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# Antiarmor Operations

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**U.S. Marine Corps**

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DEPARTMENT OF THE NAVY  
Headquarters, United States Marine Corps  
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FOREWORD

1. PURPOSE

Marine Corps Warfighting Publication (MCWP) 3-15.5, *Antiarmor Operations*, addresses tactics, techniques, and procedures used by a MAGTF commander, his staff staff, and subordinate commanders in defensive operations against a mechanized or armored force.

2. SCOPE

MCWP 3-15.5 describes how the MAGTF exploits its transitional capabilities to achieve the effects of combined arms against modern mechanized and armored forces.

3. SUPERSESSSION

MCRP 3-15.5 supersedes FMFM 2-11, *Antiarmor Operations*.

4. CHANGES

Recommendations for improving this manual are invited from commands as well as directly from individuals. Forward suggestions using the User Suggestion Form format to:

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5. CERTIFICATION

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

# Antiarmor Operations

## Table of Contents

### Chapter 1. Introduction

1001	The MAGTF vs. Enemy Armored Formations	1-1
1002	Scope	1-1
1003	Marine Corps' Warfighting Concept in Antiarmor Operations	1-2
1004	Engagement Area Model	1-5

### Chapter 2. The Threat

#### Section I. Threat Offensive Doctrine

2101	Threat Offensive Philosophy	2-1
2102	Types of Offensive Action	2-2
2103	Tactical Formations and Movements	2-2
2104	Forms of Maneuver	2-3

#### Section II. Threat Armor

2201	Armor Improvements	2-6
2202	Threat Armored Vehicles	2-8
2203	Armor Vulnerability	2-23
2204	Lightly Armored Vehicles	2-23

### Chapter 3. MAGTF Antiarmor Weapons and Techniques

#### Section I. Antiarmor Weapon Systems

3101	Weapons Systems	3-1
3102	Strength and Weaknesses of Antiarmor Weapons Systems	3-9

#### Section II. Antiarmor Techniques

3201	Methods of Engagement	3-12
3202	Engagement Area	3-14
3203	Weapon Positioning	3-16
3204	Fire Control	3-20
3205	Tank Killer Teams	3-29

**Chapter 4. Antiarmor in the Defense****Section I. Defensive Doctrine**

4101	Fundamentals of the Defense	4-1
4102	Organization of the Battlespace	4-1
4103	Distribution of Forces	4-3
4104	Defensive Positions and Sectors	4-5
4105	Types of Defense	4-6
4106	Offensive Action in the Defense	4-9

**Section II. Organization of a MAGTF Antiarmor Defense**

4201	MAGTF Air and LAI Operations	4-12
4202	Division	4-12
4203	Regiment	4-14
4204	Battalion	4-16
4205	Company	4-19
4206	Maneuvering and Battle Positions	4-20
4207	Reverse Slope Defense	4-24
4208	Perimeter Defense	4-26
4209	Urban Terrain and Antiarmor Operations	4-27
4210	Combat Service Support	4-31
4211	Defense Control Measures	4-31

**Section III. Delay Against Mechanized Forces**

4301	Fundamentals of the Delay	4-33
4302	Techniques for Delaying	4-33
4303	Employment of Delaying Forces	4-35
4304	Employment of the Reserve	4-36
4305	Planning and Conducting a Delay Operation	4-37

**Section IV. Fire Support and the Engagement Area**

4401	Definition	4-40
4402	Offensive Air Support	4-40
4403	Indirect Fire Support	4-43
4404	Fire Support Planning	4-44

**Section V. Engineering Operations and the Engagement Area**

4501	Definitions	4-46
4502	Survivability	4-46
4503	Countermobility	4-48
4504	Existing Obstacles	4-50
4505	Reinforcing Obstacles	4-52
4506	Obstacle Employment Principles	4-54

**Section VI. Intelligence**

4601	MAGTF Intelligence and Reconnaissance Units	4-56
4602	Fundamentals of Intelligence	4-57

**Section VII. Electronic Warfare**

4701	Definitions	4-63
4702	Planning Considerations	4-64

**Chapter 5. Antiarmor Exercise**

5001	General Situation	5-1
5002	Special Situation #1	5-1
5003	Special Situation #2	5-3
5004	Special Situation #3	5-3
5005	Special Situation #4	5-3
5006	Special Situation #5	5-4
5007	Special Situation #6	5-4
5008	Special Situation #7	5-5

**Appendix**

Appendix A	Antiarmor Close Combat Course	A-1
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# Chapter 1

## Introduction

The Marine-Air Ground Task Force (MAGTF) is the Marine Corps' principle organization for the conduct of all missions across the range of military operations. MAGTFs are balanced, combined arms forces with organic ground, aviation, and sustainment elements. MAGTFs have no standard structure, rather the MAGTF provides a single commander a combined arms force that can be tailored to the situation. MAGTFs are flexible, task-organized forces that can respond to a contingency anywhere in the world and are able to conduct a variety of missions.

MAGTFs must be *light* enough to be expeditionary yet *heavy* enough to defeat potential adversaries possessing large armored formations. The expeditionary nature of the Marine Corps limits the number of armor assets available to the MAGTF, while many of our potential enemies continue to expand and upgrade their armored forces. This dilemma requires that the MAGTF commander adopt a style of warfighting which allows him to win without armor parity. The MAGTF defeats enemy armor through the use of combined arms and the execution of maneuver warfare as prescribed in MCDP 1, *Warfighting*.

### 1001. The MAGTF vs. Enemy Armored Formations

A MAGTF may confront two types of armor threat. The first is the small group of tanks operating in support of enemy infantry. The second type is the large armored force which may be the enemy's primary means of influencing the battle. The destruction of either threat is the subject of this manual.

Destroying small groups of tanks is an action that occurs primarily at the small unit level of war. The destruction of enemy armored formations is primarily a tactical action carried out by the integration of all lethal and non-lethal weapon systems available to the MAGTF commander. The defeat of large armored formations *is not* the result of a series of successful, random actions at the platoon and squad level, in which small units utilize supporting arms on an as required basis. Success against large armored formations requires detailed planning, coordination, and the effective use of combined arms from the MAGTF commander down to his subordinate commanders and staffs.

When developing a countermechanized plan for countering a modern opposing force, if intelligence is incomplete, the assumption should normally be made that the MAGTF is potentially facing a sizable enemy armor force. This approach avoids the pitfall of analyzing threat as if it were only operating in an infantry-intensive environment. This precaution should not only be reflected in the Countermechanized Plan in Appendix 20. Rather, it must be integrated and reflected throughout the entire operations order. Adjustments to the countermechanized plan are made according to mission, enemy, terrain and weather, troops and support available, and time available (METT-T). The MAGTF should assume an antiarmor posture as a rule, not an exception.

### 1002. Scope

This manual sets forth the basic concepts of antiarmor operations for the MAGTF commander, subordinate commanders, and his staff. This manual provides general guidance (doctrine and tactics) and specific guidance (techniques and procedures) to commanders and their staffs. The most general guidance is called doctrine, while the most specific guidance is called procedures. Tactics and techniques fall between doctrine and procedures, with tactics being more general than techniques. (See fig. 1-1.)

1  
2  
3 There are no clear divisions between these different levels of guidance. The interdependence of these levels is  
4 equally difficult to quantify. For example, a change in tactics may or may not require a change in procedures. The  
5 guidance in this manual includes doctrine, tactics, techniques, and procedures.  
6

7 **a. Doctrine.** MCWP 3-15.5 (CD) provides the doctrinal foundation for employment of antiarmor operations  
8 by the by the MAGTF commander. MCWP 3-15.5 (CD) also provides an overview of Threat doctrine for antiarmor  
9 operations. Doctrine is the fundamental principles by which the military forces, or elements thereof, guide their  
10 actions in support of national objectives. It is authoritative but requires judgment in application. (Joint Pub 1-02)  
11 Doctrine is a collection of words which describe how military organizations function and how military operations  
12 are conducted. Each principle has (1) a word or phrase for a name and (2) a definition which explains or describes  
13 the principle. The definition may include a list of functions or a list of parts. Doctrine is important because words are  
14 the tools for thinking, teaching, and giving directions. An example is the primacy of the combined arms concept  
15 over individual arms in achieving success.  
16

17 **c. Tactics.** This manual describes the tactical actions that a commander must take to destroy enemy armored  
18 formations. Tactics is 1: employment of units in combat and the ordered arrangement and maneuver of units in  
19 relation to each other and/or to the enemy in order to use their full potentialities (Joint Pub 1-02). .  
20

21 **c. Techniques.** Techniques are methods of accomplishing a goal or mission. An example is engaging enemy  
22 armored formations at the maximum effective range of friendly antiarmor weapon systems.  
23

24 **d. Procedures.** Procedures are a series of standardized steps, a particular way of doing something. An example is  
25 the formulation of an anti armor weapon range card.  
26

### 27 **1003. Marine Corps' Warfighting Concept in Antiarmor Operations**

28

29 The MAGTF defines the Marine Corps' posture toward combat. When the MAGTF is fighting against armored  
30 formations, the fact that the MAGTF is an air-ground team can be used to present the enemy with a dilemma. To  
31 effectively strike our ground forces, the enemy may mass his armor. However, massing his armor may present a  
32 lucrative target to our ground attack aircraft and indirect fire weapon systems. To avoid being attacked by Marine  
33 air, enemy armored commanders will seek to operate in forests, built-up areas, and other close terrain. However,  
34 this type of terrain is ideal for dismounted ground forces can most effectively attack armored vehicles.  
35

36 **a. The MAGTF's Transitional Capability.** The MAGTF commander views his force's traditional combined arms  
37 capability as a combat multiplier, allowing the MAGTF to simultaneously confront the enemy with a variety of  
38 fighting modes:  
39

40 · Light armored reconnaissance (LAR).

41  
42 · Mechanized (AAV).

43  
44 · Dismounted (foot).

45  
46 · Motorized (truck).  
47

1 · Helicopterborne (helicopter).

2  
3 **b. Terminology.** The following definitions are provided to assist the reader in developing a basic understanding of  
4 antiarmor doctrine and operations.

5  
6 (1) **Combined Arms.** The full integration of combat arms in such a way that to counteract one, the enemy must  
7 become more vulnerable to another (MCRP 5-2A). We accomplish combined arms through tactics and techniques at  
8 the lower levels and through task organization at the higher levels. Combined arms integrates the effects of various  
9 arms- infantry, armor, artillery, and aviation- to achieve the greatest possible effect against the enemy. The strengths  
10 of arms complement and reinforce each other. At the same time, the weaknesses and vulnerabilities of each arm are  
11 protected or offset by the capabilities of the other. In doing so we take advantage of the complementary  
12 characteristics of different types of units and enhance our mobility and firepower. Fundamental considerations  
13 include:

14  
15 a. Lowest Level. The commander should implement combined arms at the lowest echelon capable of  
16 controlling and coordinating the different forces and weapons systems.

17  
18 b. Task Organization. Task organization is the process of allocating available forces to subordinate  
19 commanders for the accomplishment of tasks. Task organization is developed through the Marine Corps Planning  
20 Process described in MCWP 5-1, *Marine Corps Planning Process*. By using the planning process, the commander  
21 and his staff wargame and analyze courses of action, taking into account key operational factors--mission, enemy,  
22 terrain and weather, troops and support available-time available (METT-T); the commander's intent and concept of  
23 operations; the maintenance of operational flexibility and tempo; and weighting the main effort--to determine the  
24 best allocation of combat power to accomplish the mission.

25  
26 c. Optimal Force Mix. The commander task organizes forces and employs weapons to maximize mutual  
27 support and minimize inherent limitations among different units and their weapon systems. Characteristics to  
28 examine when task-organizing a force include, but are not limited to: training, experience, equipment, sustainability,  
29 operating environment, enemy threat, and mobility.

30  
31 d. Unity of Command. All forces operate under one responsible commander who possesses requisite  
32 authority to direct forces in the pursuit of a common unified purpose. The commander must have the means and  
33 authority to control the employment of the combined arms force. Command and support relationships must give the  
34 commander maximum flexibility to accomplish his mission.

35  
36 e. Unity of Effort. Commanders develop in their staffs and subordinates the desire to cooperate, not only  
37 among themselves, but with other elements of the MAGTF. Unity of effort extends down the entire chain of  
38 command so that all echelons are working to attain the same goal. Teamwork is essential to ensure unity of effort  
39 necessary to achieve the synergistic effect of combined arms.

40  
41 (1) **Mechanized Force.** A Marine mechanized force is a task-organized, ground combat force of combined arms  
42 built around an infantry or tank unit, reinforced with substantial assault amphibian assets. The Marine Corps is one  
43 of the few armed forces in the world that conducts mechanized operations without permanently formed mechanized  
44 infantry units. A Marine mechanized force is normally supported by air, artillery, light armor, antitank, engineer,  
45 reconnaissance, motor transport, and other combat support and combat service support units. Maneuver units of a  
46 Marine mechanized force are primarily tracked but may also include wheeled vehicles.

1 (2) **Mechanized Operation.** A mechanized operation is a tactical operation designed to maximize the ground  
2 mobility, protection, shock action, and firepower of combat vehicles to concentrate combat power rapidly against  
3 the enemy. Combat power is generated by the massed employment of tanks and enhancing the mobility of other  
4 forces through the use of AAVs and other ground mobility means. (MCRP 5-2A)

5  
6 (3) **Mechanized Infantry.** This term refers to a task-organized force of Marine infantry mounted in tracked  
7 vehicles (AAVs). In general, this term is a reference to any infantry (friendly or enemy) that are riding in APCs or  
8 IFVs. Note, that in most of the world's land armies the APC or IFV is organic to infantry units.

9  
10 (4) **Light Armored Reconnaissance (LAR).** This term refers to the LAR battalion. The infantry personnel which  
11 are organic to the LAR battalion are called scout infantry. Scout infantry are not employed in the same manner as  
12 infantry or mechanized infantry. Scout infantry are trained and organized for employment in support of light  
13 armored vehicles.

14  
15 (5) **Cross-attachment.** The exchange of subordinate units between units for the purposes of task organizing a force  
16 for a specific mission on a temporary basis. Example: A tank battalion detaches a tank company that is subsequently  
17 attached to an infantry battalion mechanized in AAVs, and the infantry battalion mechanized in AAVs detaches a  
18 company to the tank battalion to create two battalion task forces with complementary capabilities.

19  
20 (6) **Mechanized Task Force.** A mechanized task force is created by task organizing mechanized infantry and or  
21 tanks under the command of a single battalion or regimental commander. The mechanized task force, like the  
22 MAGTF, has no standard structure. Normally, the mechanized task force is supported by air, artillery, light armor,  
23 antitank, engineer, reconnaissance, motor transport and other combat support and combat service support units.  
24 Mechanized task forces are described by their mix of tank and mechanized infantry. (Note: Graphics for task force  
25 and company teams to be included during editing)

26  
27 a. **Tank Heavy Task Force.** A tank-heavy force has more subordinate tank than infantry units. The  
28 headquarters of a tank heavy task force is usually that of a tank battalion. Tank-heavy forces provide more firepower  
29 and armor protection than mechanized infantry.

30  
31 b. **Mechanized Heavy Task Force.** A mech-heavy force has more subordinate infantry units mounted in  
32 tracked vehicles than subordinate tank units. The headquarters of a mech-heavy task force is usually that of an  
33 infantry battalion or regiment.

34  
35 c. **Balanced Task Force.** A balanced task force is organized with an equal number of subordinate tank and  
36 infantry units. The headquarters for a balanced task force can be either that of a tank battalion or infantry  
37 battalion/regiment. A balanced task force provides a balance between armor and infantry capabilities while retaining  
38 similar mobility.

39  
40 d. **Tank/Infantry Pure Task Force.** A pure unit has either tank or infantry units, but not both.

41  
42 (7) **Company Team.** A team organized by the cross attachment of one or more tank platoons and/or mounted or  
43 dismounted infantry platoons. Based on METT-T, an infantry or tank battalion commander receiving tank or  
44 mechanized infantry companies may tailor the increase the effectiveness of his units by forming company teams.  
45 This is done by cross-attaching tank platoons and mechanized infantry platoons.

46  
47 a. **Tank/Mechanized Infantry Heavy Teams.** Teams are cross-attached in the same manner and for the  
48 same reasons as task forces.

