

A field artillery team provided for each maneuver company/troop and selected units to plan and coordinate all supporting fires available to the unit, including mortars, field artillery, naval surface fire support, and close air support integration. (JP 3-09.3)

fires

The use of weapon systems or other actions to create specific lethal or nonlethal effects on a target. (JP 3-09)

fix

A tactical mission task in which a unit prevents the enemy from moving from a specific location for a specific period. (FM 3-90)

forced march

A march longer or faster than usual or in adverse conditions. (FM 3-90)

forms of maneuver

Distinct tactical combinations of fire and movement with a unique set of doctrinal characteristics that differ primarily in the relationship between the maneuvering force and the enemy. (ADP 3-90)

fragmentary order

An abbreviated operation order issued as needed to change or modify an order or to execute a branch or sequel. (JP 5-0)

frontal attack

A form of maneuver in which an attacking force seeks to destroy a weaker enemy force or fix a larger enemy force in place over a broad front. (FM 3-90)

guard

A type of security operation done to protect the main body by fighting to gain time while preventing enemy ground observation of and direct fire against the main body. (ADP 3-90)

hasty breach

The creation of lanes through enemy minefields by expedient methods such as blasting with demolitions, pushing rollers or disabled vehicles through the minefields when the time factor does not permit detailed reconnaissance, deliberate breaching, or bypassing the obstacle. (JP 3-15)

hasty operation

An operation in which a commander directs immediately available forces, using fragmentary orders, to perform tasks with minimal preparation, trading planning and preparation time for speed of execution. (ADP 3-90)

hybrid threat

The diverse and dynamic combination of regular forces, irregular forces, and/or criminal elements all unified to achieve mutually benefitting effects. (TC 7-100)

implied task

A task that must be performed to accomplish a specified task or mission but is not stated in the higher headquarters' order. (FM 5-0)

infiltration

A form of maneuver in which an attacking force conducts undetected movement through or into an area occupied by enemy forces. (FM 3-90)

key terrain

(Army) An identifiable characteristic whose seizure or retention affords a marked advantage to either combatant. (ADP 3-90)

large-scale combat operations

Extensive joint combat operations in terms of scope and size of forces committed, conducted as a campaign aimed at achieving operational and strategic objectives. (ADP 3-0)

linkup

A type of enabling operation that involves the meeting of friendly ground forces, which occurs in a variety of circumstances. (FM 3-90)

line formation

A movement formation in which elements move abreast of each other. (FM 3-90)

local security

The low-level security activities conducted near a unit to prevent surprise by the enemy. (ADP 3-90)

main body

The principal part of a tactical command or formation. It does not include detached elements of the command, such as advance guards, flank guards, and covering forces. (ADP 3-90)

main effort

A designated subordinate unit whose mission at a given point in time is most critical to overall mission success. (ADP 3-0)

medical evacuation

The timely and effective movement of the wounded, injured, or ill to and between medical treatment facilities on dedicated and properly marked medical platforms with en route care provided by medical personnel. (ATP 4-02.2)

meeting engagement

A combat action that occurs when a moving force engages an enemy at an unexpected time and place. (FM 3-90)

mission statement

A short sentence or paragraph that describes the organization's essential task(s), purpose, and action containing the elements of who, what, when, where, and why. (JP 5-0)

mobile defense

A type of defensive operation that concentrates on the destruction or defeat of the enemy through a decisive attack by a striking force. (ADP 3-90)

mobility tasks

Combined arms activities that mitigate the effects of obstacles to enable freedom of movement and maneuver. (ATP 3-90.4)

movement formation

An ordered arrangement of forces for a specific purpose and the general configuration of a unit on the ground. (ADP 3-90)

movement to contact

(Army) A type of offensive operation designed to establish or regain contact to develop the situation. (FM 3-90)

multidomain operations

The combined arms employment of joint and Army capabilities to create and exploit relative advantages that achieve objectives, defeat enemy forces, and consolidate gains on behalf of joint force commanders. (ADP 3-0)

nontactical movement

A movement in which troops and vehicles are arranged to expedite their movement and conserve time and energy when no enemy ground interference is anticipated. (FM 3-90)

observation post

A position from which observations are made or fires are directed and adjusted. (FM 3-90)

obstacle

Any barrier designed or employed to disrupt, fix, turn, or block the movement and maneuver, and to impose additional losses in personnel, time, and equipment. (JP 3-15)

offensive operation

An operation to defeat or destroy enemy forces and gain control of terrain, resources, and population centers. (ADP 3-0)

operation

A sequence of tactical actions with a common purpose or unifying theme. (JP 1, Volume 1)

operation order

A directive issued by a commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation. (JP 5-0)

operational environment

The aggregate of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. (JP 3-0)

operational framework

A cognitive tool used to assist commanders and staffs in clearly visualizing and describing the application of combat power in time, space, purpose, and resources in the concept of operations. (ADP 1-01)

penetration

A form of maneuver in which a force attacks on a narrow front. (FM 3-90)

point of breach

The location at an obstacle where the creation of a lane is being attempted. (ATP 3-90.4)

point of departure

The point where the unit crosses the line of departure and begins moving along a direction of attack. (ADP 3-90)

point of penetration

(Army) Point of penetration is the location, identified on the ground, where the commanders concentrate their efforts to seize a foothold on the far side objective. (ATP 3-90.4)

preparation fires

A brief, intense bombardment on selected targets or a prolonged effort over time covering a large number of targets. (FM 3-09)

primary position

The position that covers the enemy's most likely avenue of approach into the assigned area. (FM 3-90)

priority target

A target, based on either time or importance, on which the delivery of fires takes precedence over all the fires for the designated firing unit or element. (FM 3-09)