49  
50 b. Types of Mechanized Company Teams

51

1 Note: Graphics to be included later.

- 2
- 3 1. Tank Heavy Teams
- 4 2. Mechanized- Heavy Teams
- 5 3. Balanced Teams
- 6 4. Mechanized Pure Companies
- 7 5. Tank Pure Companies
- 8
- 9

#### 10 1004. Engagement Area Model

11  
12 In addition to the preceding model depicting different levels of guidance, the reader should also be cognizant of  
13 another conceptual model that addresses the technical aspects of antiarmor operations within the framework of the  
14 engagement area (EA). An **engagement area** is an area along an enemy avenue of approach where the commander  
15 intends to contain and destroy an enemy force with massed fires of all available weapons. The size and shape of the  
16 engagement area is determined by the relatively unobstructed intervisibility from the weapons systems in their firing  
17 positions and the maximum range of those weapons (MCRP 5-2A). Within the EA, sectors of fire are usually  
18 assigned to subordinates to prevent fratricide. Mutual support among firing positions exists to achieve interlocking  
19 fire for area coverage and recognizable limits for the control of fires. Key elements of this model are: weapon  
20 engagement and positioning, and unit positioning within the EA. As the definition implies “all available weapons”  
21 refers to the integration of both lethal and non-lethal fires that all MAGTF elements can employ.

22  
23 The engagement area model is rooted in higher order doctrine under the concept of ambush mentality.(MCDP 1-3)  
24 Like ambushes, commanders employ engagement areas to:

25  
26 (1) *Surprise the enemy* by delivering fires from multiple directions. The psychological impact of this  
27 surprise may paralyze the enemy’s thoughts and actions, leaving the enemy incapable of reacting effectively.

28  
29 (2) *Draw the enemy unknowingly into a trap* by deceiving them into taking an inviting course of action.  
30 When the attacker takes this course of action, he will face overwhelming massed fires.

31  
32 (3) *Create the illusion of invisibility* by preventing the enemy from detecting us until it is too late to react.  
33 Invisibility can be achieved by stealth or by luring the enemy’s attention elsewhere to allow our forces time and  
34 space to maneuver without detection.

35  
36 (4) *Shock the enemy* by massing fires which may induce paralysis and prevent a proper counter-action by  
37 the enemy. Often the enemy will panic, making his problem worse as he reacts rather than acts.

38  
39 (5) *Focus on the enemy* by using terrain to effect the ambush. The primary purpose is to destroy the  
40 enemy, not hold a piece of terrain.

41  
42 The EA model, like the concept of the ambush mentality, is the frame of reference for the discussion of MAGTF  
43 antiarmor operations. (See fig. 1-2.) This concept will be further defined in the forthcoming chapters. See chapter 3,  
44 Section 3202.

## Chapter 2

### The Threat

This chapter addresses offensive mechanized doctrine and armored vehicles used by potential adversaries. Many Third World countries were trained and equipped by the former Soviet Union. The former Soviet offensive capability remains a useful yardstick by which to measure the MAGTF's capability against potential land forces. However, this chapter presents a generic enemy doctrine that is influenced by but not solely restricted to the former Soviet doctrine. While many of our potential enemies are not completely organized as combined armed forces, some possess the capability to concentrate battalion or regimental-sized armored formations against the MAGTF. Armor equipment presented in the second section includes vehicles manufactured by traditional allies. Future weapon sales and shifting alliances could result in equipment traditionally viewed as *friendly* being employed against the MAGTF. Due to these uncertainties, a basic understanding of mechanized doctrine and weapon system capabilities and limitations is essential for successful antiarmor operations.

### Section 1. Threat Offensive Doctrine

#### 2101. Threat Offensive Philosophy

Threat forces consider the offense the basic form of combat action. Threat forces plan on overwhelming the enemy with numbers coupled with speed and firepower at critical times during the battle. They also assume that there will be high losses early in the battle that are ultimately justified by the short duration of combat resulting from this mass-speed combination.

Offensive action will normally begin with simultaneous artillery and air attacks combined with tank and mechanized infantry formations to break through the enemy's tactical (division and below) defense. The mechanized formations then drive rapidly and forcefully into the depth of the enemy's operational rear. The assumption is that a disorganized, demoralized, and isolated enemy would be unable to reestablish an effective and coordinated defense (FM 100-2-1).

Threat forces may attempt to maintain a rapid tempo of operations by echeloning their formations. Echeloning occurs at the operational and tactical level. (See fig. 2-1.)

Threat Planners desire an aggregate ratio of combat power of approximately 3:1 for conducting an attack. This 3:1 ratio refers to more than just cumulative numbers of first echelon troops and weapons relative to enemy troops and weapons in a given sector. When the attack begins, his actual strength advantage at the FEBA could be as small as 2:1. The remainder of the force may not be readily visible to defending enemy units (FM 100-2-1).

A combined-arms force will emphasize some or all of the following concepts:

- Rapid concentration and dispersal of combat power on the battlefield.
- Attacking on multiple axes.
- Exploitation of weak points in an enemy defense.

- Flexibility and speed in shifting combat power.
- Surprise.
- Speed.
- Independent action by commanders.
- Attacking deep into the enemy's rear.

**2102. Types of Offensive Action**

Offensive actions are divided into three subcategories which focus on enemy actions and disposition.

- Attack against a defending enemy.
- Meeting engagement (enemy is also on offense).
- Pursuit (enemy is withdrawing).

**2103. Tactical Formations and Movements**

Threat forces emphasize rapid column movement in the *march formation* and successive deployment into the *prebattle formation* and the *attack formation*. These formations are designed for a rapid transition into combat while maintaining maximum security, speed, and firepower.

**a. March Formation.** A march is an organized troop movement conducted in column formation on roads or cross country. It is planned and conducted with expectation of contact. A regiment is normally assigned two routes and a battalion one route. See figure 2-2 for a battalion march formation. A march formation consists of the following elements:

- Reconnaissance.
- Advance guard.
- Flank security.
- Main force.
- Rear security element.

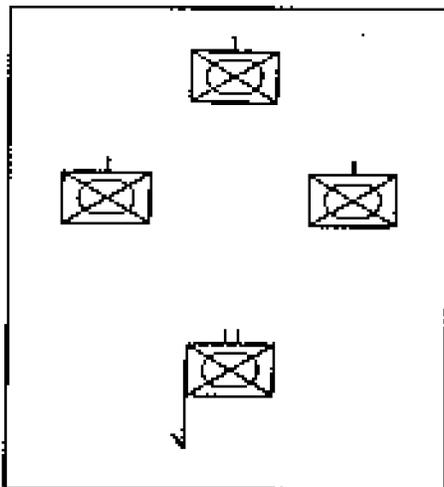
**MARCH RATES**

**Average March Rates for Mixed Columns**

Day, on roads.....	20 - 30 km/h
Night, on roads.....	15 - 20 km/h
Cross Country.....	5 - 10 km/h

The march is completed when the unit enters a new assembly area or when it enters prebattle formation or combat.

**b. Prebattle Formation.** The enemy will shift from a march formation to lateral deployment only when combat is imminent. The next successive lateral deployment out of the march formation is normally into a prebattle formation (also known as *approach march formation*). (See fig. 2-3.) The unit advances dispersed laterally and in depth.



**Figure 2-3. Battalion Prebattle Formations.**

This formation is used when approaching the battlefield, moving into the enemy's rear, and attacking an enemy that has been severely degraded by artillery preparatory fires. A battalion advances with its companies deployed on line, in a wedge, or an echelon. Each company moves in march column within the formation.

**c. Attack Formation.** The attack formation is assumed immediately before combat (1,000 meters from objective). (See fig. 2-4.) Platoons disperse laterally into line formations. A battalion may attack with all (three companies on line.

As depicted, tanks on line normally precede APCs or IFVs. If troops dismount, they normally follow closely behind the tanks. APCs or IFVs normally follow between 100 to 400 meters behind the tanks. While the enemy may attempt to overrun the position mounted, any defensive position must be prepared to engage dismounted enemy infantry with tanks and Ifs firing in support.

## 2104. Forms of Maneuver

Former Soviet-bloc forces use three basic forms of maneuver: the frontal attack, flank attack, and envelopment. The flank attack and envelopment are normally done in conjunction with a frontal attack. (See fig. 2-5.)

**a. Frontal Attack.** The frontal attack was previously the most frequently employed form of maneuver. However, it is now the least preferred form of maneuver.

**b. Flank Attack.** Flank attacks are conducted through gaps or breaches in enemy formations and are normally a shallow attack against the enemy's flank or rear. Fire support is coordinated between forces simultaneously conducting frontal and flank attacks.

**c. Envelopment.** Envelopment is a deeper attack designed to get the enemy to fight in a new direction. It does not require coordination of fires with a force simultaneously conducting a frontal attack. It is the most desired form of maneuver because it exploits enemy gaps and allows attacks to the full depth of the enemy defense.

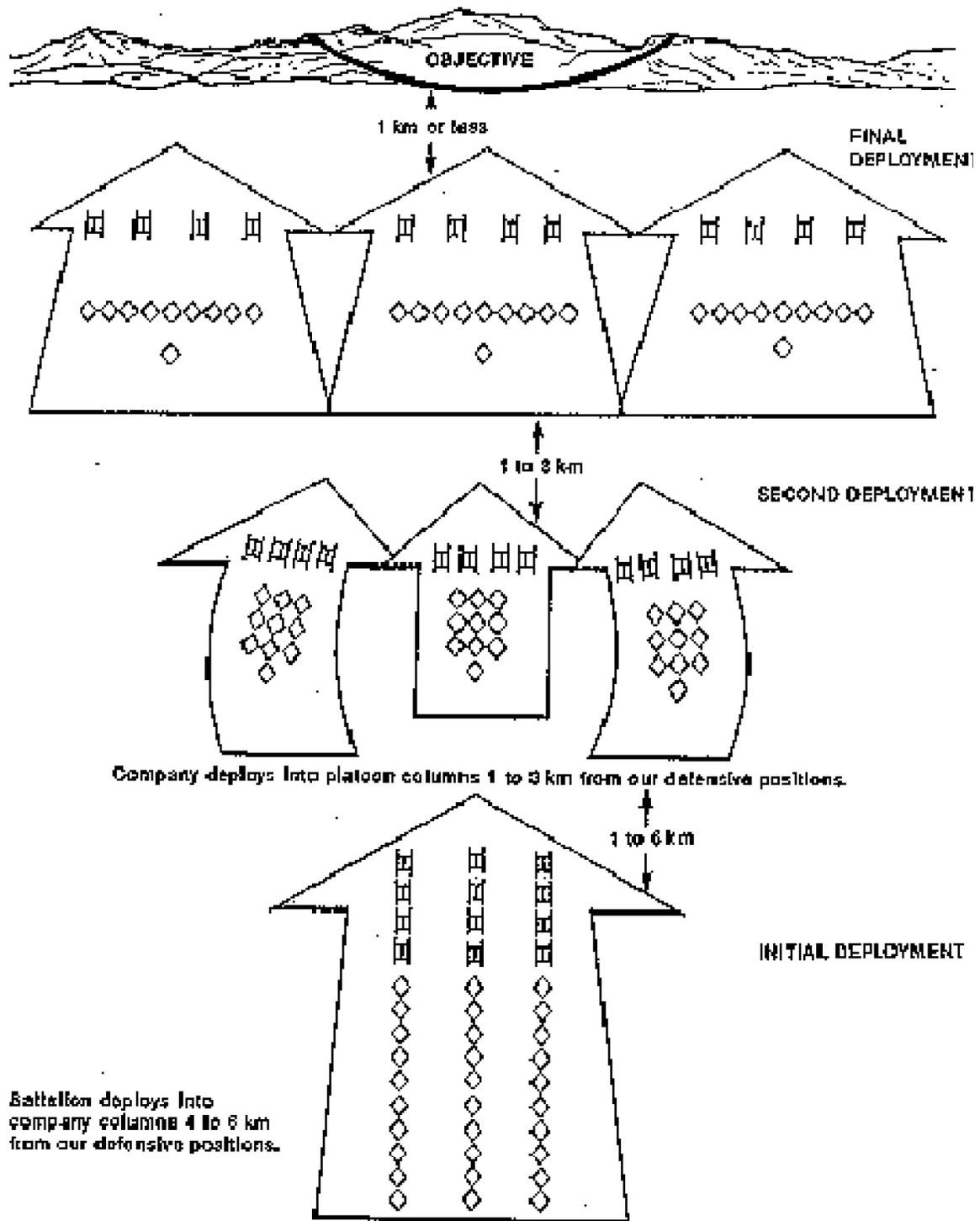
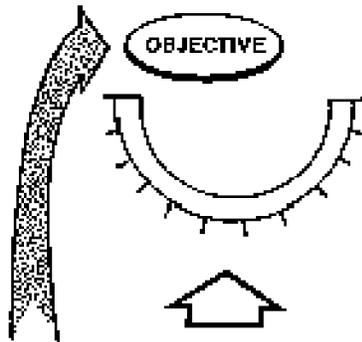


Figure 2-4. Deployment of a Battalion and Company.

Combination of Frontal and Flank Attacks



Envelopment With Frontal Attack

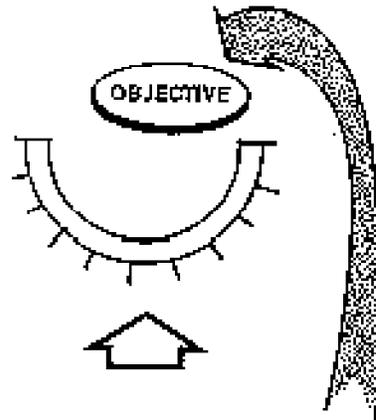


Figure 2-5. Forms of Maneuver.

## Section II. Threat Armor

### 2201. Armor Improvements

During the 1980's, the M-1 Abrams, Leopard 2, T-72, and T-80 model tanks were introduced with state-of-the-art armor protection. The emergence in NATO and the Warsaw Pact of increasingly sophisticated armor--composite and *reactive*--resulted in reduced effectiveness of chemical energy rounds such as high explosive (HE) shaped-charge-type antiarmor weapons (antitank guided missiles and hand-held infantry weapons) and kinetic energy rounds (the tank cannon's primary armor defeating projectile).

*Reactive* armor is applied to the existing armor hull and turret. *Reactive* armor is simply explosive charges attached to the front and sides of armored vehicles that explode when hit, thereby negating the effects of shaped-charge-type rounds. Composite armor is plating made of layered steel and ceramic with empty air spaces. Composite and *reactive* armor, either separately or in combination, severely decrease the probability of kill ( $P_k$ ) for frontal shots. *Reactive* armor can be easily and inexpensively applied to upgrade existing T-54/55 and T-62 models, all plentiful in the Third World. Additionally, the T-72 and T-80 tanks with composite armor are being exported in greater numbers.

The 1990s have seen the emergence of *countermeasure systems* mounted on armored vehicles. This is primarily due to the proliferation of ATGMs and smart-submunitions on the battlefield. Countermeasure and signature reduction are the most significant trends in armor survivability being fielded today.

#### Countermeasure Systems

The most abundant of these systems are referred to as Defensive Aid Suites (DAS) . These systems are designed to intercept, destroy, or confuse attacking enemy munitions. These countermeasure systems fall into two categories: Active and Passive

#### Active Countermeasures

Hard Kill Systems or Active Protective Systems (APS). APS engage and destroy enemy missiles and projectiles before they impact their intended target. APS are a close-in system of antimissile defense that creates an active fire zone of protection at a safe distance around the vehicle by launching countermunitions. However, a major vulnerability of this type of system is the risk of potential fratricide caused when an active system is employed in close proximity to supporting dismounted troops due to the blast effects of exploding countermunitions. Current generation APSs do not possess the capability to engage and destroy kinetic energy projectiles. However, as technological advances in fire control and detection increase, APSs systems in the near future may be capable of engaging both Antitank Guided Missiles (ATGM), tank fired chemical (HE) or kinetic energy munitions. See figure ( 2-5a )

Soft kill systems confuse and divert inbound missiles with the use of munitions (obscurants), jammers, and decoys. Examples include Multi-spectral smoke or aerosols that are used to defeat lasers and thermal sights and IR jammers to defeat inbound missiles .

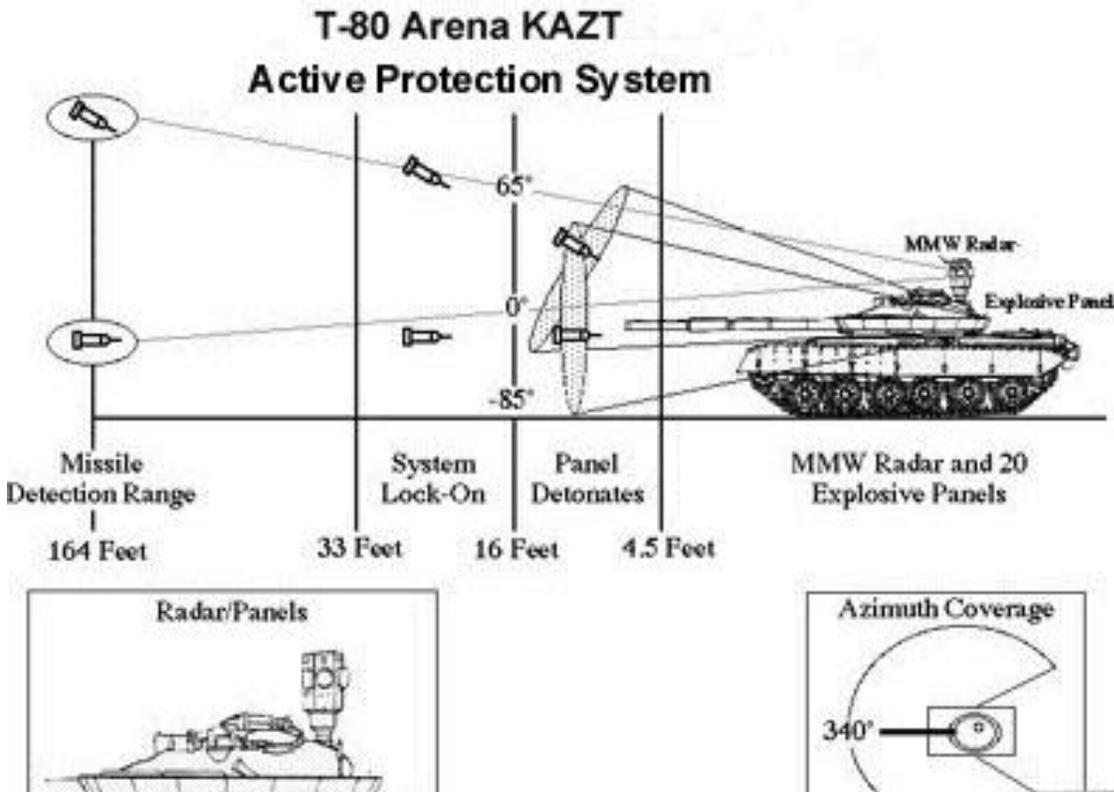


Figure 2-5a Arena APS example

Signature Reduction

Due to the fielding of improved target acquisition devices within the battlespace, armored vehicles are incorporating signature reduction measures to improve their survivability. These would include techniques or applications that would not only reduce the vehicle's signature in the visual, infrared (IR) and millimeter wave length (MMW) spectrum, but also the overall radar cross section, magnetic signature strength, and acoustic levels as well.

These measures would include the use of:

Camouflage appliqué, laser absorbing/diffusing paint.

Noise management through the use of rubber track or electric motors.

Exhaust plume reduction through venting techniques.

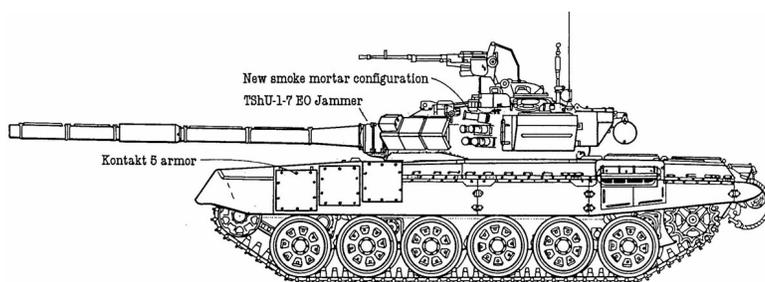
Use of side skirts to mask the heat signature given off by hot track and road wheels.

Magnetic signature reduction using non-metallic materials in the structure, armor, and engine components.

The Marine commander must be aware of the technical capabilities of his current antiarmor weapons systems relative to the type of tank he may encounter. He must remember that any advantages gained by technological advancement are only temporary for the enemy will always find a countermeasure, tactical or itself technological, which will lessen the impact of technology. Previously, a commander only considered the *size* of the tank force. He must now be equally concerned with the *type* of tanks he is fighting. Generally, a force of T-80 tanks presents a much greater challenge than a force of T-54 tanks without reactive and/or composite armor. However, varying technological enhancements which upgrade tank and armored vehicle capabilities such as countermeasure systems, improved fire control systems or main guns retrofitted to fire ATGMs can alter tactics and techniques employed by the MAGTF to defeat such an armored or mechanized force. Later sections will present technical and tactical options in the defense that account for differences in the *size* and *type* of enemy armored forces.

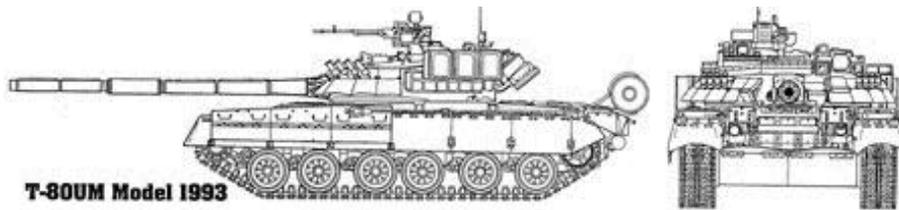
### 2202. Threat Armored Vehicles

The following identification guide is provided to assist the reader in understanding the individual characteristics of specific mechanized weapons. The reader should remember that many of these systems are found in Third World forces. Even equipment manufactured by US Allies might confront us. In each example shown below, the *maximum effective range* refers to the maximum range at which a weapon may be expected to achieve a high single-shot probability of hit (50%) and required level of destruction against assigned targets. This figure may vary for each specific munition and by type of target (such as infantry, armored vehicles, or aircraft). The maximum effect range figures shown below are daylight figures, night ranges are considerably less in most cases due to the capabilities of target acquisition systems.



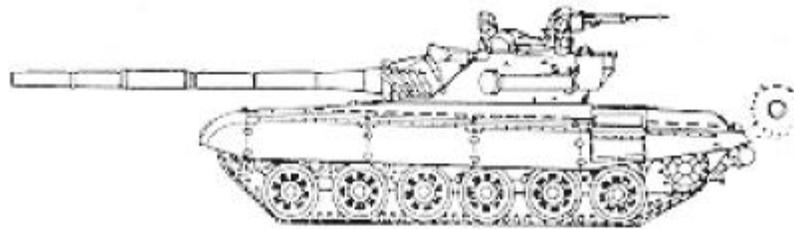
Crew	3
Weight	44.5 tons
Armament	125mm smoothbore tank gun (also fires ATGM) MER APFSDS-T (Sabot) 2000 to 3000m HEAT range 3000m Frag- HE range 4000m AT-11/SVIR ATGM range 5000m 2.7mm turret MG range 1500m 7.62 Coaxial MG range 1500m
Basic Load	39 main gun rounds and 6 ATGMs

**Figure 2-5B T-90**



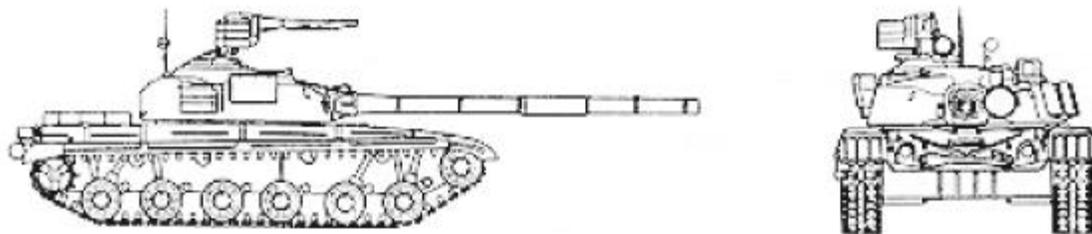
Crew	3
Weight	46 tons
Armament	125mm smoothbore tank gun (also fires ATGM) MER APFSDS-T 2000 to 3000m HEAT range 3000m Frag HE range 4000m AT-11/SVIR ATGM range 5000m MER 12.7mm turret MG range 1500m 7.62 Coaxial MG range 1500m
Basic Load	39 main gun rounds and 6 ATGMs

**Fig 2-6 T-80U**



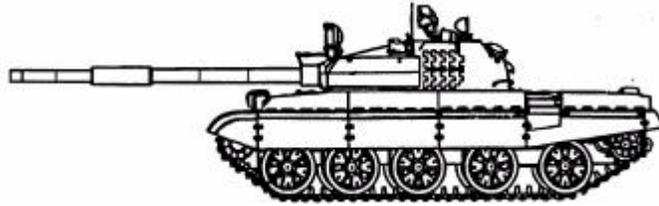
Crew	3
Weight	41 tons
Armament	125 mm smoothbore tank gun Maximum effective range 50% P <sub>h</sub> 2,000 m 7.62 Coax MG-maximum effective range 1,000 m 12.7 mm Turret MG-maximum effective range 1,500 m
Basic Load	40 rounds main gun

Figure 2-7. T-72.



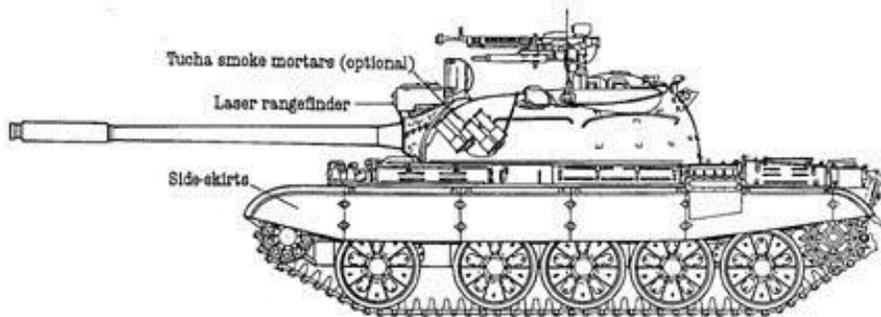
Crew	3
Weight	38 tons
Armament	125 mm smoothbore tank gun Maximum effective range 50% P <sub>h</sub> 2,000 m 7.62 Coax MG-maximum effective range 1,000 m 12.7mm Turret MG-maximum effective range 1,500 m
Basic Load	40 rounds main gun

Figure 2-8. T-64.



Crew	4
Weight	41.5 tons
Armament	115mm rifled gun MER APFSDS-T 1200-2000 est HEAT range 1200m Frag-HE range 1500-2000m ATGM AT-10/Sheksna range 4000m 7.62mm coax PKT MG range 1000m
Basic Load	40 rounds

**Figure 2-9 T-62M**



Crew	4
Weight	40.5
Armament	100mm rifled gun APFSDS-T range 2500m MER HEAT range 1000m Frag-HE range 2500m+ AT-10/ Bastion ATGM range 4000m
Basic Load	34 (T-54), 43 (T-55)

**Figure 2-10a T-55M**



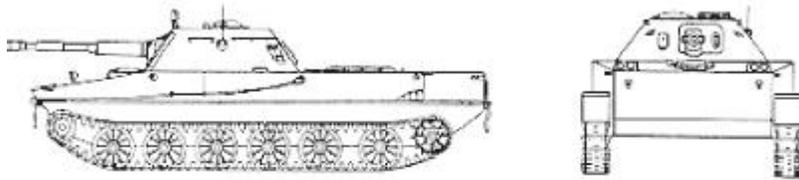
Crew	4
Weight	37 tons
Armament	105mm rifled gun MER APFSDS range 2000-3000m est. HEAT range 1500-2500m est. HESH range 2000-3000m est.
Basic Load	34 rounds

**Figure 2-10b Chinese MBT Type 59-II**



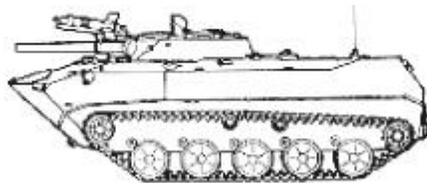
Crew	3
Weight	41.0 tons
Armament	125mm smoothbore gun MER APFSDS-T range 2000-3000m HEAT range range2000m est Frag-HE-T range 4000m est 12.7mm cupola AAMG range 1500m 7.62mm coax-MG range 1000m
Basic Load	42

**Fig 2-10c Chinese MBT Type 85-IIM**



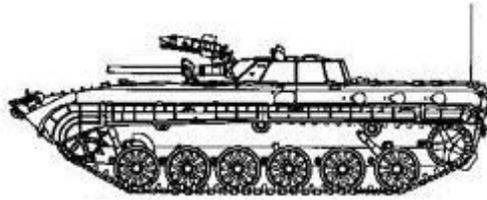
Crew	5
Weight	34 tons
Armament	76 mm tank gun Maximum effective range 50% P <sub>1</sub> 650 m 7.62 Coax MG-maximum effective range 1,000 m
Basic Load	40 rounds main gun

Figure 2-11. PT-76 (Light Amphibious Tank).



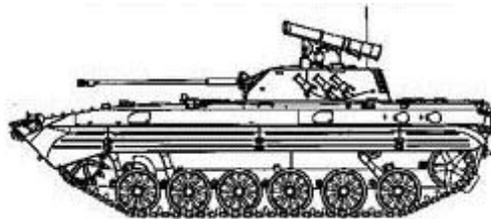
Crew	2, 5 passengers
Weight	13.3 tons
Armament	73mm gun MER HEAT range 1000m HE range 1300m AT3 ATGM range 3000m
Basic Load	7.62 coax and 2x 7.62 box MG range 1000m 40 AT rounds and 4 ATGMs

Figure 2-12 BMD



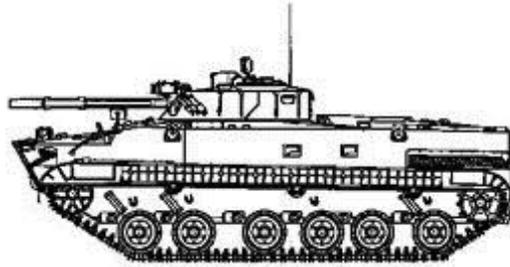
Crew	3, 8 passengers
Weight	13.5 tons
Armament	73 mm AT gun MER HEAT range 1000m HE range 1300m AT-4 Spigot range 2,000m AT-5 Spandrel range 4,000m 7.62 Coax MG-maximum effective range 1000m
Basic Load	40x 73mm rounds and 4 xATGMs

**Figure 2-13. BMP-1**



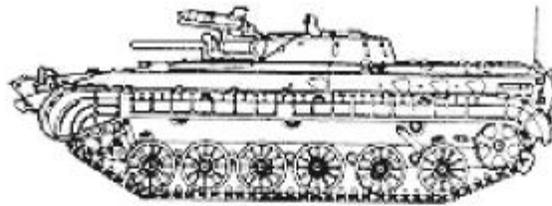
Crew	3, 7 passengers
Weight	14.3 tons
Armament	30 mm gun MER APFSDS-T range 2000+m AP-T range 1500m Frag HE 4000m AT-4 Spigot range 2000m AT-5 Spandrel range 4000m 7.62 Coax MG-MER 1000m
Basic Load	500 x 30mm rounds and 5 x ATGMs

**Figure 2-13a BMP-2**



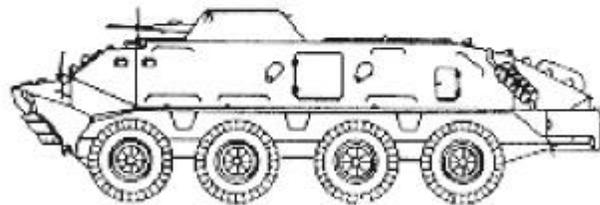
Crew	3, 7 passengers
Weight	18.7 tons
Armament	100mm rifled gun and 30mm auto gun MER AT-10 ATGM Basnya 4000m 100mm HE-Shrapnel range 5200 30mm APFSDS-T range 2000+ m 30mm AP-T 1500m MER 30 mm Frag-HE 4000m
Basic Load	40x100mm with 8 ATGMs and 500x30mm rounds

**Figure 2-13b BMP-3**



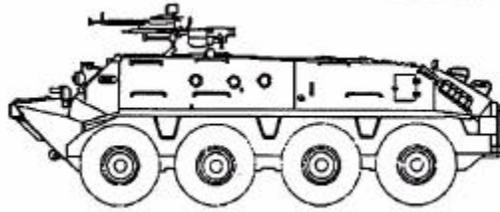
<b>Crew</b>	3, 8 passengers
<b>Weight</b>	13.5 tons
<b>Armament</b>	73 mm AT gun Maximum effective range 50% P <sub>h</sub> 800 m AT-3 Sagger range 3,000 m 7.62 Coax MG-maximum effective range 1,000 m
<b>Basic Load</b>	40 AT rounds and 4 ATGMs
<b>Amphibious</b>	

Figure 2-13. BMP.