pursuit

A type of offensive operation to catch or cut off a disorganized hostile force attempting to escape, with the aim of destroying it. (FM 3-90)

quartering party

A group dispatched to a new assigned area in advance of the main body. (FM 3-90)

reconnaissance

A mission undertaken to obtain information about the activities and resources of an enemy or adversary, or to secure data concerning the meteorological, hydrographical, geographical, or other characteristics of a particular area, by visual observation or other detection methods. (JP 2-0)

reconnaissance by fire

A technique in which a unit fires on a suspected enemy position. (FM 3-90)

reconnaissance in force

A form of reconnaissance operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information. (FM 3-90)

reduction area

A number of adjacent points of breach that are under the control of the breaching commander. (ATP 3-90.4)

rehearsal

A session in which the commander and staff or unit practices expected actions to improve performance during executions. (ADP 5-0)

reorganization

All measures taken by the commander to maintain unit combat effectiveness or return it to a specified level of combat capability. (ATP 3-94.4)

reserve

(Army) That portion of a body of troops that is withheld from action at the beginning of an engagement to be available for a decisive movement. (ADP 3-90)

restrictive fire line

A specific boundary established between converging, friendly surface forces that prohibits fires or their effects from crossing. (JP 3-09)

retirement

When a force out of contact moves away from the enemy. (ADP 3-90)

retrograde

(Army) A type of defensive operation that involves organized movement away from the enemy. (ADP 3-90)

risk management

The process to identify, assess, and mitigate risks and make decisions that balance risk cost with mission benefits. (JP 3-0)

route reconnaissance

A form of reconnaissance operation to obtain detailed information of a specified route and all terrain from which the enemy could influence movement along that route. (FM 3-90)

screen

A type of security operation that primarily provides early warning to the protected force. (ADP 3-90)

sector of fire

The area assigned to a unit or weapon system in which it will engage the enemy according to the established engagement priorities. (FM 3-90)

security

Measures taken by a military unit, activity, or installation to protect itself against all acts designed to, or which may, impair its effectiveness. (JP 3-10)

security operations

Those operations performed by a commander to provide early and accurate warning of enemy operations, to provide the force being protected with time and maneuver space within which to react to the enemy, and to develop the situation to allow commanders to effectively use their protected forces. (ADP 3-90)

situational understanding

The product of applying analysis and judgement to relevant information to determine the relationships among the operational and mission variables. (ADP 6-0)

special reconnaissance

Reconnaissance and surveillance actions conducted as a special operation in hostile, denied, or diplomatically and/or politically sensitive environments to collect or verify information of strategic or operational significance, employing military capabilities not normally found in conventional forces. (JP 3-05)

specified task

(Army) A task specifically assigned to a unit by its higher headquarters. (FM 5-0)

standard operating procedure

A set of instructions applicable to those features of operations that lend themselves to a definite or standardized procedure without loss of effectiveness. (JP 3-31)

striking force

A dedicated counterattack force in a mobile defense constituted with the bulk of available combat power. (ADP 3-90)

strong point

A heavily fortified battle position tied to a natural or reinforcing obstacle to create an anchor for the defense or to deny the enemy decisive or key terrain. (ADP 3-90)

subsequent position

A position that a unit expects to move to during the course of battle. (FM 3-90)

supplementary position

A defensive position located within a unit's assigned area that provides the best sectors of fire and defensive terrain along an avenue of approach that is not the primary avenue where the enemy is expected to attack. (FM 3-90)

survivability

A quality or capability of military forces which permits them to avoid or withstand hostile actions or environmental conditions while retaining the ability to fulfill their primary mission. (ATP 3-37.34)

tactical movement

A movement in which troops and vehicles are arranged to protect combat forces during movement when a threat of enemy interference is possible. (FM 3-90)

tactical road march

A rapid movement used to relocate units within an area of operations to prepare for combat operations. (FM 3-90)

target acquisition

The detection, identification, and location of a target in sufficient detail to permit the effective employment of capabilities that create the required effects. (JP 3-60)

target reference point

A predetermined point of reference, normally a permanent structure or terrain feature than can be used when describing a target location. (JP 3-09.3)

task

A clearly defined action or activity specifically assigned by the appropriate authority to an individual or organization, or derived during mission analysis, that must be accomplished. (JP 1, Volume 1)

tempo

The relative speed and rhythm of military operations over time with respect to the enemy. (ADP 3-0)

threat

Any combination of actors, entities, or forces that have the capability and intent to harm United States forces, United States national interests, or the homeland. (ADP 3-0)

trigger line

A phase line located on identifiable terrain used to initiate and mass fires into an engagement area at a predetermined range. (FM 3-90)

troop leading procedures

A dynamic process used by small-unit leaders to analyze a mission, develop a plan, and prepare for an operation. (ADP 5-0)

troop movement

The movement of Soldiers and units from one place to another by any available means. (FM 3-90)

turning movement

(Army) A form of maneuver in which the attacking force seeks to avoid the enemy's principle defensive positions by attacking to the rear of their current positions forcing them to move or divert forces to meet the threat. (FM 3-90)

unity of effort

Coordination and cooperation toward common objectives, even if the participants are not necessarily part of the same command or organization that is the product of successful unified action. (JP 1, Volume 2)

warning order

A preliminary notice of an order or action that is to follow. (JP 5-0)

wedge formation

A movement formation with one lead element and the trail elements are paired off abreast of each other on the flanks. (FM 3-90)

withdraw

To disengage from an enemy force and move in a direction away from the enemy. (ADP 3-90)

zone reconnaissance

A form of reconnaissance operation that involves a directed effort to obtain detailed information on all routes, obstacles, terrain, and enemy forces within a zone defined by boundaries. (FM 3-90)

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Index

Entries are by paragraph number.

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ATP 3-20.15

10 July 2025

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