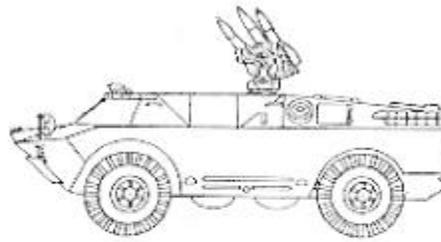
<b>Crew</b>	3, 8 passengers
<b>Weight</b>	10.2 tons
<b>Armament</b>	14.5 mm Turret MG 7.62 Coax MG-maximum effective range 1,000 m
<b>Amphibious</b>	

Figure 2-14. BTR-60PB.



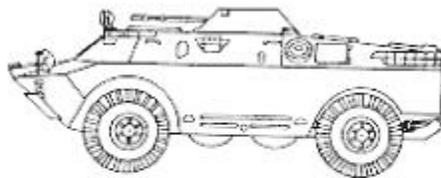
Crew	2, 12 passengers
Weight	10.1 tons
Armament	12.7mm MG MER 1500m 7.62 PKT MG MER 1000m
Basic Load	500 rounds 12.7mm and 3000 rounds 7.62mm

**Figure 2-14b BTR-60PA**



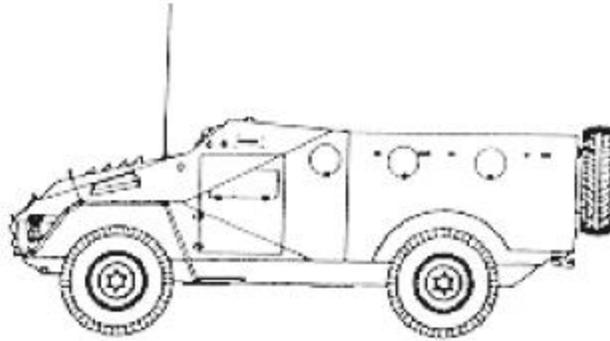
Crew	3
Weight	7 tons
Armament	AT-5 Spandrel
	AT-5 range 4,000 m
Basic Load	14 ATGMs

Figure 2-15. BTR-40P2 ATGM Carrier.



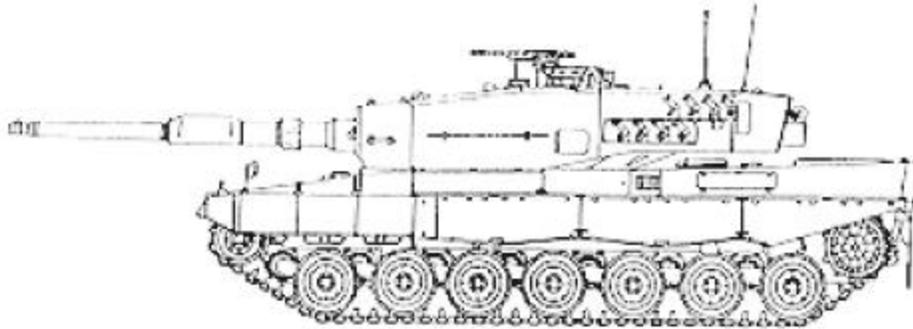
Crew	2-5 depending on mission
Weight	7 tons
Armament	14.5 mm Turret MG
	7.62 Coax MG-maximum effective range 1,000 m
Amphibious Recon Vehicle	

Figure 2-16. BTR-40P2 (BRDM-2).



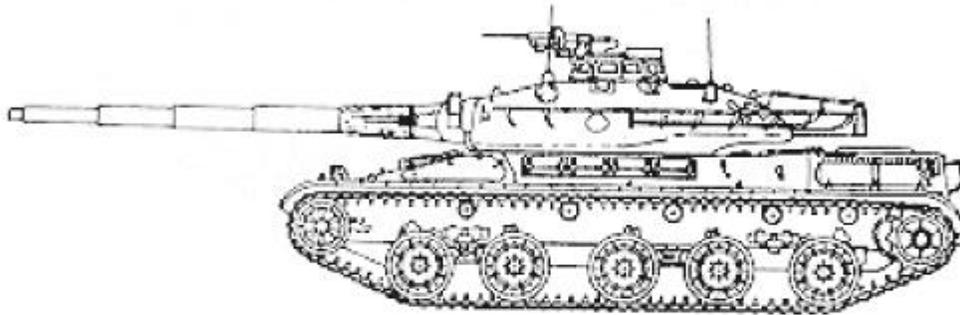
Crew	2 + 6
Weight	5,600 Kg

Figure 2-17. BTR-40 (4 x 4) Without Armament.



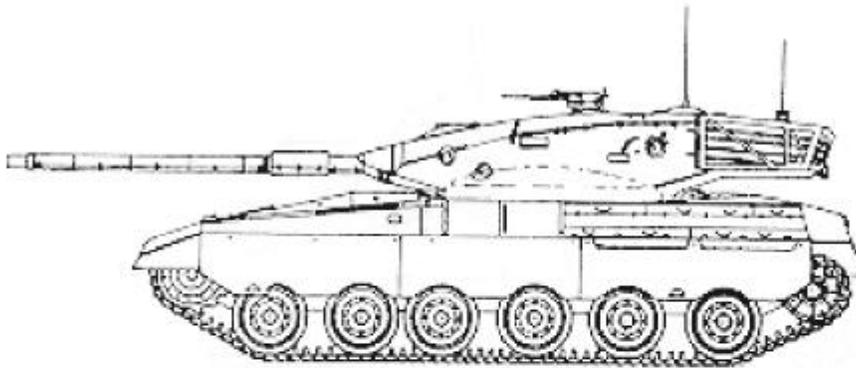
Crew	3
Weight	18 tons
Armament	105 mm main gun, 20 mm cannon, 7.62 mm MG
Basic Load	47 rounds main gun

Figure 2-18. AMX-30 MBT (France).



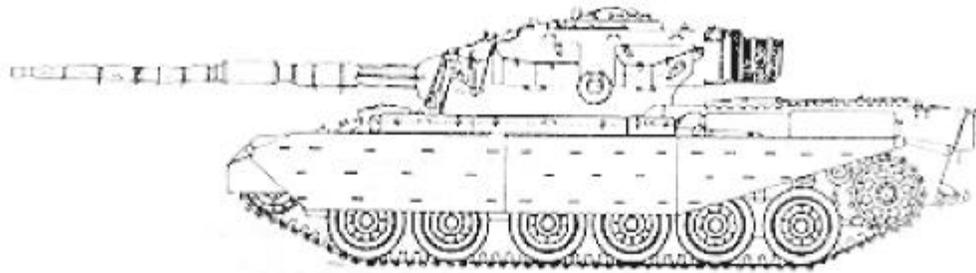
Crew	4
Weight	44.3 tons
Armament	120 mm main gun, 7.62 mm MG (coax), and 7.62 mm (loader)
Basic Load	42 rounds main gun

Figure 2-19. Leopard 2 MBT (Germany).



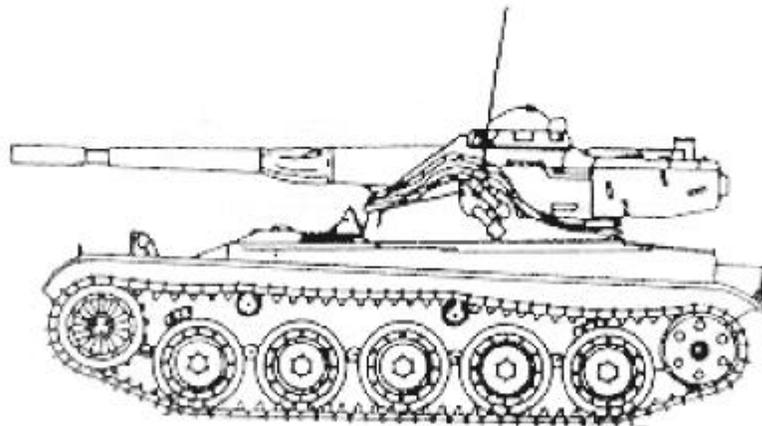
Crew	4
Weight	60,000 Kg
Armament	105 mm main gun, 7.62 mm MG (coax), and two 7.62 mm MG turret
Basic Load	62 rounds main gun

Figure 2-20. Merkava MBT (Israel).



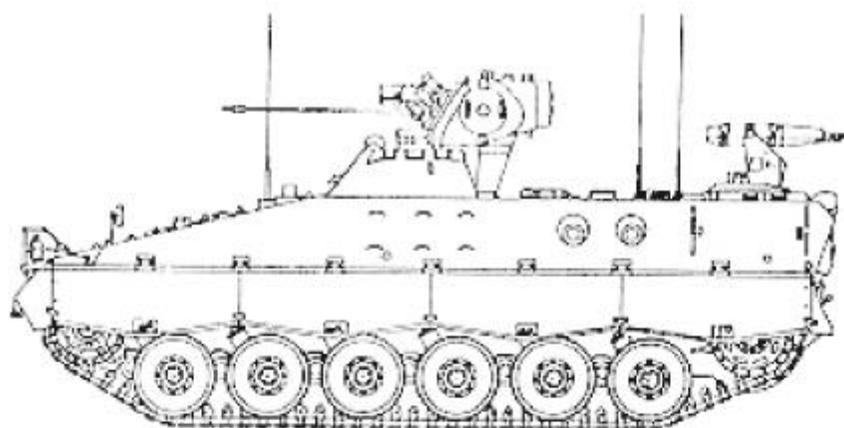
Crew	4
Weight	55,000 Kg
Armament	120 mm main gun, 7.62 mm MG (coax), and 7.62 mm MG turret
Basic Load	40 rounds main gun

Figure 2-21. Centurion Mk 10 MBT (Great Britain).



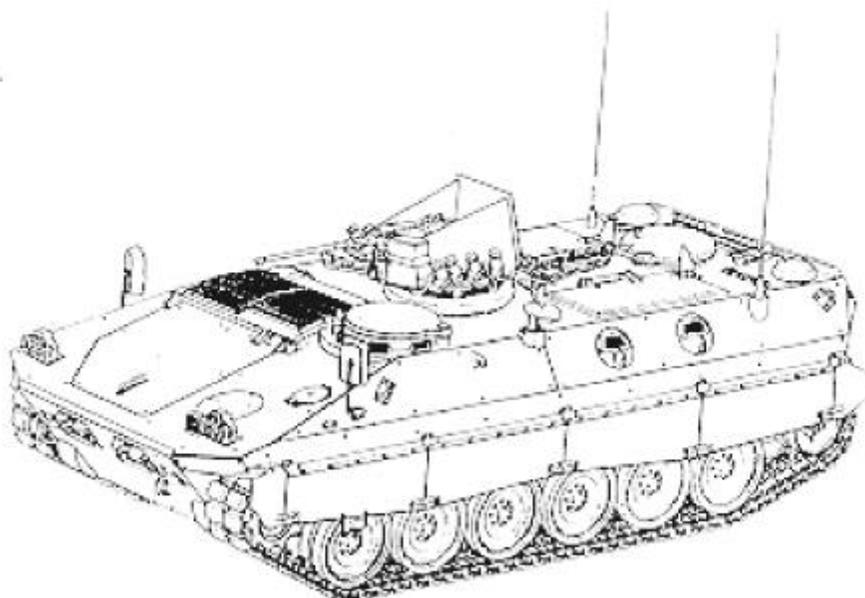
Crew	3
Weight	15,000 Kg
Armament	90 mm main gun, 7.62 mm MG (coax), and 7.62 mm MG turret
Basic Load	32 rounds main gun

Figure 2-22. AMX-13 Light Tank (France).



Crew	9
Weight	30,000 Kg
Armament	20 mm cannon, 7.62 mm MG
Basic Load	1,200 rounds 20 mm

Figure 2-23. Marder ICV Infantry Combat Vehicle (Germany).



Crew	12
Weight	14,650 Kg
Armament	12.7 mm MG
Basic Load	800 rounds 12.7 mm

Figure 2-24. OTO Melara C13 APC (Italy).

## 2203. Armor Vulnerability

The tank is the backbone of a mechanized force. At some point in any antiarmor defense, the tank must be engaged and destroyed. Whether protected by homogenous steel armor, composite armor, or augmented with reactive armor or countermeasure systems, there are inherent strengths and weaknesses common to all tanks and armored vehicles. An understanding of the tank and other armored vehicles' vulnerabilities is prerequisite for the selection and positioning of antiarmor weapons and, ultimately, the destruction of the enemy armored force.

**a. Dead space.** *Visual deadspace* refers to the areas surrounding a tank that the tank crewman cannot see due to the design of the tank and/or the location of the turret in relation to the hull. Any discussion of visual dead space involves the issue of if and when an enemy tank crew “*buttons-up*” or closes all hatches. Generally, tank crews only button up when they expect to receive the bursting effects of air and surface delivered fires (friendly and enemy). The tank is not *blind* when buttoned up, but it still lacks *constant* 360-degree visibility. *Weapon deadspace* refers to areas surrounding the tank that cannot be fired upon with the tanks armament due to the elevation and depression of the guns. The combination of deadspace and the size of the target renders the tank especially vulnerable in close-in terrain. (See figs. 2-25 and 2-26.)

**b. Armor Protection.** Currently homogeneous steel and composite (spaced) armor can't to be constructed in sufficient thickness throughout a tank to protect it completely from armor-defeating ammunitions. The reason for this weight restriction is a technological one. Increased weight results in decreased automotive performance due primarily to strain on suspension systems. Currently, the greatest degree of protection on tanks and other armored vehicles is on the front of the hull and the turret. The least protection is on the rear, sides, top, and undercarriage. This general rule applies to all types or models of armored vehicles. A flank, rear shot, or top attack shot provides the highest probability of kill ( $P_k$ ). The necessity of firing these types of shots is further underscored by the advent of composite (spaced) and *reactive* armor, and countermeasure systems found on some threat tanks.

**d. Engine Compartment.** The engine compartment is a particularly vulnerable area. A tank can be stopped by targeting the engine with incendiary devices such as a thermite grenade or napalm. It is unnecessary to destroy the entire engine. Sufficient damage to any critical component will prevent the engine from running. A disabled tank may still have full access to its weapons systems, however it is less difficult to destroy.

**e. Suspension System.** The suspension system (including the track) is a susceptible area. Mines or log cribs may immobilize a tank. It should be pointed out that destruction of road wheels or support rollers may slow down or hinder tank movement; however, in most instances, loss of one or two road wheels or support rollers will not stop a tank.

**f. Fuel System.** Many threat tanks use both internal and external auxiliary fuel tanks. The auxiliary tanks, which are approximately the size of 55-gallon drums, are mounted on the side and rear of the tank. Though normally jettisoned prior to contact, if caught in an ambush, these fuel tanks make the tank considerably more vulnerable by causing fire damage to the tanks externally mounted systems, reducing crew visibility due to smoke, and increasing the chance of separating tanks from their supporting dismounted infantry.

## 2204. Lightly Armored Vehicles

Although main battle tanks are the most dangerous armored vehicles on the battlefield, they are not the most numerous. All armies that have tanks (and many that do not) field lighter armored vehicles with significantly less armor protection. As a general rule, this means that these lighter vehicles are vulnerable to a wider variety of

weapons than tanks and are thus easier to defeat. For example, the armored sides of these vehicles can be pierced by heavy machine gun (.50 caliber) fire. The sides of some lightly armored vehicles can also be penetrated by even smaller caliber bullets. As is the case with tanks, each model has its own particular vulnerabilities.

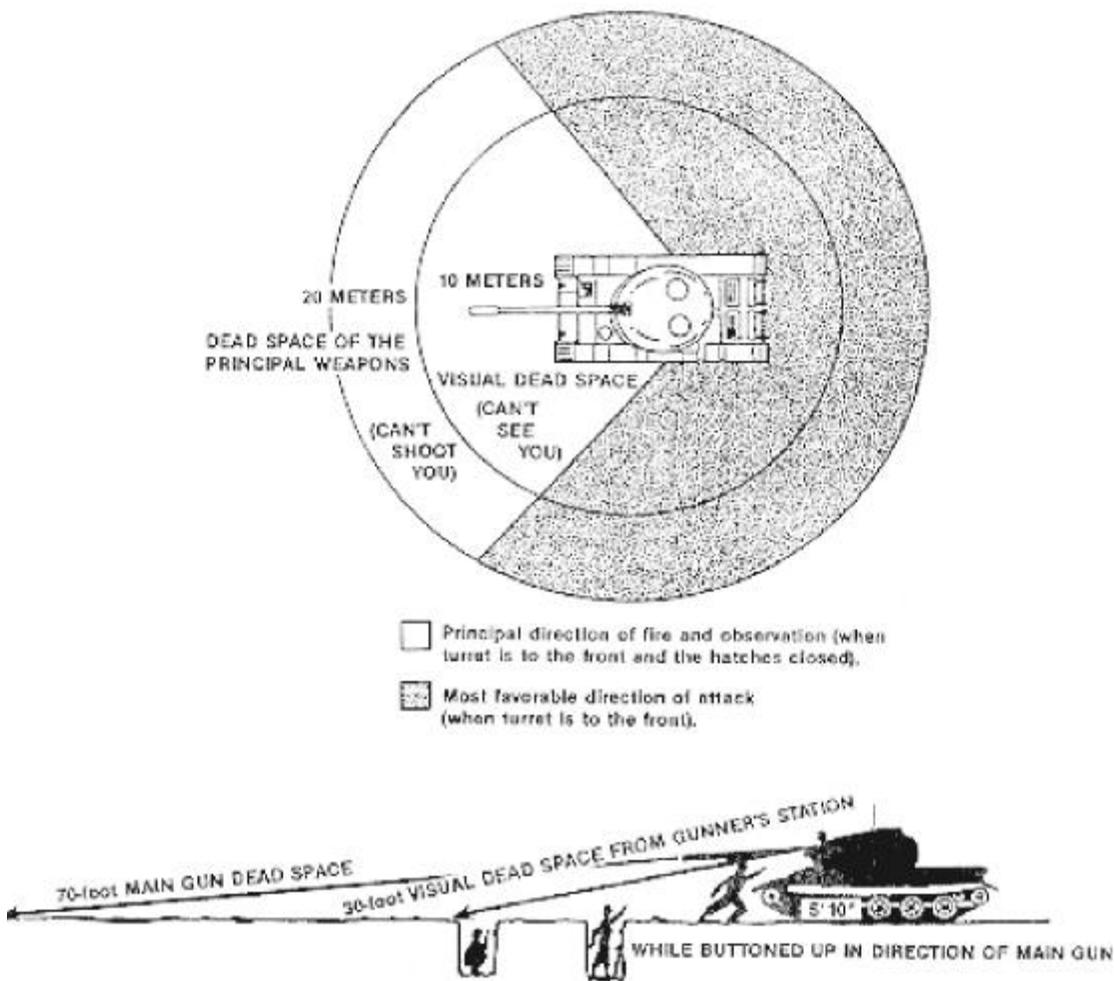
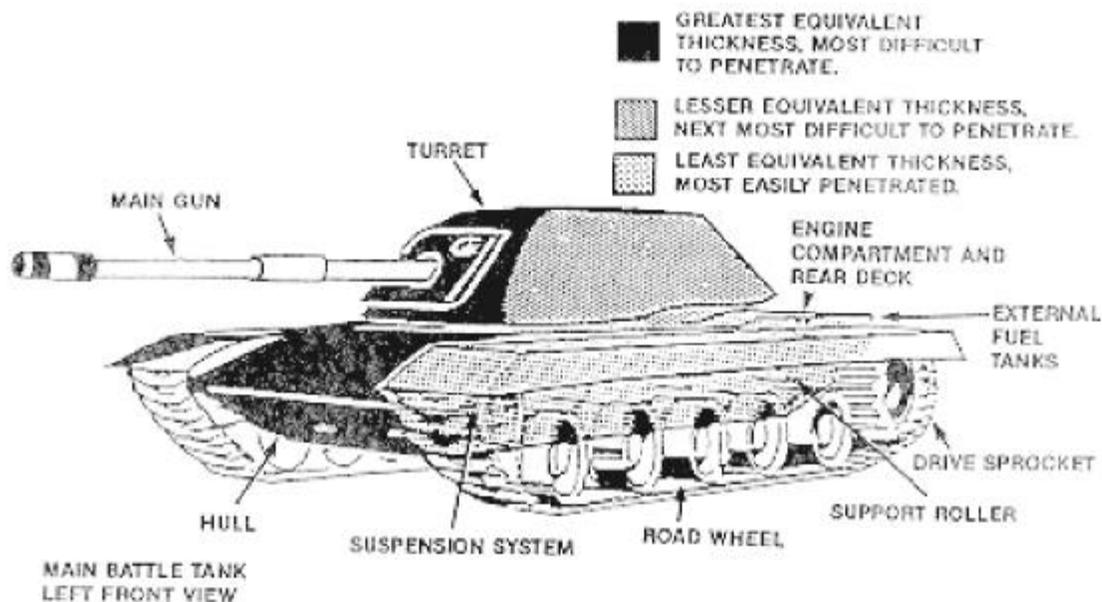


Figure 2-25. Tank Deadspace.

**a. Armored Personnel Carriers.** APCs carry from six to twenty infantrymen from one point on the battlefield to another. APCs provide mobility and limited armored protection. When armed with light (approximately 7.62 mm or .30 caliber) or heavy (12.7 mm, 14.5 mm, or .50 caliber) machine guns, empty APCs can provide a base of fire for the maneuver of their dismounted infantry. While the APC protects its occupants against shell fragments and other small projectiles, it also puts them at greater risk from mines, antitank rockets and missiles, and direct hits from artillery and air delivered munitions. This is due to a combination of troop density inside the vehicle and because armor has a tendency to contain (and thus greatly increase the effect of) the explosion of a rocket, mine, or shell. Because of these dangers, troops will often ride on the outside of the APC. This, in turn, makes them more vulnerable to small arms and indirect fire. A major limitation of APC is that mounted infantryman cannot engage targets with small arms from inside the vehicle. Many variants of the infantry fighting vehicle however provides this capability.

**b. Infantry Fighting Vehicles.** The Soviet BMP and the US Army's Bradley Fighting Vehicle are two examples. IFVs carry a small caliber (25-35 mm) high velocity or medium caliber (approx. 75 mm) low velocity gun as well as a small squad (four to eight men) of infantry. Some IFVs are also equipped with antitank guided missiles. Although they tend to have marginally better armor protection, IFVs have the same vulnerabilities as APCs. Their main guns have the same vulnerabilities due to dead spots.

**c. Fire Support Vehicle (FSV).** FSVs are armored personnel carriers that have been modified to carry a 25 mm to 105 mm gun. Their purpose is to provide a base of fire for the maneuver of infantry and lightly armored vehicles, to attack bunkers and other point targets, and to engage enemy lightly armored vehicles.



Because of their thin armor relative to tanks and the fact that their guns are rarely able to penetrate the frontal armor or modern main battle tanks, FSVs cannot effectively fight long range duels against tanks. FSVs can use their weapons to fire through or destroy cover and concealment found in close, terrain such as urban or woodland terrain. For this reason FSVs are often positioned to deliver fires during narrow engagement windows at short range. While FSVs have roughly the same vulnerability as tanks in regard to weapon deadspace, they are vulnerable to a wider variety of weapon systems.

**d. Reconnaissance Vehicles.** These tend to be smaller and even less well protected than other types of lightly armored vehicles. Some, in fact, are little more than modified scout cars. Armed with a machine gun or a light (25-35 mm) cannon, they are dangerous to infantry in the open and to other lightly armored vehicles. Reconnaissance vehicles are particularly vulnerable to dismounted infantry close, broken or urban terrain.

**e. Specialized Vehicles.** The chassis of APCs and tanks are often used as the basis for a variety of specialized vehicles. These can be used as mobile command posts, artillery observer vehicles, electronic warfare vehicles, mortar carriers, antitank guided missile carriers, anti-aircraft weapons carriers, or long-range missile carriers. Although many carry machine guns for local defense, these vehicles were not intended to engage in close combat and thus are very vulnerable to ground forces. Vehicles carrying anti-aircraft guns provide a notable exception to this general rule. Due to a high rate and volume of firepower delivered by anti-aircraft guns, these vehicles are often employed in the direct fire mode against dismounted infantry and lightly armored vehicles..

## Chapter 3

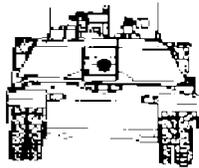
# MAGTF Antiarmor Weapons and Techniques

The MAGTF possesses a vast array of weapons systems with anti armor capabilities. While later chapters will address the proper integration of these weapons systems in a combined arms role, it is imperative that the reader understand the capabilities and limitations of each weapon system against a tank or other types of armored vehicles. Since improvement of weapon capabilities and armor is ongoing and information is often classified, the reader should consult the unit S-2 for timely updates on this subject matter.

## Section I. Antiarmor Weapons Systems

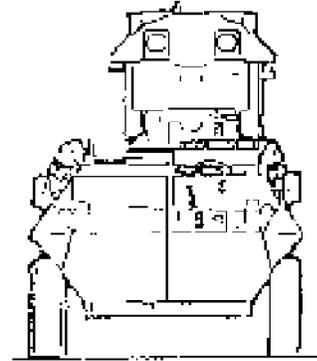
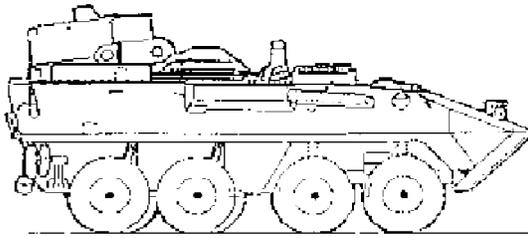
### 3101. Weapons Systems

The M1A1 main battle tank is powered by a gas turbine engine rated at 1,500 hp, with a 23.8 hp/ton ratio. This MBT has a maximum speed of 42 mi/h and a cruising range of 275 miles. The M1A1 has a laser range finder, optical day sight, and a thermal imaging night sight. With the fording kit, it is capable of moving in water at turret roof depth. The M1A1 fires only Sabot (kinetic energy round) and the high explosive antitank (HEAT) (high explosive [HE] shaped charge), and the Mult-purpose Anti-Tank (MPAT) which is an air/ground fused version of the HEAT round.



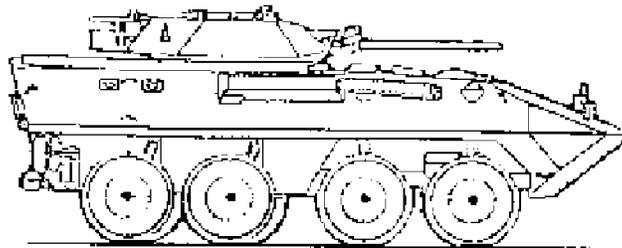
<b>Crew</b>	<b>4</b>
<b>Weight</b>	<b>67.59 tons</b>
<b>Armament</b>	<b>120mm smoothbore tank gun</b> <b>MER for HEAT, APFSDS, and MPAT range</b> <b>4000m</b> <b>.50 cal M2 MG tank commanders</b> <b>Maximum effective range 1830 m</b> <b>7.62 mm Coax MG and 7.62 mm Coax MG</b> <b>Maximum effective range 900 m</b>
<b>Basic Load</b>	<b>44 rounds main gun</b>

Figure 3-1. M1A1 Tank.



<b>Crew</b>	<b>4</b>
<b>Weight</b>	<b>12.6 tons</b>
<b>Armament</b>	<b>TOW ATGM launcher, MER 3,750 m</b>
<b>Basic Load</b>	<b>12 TOW missiles</b>
	<b>(2 ready, 10 stowed)</b>
<b>Top Speed</b>	<b>60+ mi/h</b>

Figure 3-2. LAV AT.



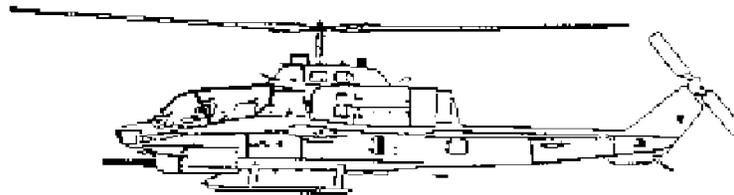
<b>Crew</b>	<b>4</b>
<b>Weight</b>	<b>12.2 tons</b>
<b>Armament</b>	<b>25 mm M242 chain gun</b>
	<b>Maximum effective range 2,000 m (approx.)</b>
	<b>2-M240 7.62 mm MG coax and</b>
<b>pintle-mounted</b>	<b>Maximum effective range 900 m</b>
<b>Top Speed</b>	<b>60+ mph</b>

Figure 3-3. LAV 25.



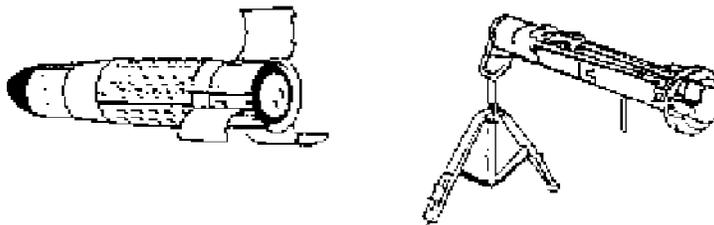
**TOW Section, Antiarmor Plt, Wpns. Co, Inf Bn**  
**8 Tms x 3 Marines + Sec Ldr = 25 Marines**  
**Crew** 3  
**Weight** 8,194 lb. w/equipment and crew (vehicle mounted)  
**Max Eff Rng** 3,750 m/21.5sec. time of flight  
**Types** TOW2A (conventional direct attack profile)  
 TOW2B (top-down attack profile)  
**Basic Load** 6 TOW missiles  
**Note** TOW gunners normally require approximately 150 to 300 m of missile flight to gain control of the missile.

Figure 3-4. M220E4 TOW (HMMWV)



**Armament** TOW or Hellfire (laser designated)  
**of flight** Maximum range TOW 3,750 m/21.5 sec. time of flight  
 Hellfire excess of 5,000 m  
**Basic Load** 8 TOW or 8 Hellfire (combination of 4 TOW/4 Hellfire)

Figure 3-5. AH-1W COBRA Attack Helicopter.



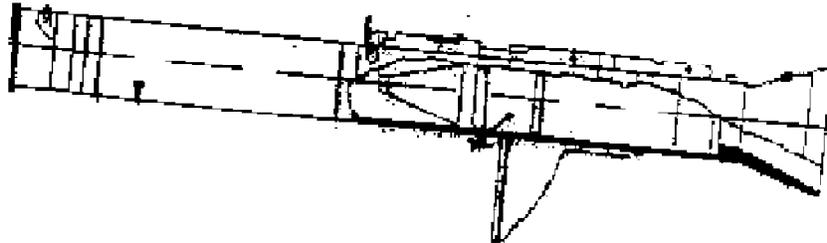
**Dragon Sec, Anti-Armor Plt, Wpns Co, Inf Bn**  
**12 tms x 2 Marines = 24 systems of day and night trackers**  
**Team** 2  
**Weight** 33.91 lb (round with day tracker)  
 48.7 lb (round with night tracker)  
**Max Rng** 1,100 m/11sec (100 m per sec)



Note: Fire & Forget weapon system. Selectable for top-down or direct attack profile. Will defeat any main battle tank w/ reactive armor.

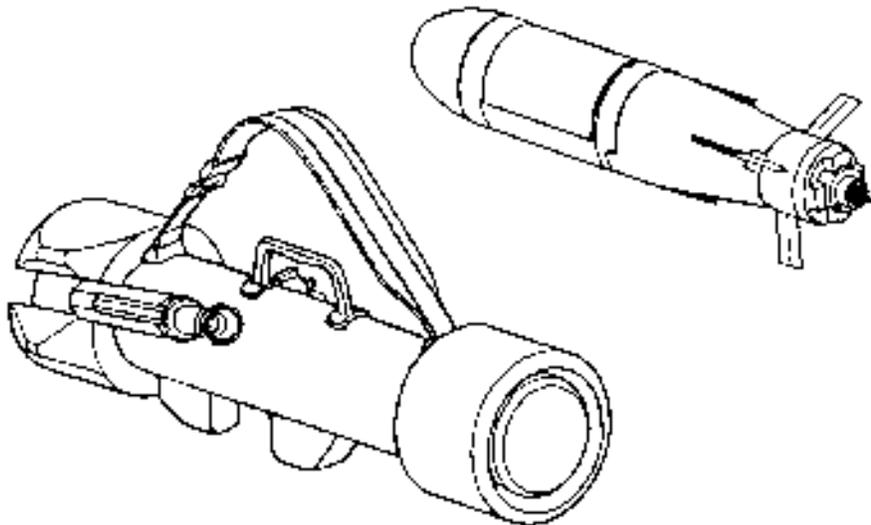
The JAVELIN is the replacement for DRAGON (M47) missile system.

Figure 3-8. FGM-148 JAVELIN Advanced Antitank Weapon System - Medium (AAWS-M).



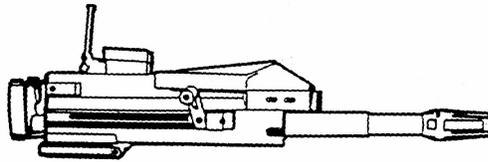
Team	Any Marine regardless of MOS
Weight	14.6 lb
Warhead	84 mm HEAT
MER	50% P <sub>h</sub> /P <sub>k</sub> 300 m stationary 250 m moving (approx.)

Figure 3-9. AT4.



Team	Any Marine regardless of MOS
Weight	19 lbs.
Warhead	explosively formed penetrator
MER	80%P <sub>h</sub> 17-600m (stationary) 200m (moving)
Note:	Fire & Forget weapon system, inertial reference autopilot guidance

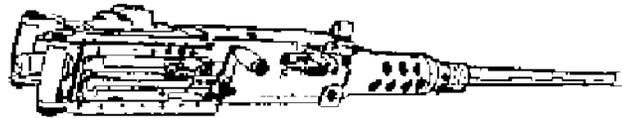
Figure 3-10. PREDATOR Short Range Antitank Weapon (SRAW).



Team	2
Weight	140.6 lb (tripod mounted)
MER	2,212m (area)
	1,500m (point)
Warhead	40 mm HEDP grenade

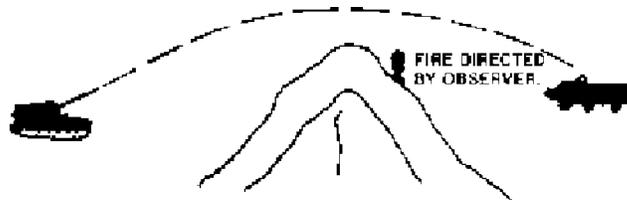
The MK-19 MG is mounted on the AAV, HMMWV, and ground-mounted on a tripod.

Figure 3-11. MK-19 Machine Gun



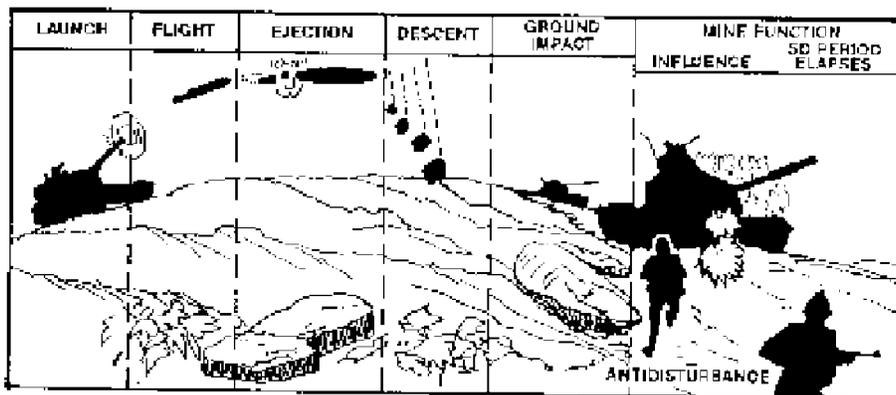
Crew/Team	1-4 (cupola, ring mount, or tripod)
Weight	129 lb (total) 60 lb (receiver group) 24 lb (barrel) 44 lb (tripod)
Max Eff Rng	1,830 m
Grazing Fire	700 m
Tracer burnout	2,200 m

Figure 3-12. M-2 Browning Machine Gun (Caliber .50 HB).



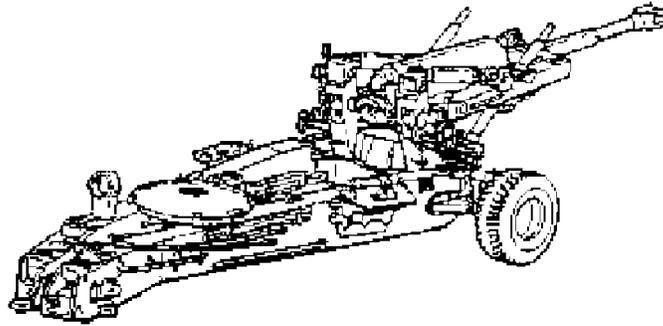
The Copperhead is a 155 mm cannon launched, antitank, laser-guided projectile. It has a maximum range of 16,800 m and a minimum range of 3,000 m. It must be terminally guided by the modular universal laser equipment (MULE) laser designator.

Figure 3-13. Copperhead.



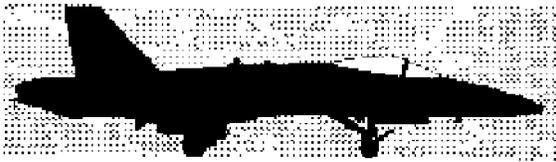
Family of scatterable mines (FASCAM) is an artillery delivered munition. RAAMS projectiles are 155 mm and contain nine anti armor mines with self-destruct times of less than and greater than 24 hours. The GATOR (CBU 78/B) is an air-delivered mine. The GATOR consists of 60 submunitions -- 15 anti armor and 45 antipersonnel.

Figure 3-14. Family of Scatterable Mines.



The M483A1 dual-purpose improved conventional munitions (DPICM) round is fired from the M-198, with a range of 17,500 m. This round contains antipersonnel, antimaterial, dual-purpose grenades. A shaped charge jet is expelled downward through the body of the grenade, while the rest of the grenade bursts into a large number of small fragments, expelled outward with high velocity. The jet is capable of penetrating approximately 2.75 inches of homogenous armor plate. Each projectile contains 88 shaped-charge grenades. When DPICM is not available, the artillery has the capability to degrade armored force capabilities. Fired in high concentrations, HE (PD) and (VT) fired in close proximity to armored vehicles can achieve mobility kills by damaging road wheels, suspensions, and tread. Additionally, these rounds can damage externally mounted target acquisition devices and optics, strip off radio antennae, and puncture fording kits and external fuel tanks.

Figure 3-15. Dual-Purpose Improved Conventional Munitions 155 M-198



The F/A-18 is an all-weather, strike fighter capable of both intercept/destruction of enemy aircraft and close air support (CAS). Armament includes a 20 mm gun, bombs, and an array of air-to-air and ground attack missiles and rockets.

Figure 3-16. F/A-18C/D Hornet.



The AV-8B is a vertical/short takeoff and landing (V/STOL) fighter that provides CAS. Armament includes a 25 mm gun, and various missiles, bombs, and rockets.

Figure 3-17. AV-8B Harrier, Harrier II, and Super Harrier II Plus.



The EA-6B's mission is to assist the operation of friendly aircraft by suppressing and degrading enemy defense systems through the jamming of enemy electronic signals or destruction of air defense systems through the use of High-Speed Anti-Radiation Missile (HARM). It's role is to assist in the suppression of enemy air defense (SEAD) in, among other missions, the execution of anti-armor operations.

**Figure 3-18. EA-6B Prowler.**

For a detailed discussion of weapon capabilities and employment of artillery, naval surface fire support (NSFS), and air-delivered ordnance, refer to MCWP 3-16, *Tactics, Techniques, and Procedures for Fire Support Coordination*, MCWP 3-16.1, *Marine Artillery Support*, and MCWP 3-23.1 *Close Air Support*.

## 3102. Strength and Weaknesses of Antiarmor Weapons Systems

There is no single *best* weapons system for every situation. In order to maximize combat power, the MAGTF uses all available resources to best advantage. To do so, the MAGTF seeks to achieve the effects of combined arms. Combined arms is the full integration of combat arms in such a way that to counteract one, the enemy must become vulnerable to another. The choice of a single system or a mix of systems is mission, enemy, terrain, and weather, troops and support available, and time available (METT-T) dependent. For a detailed study of specific weapons system, the reader should refer to the appropriate MCWP or TM. The following general comments address different families of weapons systems from a technical perspective.

**a. Tank.** The tank is the best weapon within its maximum effective range to engage another tank from the front. The M1A1 tank's 120 mm gun is capable of penetrating the front slope of MBTs. The tank cannon is capable of a rapid rate of fire. A crew can acquire a target and fire 2 main gun rounds in 12 seconds. The tank is the most difficult antiarmor weapon to suppress with artillery fire. Its mobility and armor protection allows a more active defensive posture. The tank's M-2 MG can engage light armor.

The tanks structural weaknesses were previously discussed. Clearly, close terrain such as urban or woodland terrain, and the size of the tank contribute to its vulnerability. The tank--individually or concentrated--presents a lucrative target for air. The tank's heat signature makes it susceptible to thermal imagery sights. The tanks weight and width restrict tank positioning options and route planning more than any other ground anti armor weapon system.

**b. ATGM.** The TOW and Dragon possess high hit probability from the moment the gunner acquires control out to their maximum effective ranges. Both systems are man portable. The TOW is found equipped on the light armored vehicle (LAV), high mobility multipurpose wheeled vehicle (HMMWV), and the AH-IW helicopter. The TOW can be ground mounted on a tripod.

The gunner and the weapon are vulnerable to enemy fire, both direct and indirect, during target acquisition and tracking. Firing is marked by a distinctive signature. ATGMs have a slow rate of fire relative to tank cannons and relative to the speed of enemy armor in the assault. ATGM travel time to target is much slower than tank cannons, though the ability of tank crews to dodge

ATGMs is probably overrated. Vegetation, firing over water, and lack of armor protection severely restrict ATGMs that are ground or vehicle mounted. While the TOW is capable of defeating most tanks from the front, the Dragon is restricted to flank shots on heavier armored vehicles. ATGMs should be employed in a combined arms role to protect the gunners. Another words, gunners should not normally engage armored targets until direct and/or indirect suppressive fires are delivered on the enemy.

Javelin. The Javelin possesses an extremely high hit probability from launch out to its maximum range. The system is manportable and found in the Javelin Section of the Anti-Armor Platoon, Weapons Company, Infantry Battalion. The Javelin incorporates fire-and-forget technology in it's design which increases the survivability of crews by eliminating the tracking time required of the TOW and Dragon gunner. Many of the other limitations of wire-command linked ATGMs are no longer considerations with this system. The Javelin allows the gunner to select either a convention direct attack mode (if a target in beneath overhead cover) or a top-down attack mode which allows the gunner to engage the least armored portion of threat vehicles. This dramatic increase over the capabilities of the Dragon, significantly enhances the MAGTF's medium range defense against an armored or mechanized threat.

**c. LAV 25/ LAV AT.** The LAV vehicle is exceedingly fast but is lightly armored. Its security role in the defense requires speed and a *limited capability* to engage enemy armor. The TOW capabilities have already been discussed. The 25 mm gum is capable of destroying light armor, particularly from the flank. Both variants are helicopter transportable, however range that the vehicle can be lifted depends on variables such as combat loaded weight of the vehicle, ambient weather conditions, and LZ elevations. Both systems are fired with the gunner inside the vehicle, allowing for marginal protection from air burst artillery and small arms.

**d. Light Antiarmor Weapons.** The AT-4 is a shoulder-launched light anti armor weapon designed to defeat modern threat MBTs from the flank and rear in close-in fighting at ranges less than 300 meters. As a munition, the AT-4 is lightweight and easy to carry. The rocket with shaped charge warhead may not be effective against all explosive reactive armor.

PREDATOR is a lightweight, manportable system with a fly-over, top-down down attack profile similar to the TOW-IIB and Javelin. The top-down attack profile takes advantage of the vulnerable upper surfaces of armored vehicles and tanks. The warhead of this munition uses an explosively formed penetrator that is lethal against all current MBTs including those with explosive reactive armor. This fire-and-forget system exposes the firer for the briefest possible time between ranges of 17 and 600 meters.

The MK-153 Shoulder Launched Multipurpose Weapon (SMAW ) is an 83mm portable antiarmor rocket launcher. It's primary role is to destroy bunkers and other fortifications. The Hight Explosive Dual Purpose (HEDP) round is effective against bunkers, masonry, concrete walls, and light armor. The High Explosive Anti-Armor (HEAA) rocket is effective against lightly armored vehicles and tanks without additional armor.

Range limitations and tracking of a moving target present difficulties to all LAW systems, resulting in the firer being well within the range of enemy weapons systems when using all three of these systems.

**e. Machine Guns.** The MK-19 and the M-2 .50 cal MG are not primary armor defeating weapons. However, these weapons can engage light armored vehicles from the flanks and may be used in concert with other primary armor defeating weapons to provide synergy to the ambush.

**f. AH-1W Helicopter.** This helicopter fires either the TOW or Hellfire (laser designated) missiles. AH-1Ws are most effective against tanks when using standoff weapons such as Hellfire (laser designated), using massed surprise fires, and when used in conjunction with ground forces to hinder enemy air defense capabilities. The TOW missile requires exposure to track the

missile to the target, potentially making the AH-1W vulnerable to ground fire. However, the AH-1W can effectively use terrain to provide cover and concealment within its battle position to reduce likelihood of detection. The missile angle of impact against tank armor make it a formidable tank killing system. Time on station is a limiting factor.

**g. Fixed Wing Aircraft.** Marine fixed-wing aircraft possess a variety of weapons systems and munitions capable of defeating enemy armor. However, vulnerability to ground weapons systems may require extensive SEAD fires, such as that delivered by the EA-6B's HARM system. While clearly capable of destroying individual armored vehicles once detected, the best use of fixed-wing aircraft is against unsuspecting armored columns or second echelon units not fully deployed for combat. Time on station is a limitation.

**h. Artillery.** The 155 mm M-198 fires Copperhead and DPICM projectiles. The Copperhead projectile is clearly capable of defeating enemy tanks, but requires laser designation. Additionally, the availability of the rounds may be limited. The DPICM rounds are most effective against light armor, not MBTs. DPICM's high dud rate should be considered if commanders plan on maneuvering through areas where it was employed. As with fixed-wing aircraft, a larger number of armor kills are likely against armored columns or second echelon units. Enemy counterbattery fire is a consideration when employing friendly artillery. Artillery in a direct fire role should only be used for self-protection.

## Section II. Antiarmor Techniques

The following discussion considers antiarmor operations from a perspective of weapons employment. The introduction of the engagement area (EA) model establishes the basic framework for posturing weapons/units in the defense against an armored force. The EA is a concept that assists commanders in focusing their planning, coordination, and allocation of resources toward the goal of defeating enemy armor.

### 3201. Methods of Engagement

There are two general methods of antiarmor engagement--HAW-MAW-LAW and massed-surprise fire. These two methods of engagement are not types of defense. Rather, they define the range relative to a weapon's maximum effective range at which friendly antiarmor weapons engage enemy armor. In practice, a defense usually employs techniques reflecting both methods of engagement.

**a. HAW-MAW-LAW.** HAW-MAW-LAW refers to heavy antiarmor weapons (TOWs and tanks), medium antiarmor weapons (Dragons, Javelin), and light antiarmor weapons (AT-4s, Predators). The HAW-MAW-LAW concept embodies two ideas: the categorization of weapons and the employment of those weapons. Weapons are categorized by range, not weight. (See fig. 3-20.)

(1) **Employment of HAW-MAW-LAW.** HAW-MAW-LAW is a concept in which friendly antiarmor weapons engage enemy targets at their maximum effective ranges. The concept has evolved to include engaging with air, artillery, and NSFS at their maximum effective ranges. The idea is to destroy enemy armor as far forward of the friendly positions as possible. This method of engagement is normally employed against large armored formations.

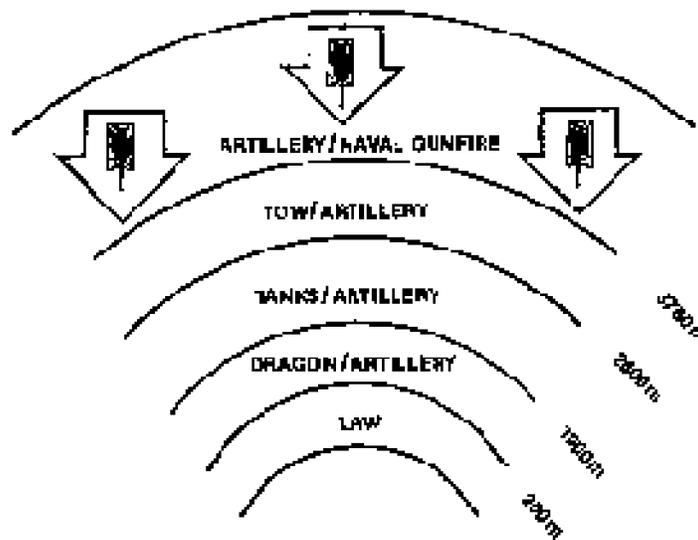


Figure 3-20. HAW-MAW-LAW.

(2) **Disadvantages and Advantages of Employing HAW-MAW-LAW.** The major disadvantages of HAW-MAW-LAW are: increased likelihood of early detection of friendly positions and longer exposure to enemy direct and indirect fire.

Secondly, flank shots may be more difficult to obtain at longer ranges. The advantage is that friendly weapons engage enemy armor for a longer period of time, normally allowing for greater attrition of enemy armored forces forward of the friendly positions (See fig. 3-21.).

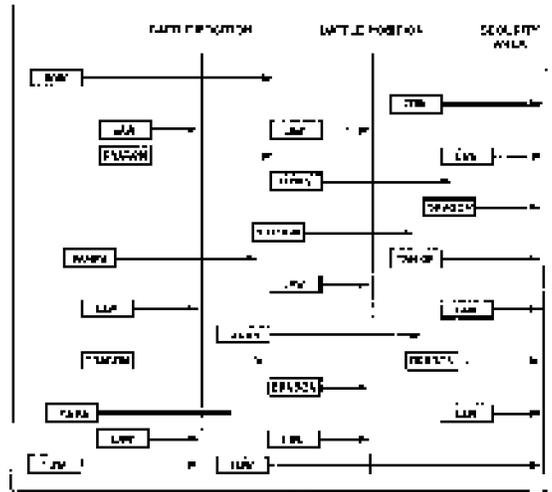


Figure 3-21. HAW-MAW-LAW Achieving Depth.

**b. Massed Surprise Fires.** This method of engagement concentrates all direct fire weapons on the enemy force *simultaneously*. This method will usually achieve more initial “kills” on first engagement, but at a much closer range. The disadvantage of this method is that it doesn’t take advantage of each weapon’s maximum effective range. Stand-off allows MAGTF antiarmor assets to engage targets at a greater range than our enemy can possibly return fires. Another disadvantage of massed surprise fire is that the , the mass and momentum of an enemy armored attack may still carry the force into friendly positions. This method is ideal in the ambush of individual or small armor units. (See fig. 3-22.)

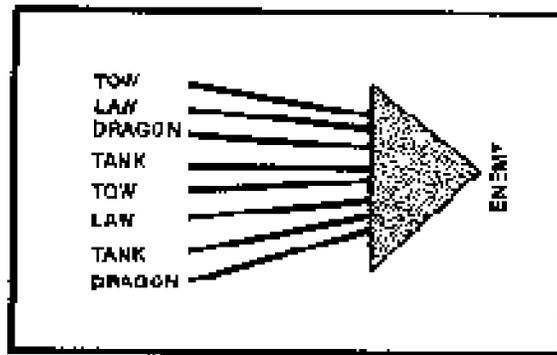
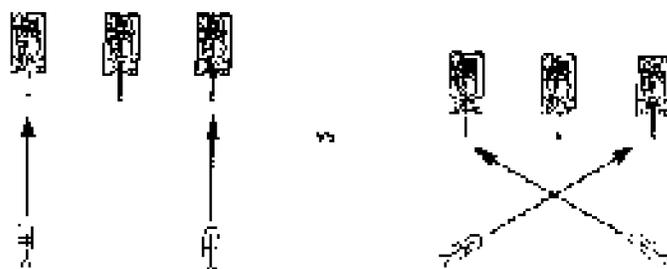


Figure 3-22. Massed-Surprise Fire.

**c. Engagement Considerations.** Generally the method of engagement chosen usually depends on the size of the enemy armored force; e.g., HAW-MAW-LAW would be employed against a large force and massed-surprise fire would be employed against a smaller force. However, other factors should be considered in addition to the size of the enemy force. However, all the factors of METT-T should be considered. Some of the key factors for consideration include terrain, point-of-aim, and positioning to counteract enemy artillery fire.

**(1) Terrain.** Terrain often limits the engagement ranges of antiarmor weapons. Studies of the '73 Arab-Israeli War show the average tank-to-tank kill in the Golan Heights was between 350 and 500 meters; in the Sinai Desert, it was 500 to 800 meters. The maximum effective range of the tanks involved was approximately 1,500 meters. Studies of Central Europe indicate that 55 percent of the ground is considered close terrain. The following ranges can be expected in any Central European scenario:

Beyond 2,500 m 6% of all line-of-sight distances  
 Beyond 2,000 m 10% of all line-of-sight distances  
 Beyond 1,500 m 17% of all line-of-sight distances  
 Beyond 1,000 m 45% of all line-of-sight distances  
 Beyond 500 m 67% of all line-of-sight distances



**Figure 3-23. Engagement Methods.**

**(2) Point of Aim.** Early generation MAW and LAW systems such as the Dragon and AT-4 may require flank shots to be effective against later model Soviet MBTs. In theory, these systems can achieve flank shots by firing across the front of a linear defense but engaging targets from an angle that is oblique to the oncoming enemy's direction of attack. However, the effect is decreased engagement range, whether or not each weapon is firing at its maximum effective range. (See fig. 3-23.)

Another positioning alternative to accommodating MAW-LAW flank shots is to position these systems forward or rearward of the HAW systems. This alternative may utilize either method of engagement. (See fig. 3-24.)

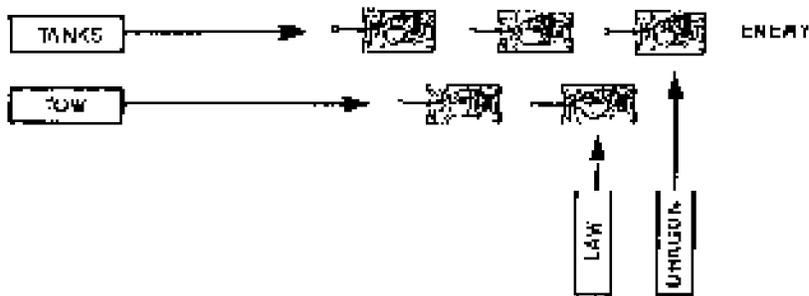
**(3) Positioning to Counteract Enemy Artillery Fire.** The Marine Corps, having limited tank assets, relies more on ATGMs than a land army. Since ATGMs are vulnerable to artillery suppression, commanders may be forced to disperse weapon systems--laterally and in depth--to counteract the results of enemy massed indirect fires. Depending on the factors of METT-T, this could result in either method of engagement being employed or a combination of both methods.

## 3202. Engagement Area

EA is a designated area along likely enemy avenues of approach where the commander intends to destroy an enemy force through massed, converging fires. The EA is the key to organizing the antiarmor defense. The commander analyzes the terrain and determines the likely enemy avenues of approach. At this point, he determines the location and lateral limits of the EA(s). (See fig. 3-25.) The EA serves as a basis for the positioning of forces and the allocation

of supporting arms and obstacles. The EA concept is sometimes referred to as *armor kill zone* or *fire sack* (Former Soviet Army).

Whether the EA is positioned in the security area, forward edge of the battle area (FEBA), main battle area, rear area or combination of these--is dependent on METT-T. A significant aspect of Estimate of the Situation Process (METT-T) --is a comparison of antiarmor weapon system capabilities in terms of range and lethality, relative to the enemy armor force. Put simply, where do you position the weapon to get the proper angle of fire to destroy the enemy vehicles?



**Figure 3-24. Front and Flank Combination Engagement**

EAs may be located in the security area, FEBA, main battle area, or rear area. The EA should be positioned where enemy armored formations are vulnerable to antiarmor fires, such as open areas or choke points. Ideally, these areas can be covered from a number of directions by a large number of mutually supporting antiarmor weapons. An EA is delineated as an area covered by fire within two or more *target reference points* (TRP). TRPs are easily recognizable points on the ground (either natural or man-made) used to initiate, distribute, and control fires. (MCRP 5-2A). The EA may be further subdivided into *sectors of fire*. Sectors of fire are defined areas which are covered by individual, crew served weapons or weapons of a unit (JP 1-02 NATO). Sectors of fire help units achieve: mutual support among firing positions, interlocking fire for area coverage, and recognizable lateral limits as references for the control of fires.

In most cases, an EA forward of the FEBA is associated with a relatively linear position (the defense may have a number of subsequent battle positions) employing the HAW-MAW-LAW method of engagement. The location of the EA is based on the assumption that the majority of antiarmor weapons systems can achieve kills against enemy armor from the frontal or oblique angles, thereby preventing enemy armor penetration.

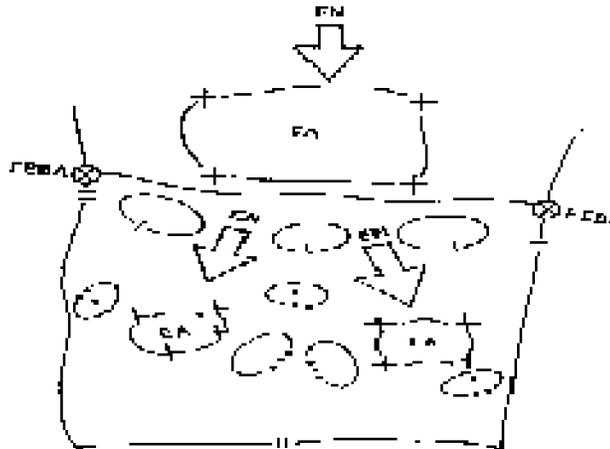
An EA within the main battle area, regardless of the method of engagement, attempts to maximize flank shots at the expense of enemy penetration of the FEBA. While this type EA might appear the least preferred, it may be the most common, considering weapon capabilities compared to enemy armor.



**Figure 3-25. Location of Engagement Areas.**

A defense may contain both type of EAs, with a particular EA oriented toward a type of armor target (See fig. 3-26.) For example, an EA forward of the FEBA might be employed against BMPs, allowing the leading tanks to penetrate the FEBA. The enemy tanks may be channeled into smaller kill zones within the battle area and destroyed by MAWs and LAWs or by a counterattacking tank force.

The following discussion will focus on weapon positions, not unit positions, even though their governing principles are often the same. Unit positions will be considered in the broader context of the defense in later sections.



**Figure 3-26 Engagement Area (Combination).**

### 3203. Weapon Positioning

The concept of the ambush guides antiarmor weapon positioning. The position of the antiarmor weapon should provide protection and effect surprise while allowing the weapon to fire a lethal shot. The position should exploit the advantages of the weapon system while minimizing its vulnerabilities.

**a. Cover and Concealment.** Cover is protection from enemy fire; concealment is protection from enemy sight. Within the time allotted for preparation, every effort should be directed toward improving these aspects of a weapon position. See figures 3-27 and 3-28 for examples of cover and concealment. There are three types of protection

afforded ground mobile antiarmor weapons--hide position, turret defilade, and hull defilade. (See figs. 3-29 through 3-31.)



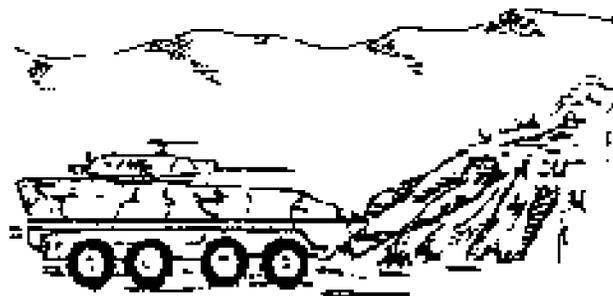
Movement of personnel in and around the position and failure to conceal from overhead observation are the most consistently neglected aspects of concealment for both ground mounted and mobile antiarmor weapons systems. Movement of personnel should be minimized. Vehicles should utilize their camouflage nets whenever possible. Noise and light discipline should be enforced.

**Figure 3-27. Concealment Using Natural Terrain.**



Ground mounted weapon systems, possessing no armor protection, should also develop overhead protection to counter enemy artillery bursts.

**Figure 3-28. Overhead Protection.**



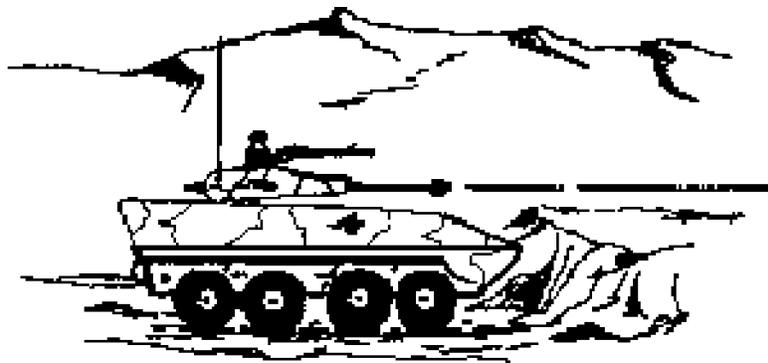
A vehicle is in the hide position when no part of the vehicle or commander is exposed to the front.

**Figure 3-29. Hide Position.**



A tank or LAV is in turret defilade (also referred to as turret-down) when the entire vehicle is in defilade (behind cover), but the commander can still observe to the front from the turret.

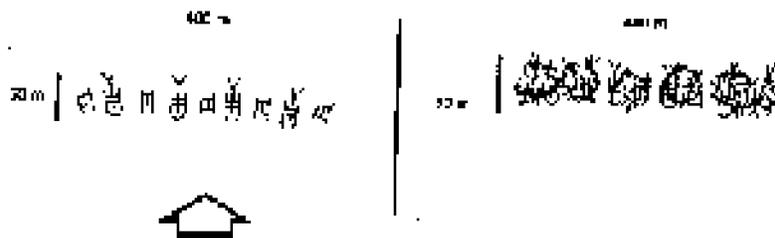
**Figure 3-30. Turret Defilade.**



Hull defilade (also referred to as hull-down) is when the turret is the lowest part of the vehicle exposed. This position allows the vehicle to fire its primary weapon while still protecting its hull or body.

**Figure 3-31. Hull Defilade**

**b. Dispersion.** Dispersion is the most effective passive measure a commander can utilize to negate the effects of threat artillery. Weapons should be dispersed both laterally and in depth so a single volley from an artillery battery would not prevent coverage of a given sector. The following examples in figures 3-32 and 3-33 depict the principle of dispersion. The enemy artillery battery is depicted firing an open sheaf.



**Figure 3-32. Inadequate Dispersion.**

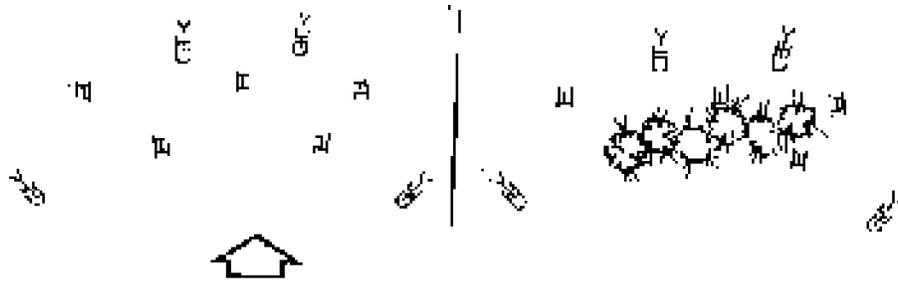


Figure 3-33. Lateral and In-Depth Dispersion.

**c. Mutual Support.** Mutual support is that support which units render each other against an enemy, because of their assigned tasks, their position relative to each other and to the enemy, and their inherent capabilities (Joint Pub 1-02). The principle of mutual support is applicable to positioning and fire control. Individual weapons and vehicles are never employed separately. Units or elements are assigned overlapping primary and secondary sectors of fire. If one unit or element is attacked or forced to displace, the mutually supporting unit or element can continue to cover the assigned sector. Antiarmor weapons like tanks and TOWs may be dispersed a considerable distance apart and still be able to cover the same sector. The other aspect of mutual support is protection against dismounted attack. Where required, antiarmor weapons should be positioned in the vicinity of infantry for security. (See fig. 3-34.)

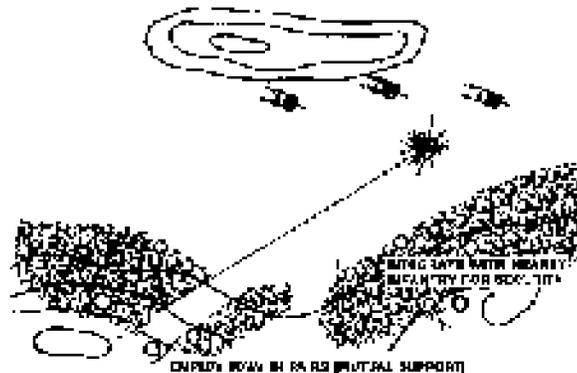


Figure 3-34. Mutual Support Between Weapons.

**d. Standoff Range.** The standoff range is the distance that a weapon's maximum effective range exceeds that of an opposing weapon's maximum effective range. The advantage of the standoff range is higher accuracy at longer ranges. For example, when a TOW's maximum effective range of 3,750 meters exceeds a tank's maximum effective range of 2,000 meters, there is a standoff of 1,750 meters. Therefore, a TOW system may be employed to maximize its *standoff* range by engaging the tank well beyond the tank's range. (See fig. 3-35.)

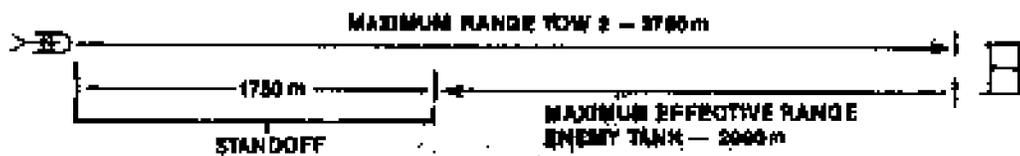


Figure 3-35. Standoff Range.

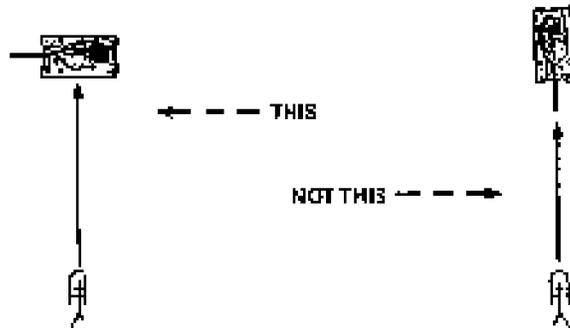
**e. Flank Shots.** Seeking flank shots is a method by which personnel position antiarmor weapons systems on the flanks of the assaulting enemy force. It is not always feasible in every situation. (See fig. 3-36.) Earlier generation MAW (Dragon) and LAW (M72A2) systems required flank or rear shots to be effective, since their chemical energy warheads are significantly degraded by composite and/or reactive armor (especially on the front slope of the tank). Flank shots are desirable because:

1. Flank shots provide the largest visual target.
2. Detection and suppression capabilities of most threat armored vehicles- vision ports, laser range finder, crew, and firepower- are oriented to the front.
3. Armored vehicles generally have more armor on the front than sides.

However, the lack of a flank shot does not prevent gunners equipped with newer generation LAW, MAW, and HAW systems from engaging targets due to top-attack technology.

1. Top-attack strikes the thinner armor normally found on top of an armored vehicle rather than the heavier frontal and side plates (TOWIIB, Javelin, and Predator)
2. Soft-launch signature decreases probability of detection (Javelin and Predator)
3. The gunner is not exposed to track the missile to the target (Javelin and Predator)

Although flank shots are not necessary, they are still desirable from a standpoint of enhanced gunner survivability due to enemy counter action.



**Figure 3-36. Flank Shot.**

## 3204. Fire Control

The first step the commander exercises in fire control is the designation of the EA itself. The EA provides the framework for all subsequent considerations of fire control. The following principles are the basis for effective fire control procedures:

- Use each weapon in its best role.
- Engage the enemy as rapidly as possible to minimize friendly exposure.
- Expose only those weapons needed to fire.
- Distribute fires to ensure complete coverage of enemy targets.

- Engage the most dangerous threats first.
- Maximize integration of indirect fires, direct fires, with natural/ manmade obstacles..
- Fire first. The weapon that fires first has an advantage.
- Engage one target with one weapon. Avoid overkill.
- Establish *simple* and *complete* fire control procedures.
- Centralize the control of antiarmor fires.
- Centralize and mass artillery fire.
- Designate the responsibility for an EA to one individual (e.g. battalion or company commander).

**a. Sector of Fire.** A sector of fire is an area which is required to be covered by fire by an individual, by a weapon, or a unit (Joint Pub 1-02). Sectors of fire ensure adequate distribution of massed fires within the EA. Sectors of fire are normally delineated by boundaries formed by natural terrain features that allow, whenever possible, ease of identification. The sector of fire may extend from the weapon to a distant boundary, or it may be an enclosed area located some distance from the weapon or unit. (See fig. 3-37.)

Normally, a specific type of weapon(s) will have a sector of fire. The sector of fire may overlap with another type of weapon's sector of fire. In this case, engagement criteria might further define each weapons role. (See fig. 3-38.)

The terrain and the number and type of weapons available dictate how sectors of fire are assigned. They should be assigned so that an EA is completely covered by the appropriate fire. Mutual support is enhanced by assigning *primary* and *secondary* sectors of fire. One unit's (weapon) secondary sector of fire may correspond to another unit's (weapon) primary sector of fire. Fire may be shifted to the secondary sector, on order, when there are no targets in the primary sector. In accordance with sectors of fire, primary, supplementary, and alternate positions are normally planned for each weapon system.

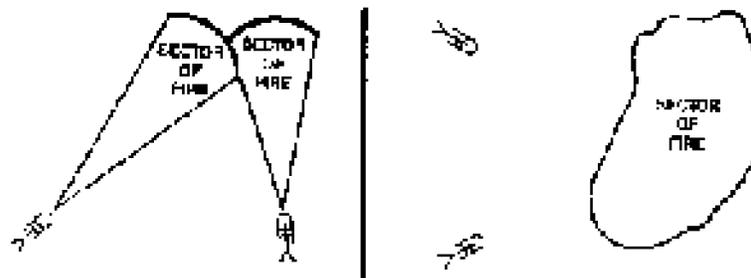


Figure 3-37, Sector of Fire.

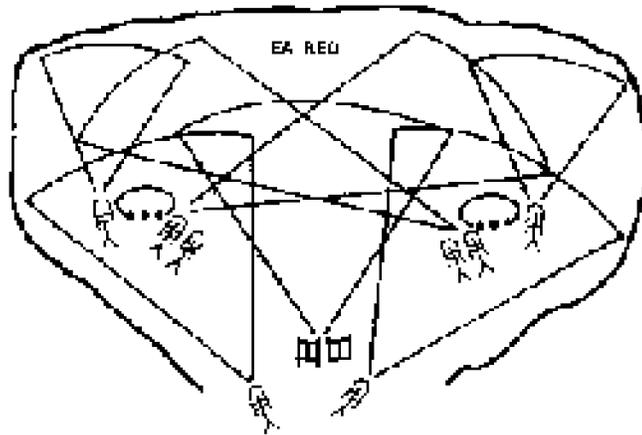


Figure 3-38. Overlapping Sectors of Fire.

**b. Target Reference Point.** A TRP is an easily recognizable point on the ground (either natural or manmade) used for identifying enemy targets or controlling fires. (MCRP 5-2A) A TRP is used for controlling the fires of more than one direct fire weapon or tactical unit firing into the sector. It may be used to *distribute* or *converge* the fires of antiarmor weapons. TRPs are numbered sequentially using a three-digit number. When a TRP is recommended and accepted as an indirect fire target, it is given a number from an assigned block of target identification numbers. Such a number has two letters and four numbers; for example AC1000. (See fig. 3-39.)

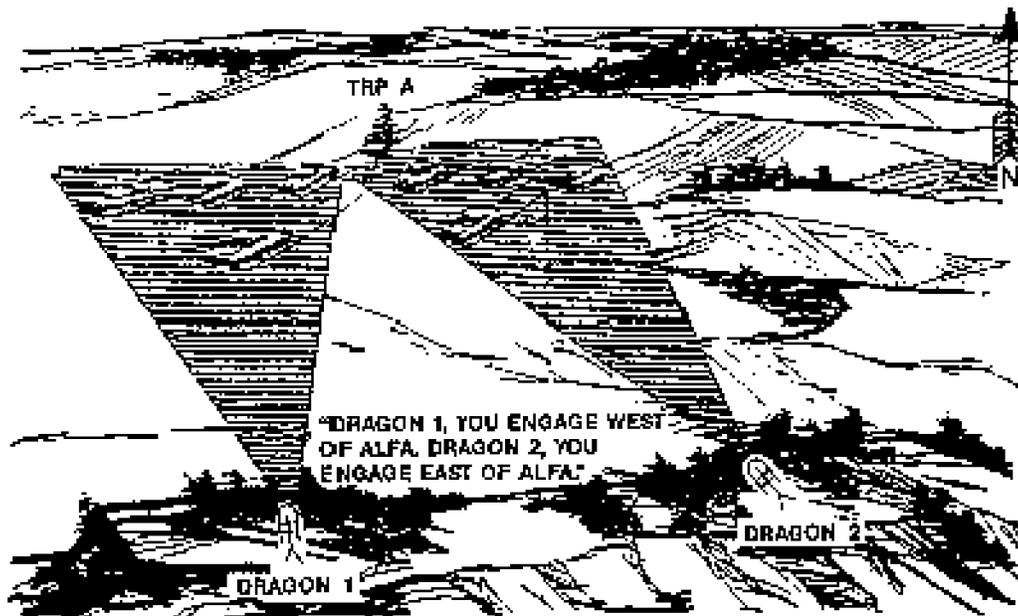


Figure 3-39. Target Reference Point.

**c. Priority of Engagement.** Priority of engagement is a sequence of targets that establishes the precedence (not the order of accomplishment) in which the targets should be attacked. This term relates primarily to direct fire antiarmor weapons. It is sometimes referred to as priority of targets. It is somewhat similar to the artillery term--target precedence. Commanders normally provide general guidance to their subordinate units on priority of engagement. It

may have to be amplified at each succeeding subordinate tactical level in accordance with the antiarmor capability of each subordinate tactical echelon.

Priority of engagement is often general guidance provided to a unit, however it may also take the form of specific engagement guidance provided to an antiarmor weapon squad or crew. Different weapons systems within a unit may have different priorities of engagement due to differing capabilities or the tactical scheme.

Antiarmor fires can be distributed rapidly and controlled effectively if a priority of engagement is assigned to each weapon system or if each team is assigned a specific type of vehicle to engage. For example, one team can engage tanks while another engages command and control vehicles and IFVs. Engagement priorities are useful when there are overlapping sectors of fire or when communication is lost.

In addition to engagement priorities based on types of vehicles, the level of danger to the antiarmor weapon system must be considered. There are three categories of danger to the individual gunner that may modify the priority of engagement. *The categories are most dangerous, dangerous, and least dangerous.* The *most dangerous* category denotes an enemy weapon that can engage, is engaging, or is preparing to engage a friendly weapon. If two or more of them are present, engage the closest one first. The *dangerous category* signifies an enemy weapon that could engage that could engage a friendly weapon but has not seen it yet. The *least dangerous* indicates an enemy weapon which cannot engage or is not powerful enough to destroy a friendly weapon.

**d. Methods of Initiating Engagement.** There are two methods of initiating engagement--*on-order fire control* and *event-oriented fire control*. Either one may be used with the HAW-MAW-LAW or Massed Surprise fire method of engagement.

The first method, *on-order fire control*, is used when the commander gives the command for his elements to begin engaging the enemy. This method assumes that there are reliable communications and that the commander is in a position to see his entire EA or sector. The second method, *event-oriented fire control*, is the guidance that each gunner is given about what enemy action or event is to occur before he fires; e.g., the event could be when the first enemy tank crosses the trigger line or when a specific number of enemy armored vehicles cross the trigger line.

There are two fire control measures that are related to the methods of initiating *engagement--maximum engagement line* and *trigger point*. The *maximum engagement line* is a constructed line within which targets can be engaged. Normally, it is never more than the TOW or M1 tank's maximum effective range. This line will normally be the range limit of the sector of fire. The *trigger point*, sometimes referred to as trigger line, is a location on the ground where the enemy comes within the effective range of a given weapon system. This line is where weapons systems fire on the enemy. The firing may be on-order or event-oriented. The trigger point is selected with consideration given to reaction time of the firing unit, time of flight of the projectile, and the rate of march of the enemy. (MCWP 3-16 *Tactics, Techniques and Procedures for Fire Support Coordination*). (See fig. 3-40.)

The maximum engagement line and the trigger point may coincide. The dimensions are normally designated by TRPs.

**e. Fire Commands/Fire Patterns.** Fire commands and fire patterns are methods of fire control that allow squads, sections, and platoons to engage enemy armor in the most economical and efficient manner. They may be incorporated in on-order or event-oriented initiated engagements. To be effective, fire commands and fire patterns should be rehearsed.

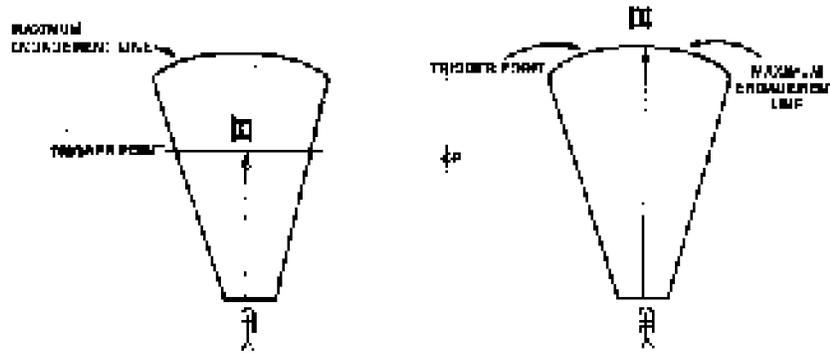


Figure 3-40. Trigger Point.

**(1) Fire Commands.** Fire commands are clear and concise commands that contribute to speed and accuracy in engaging armor formations. Fire commands will vary slightly, depending on the type of antiarmor weapon system. However, all initial fire commands contain the following five items as shown in figure 3-41.

Subsequent fire commands include those commands used to adjust, shift, and cease fire. They normally include only those elements necessary to accomplish these actions.

<b>ALERT</b>	"BRAVO Six Four, This is BRAVO Six One."
<b>TARGET DESCRIPTION</b>	Five Tanks
<b>TARGET LOCATION</b>	West of TAP Zero Zero Six
<b>FIRE CONTROL METHOD (optional)</b>	Depth
<b>EXECUTION</b>	At My Command, FIRE."

Figure 3-41. Sample TOW Section Fire Command.

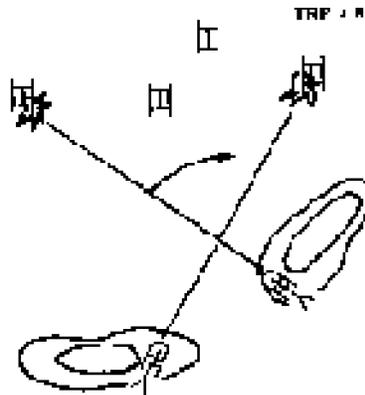
**(2) Fire Patterns.** Fire patterns are standard techniques for the distribution of antiarmor fires on multiple targets. Fire patterns are announced as part of a platoon or section fire command. Fire patterns are normally used by tank and LAR platoons and TOW and Dragon sections. There are three basic fire patterns: frontal, cross, and depth. (See figs. 3-42 through 3-44.)



**Figure 3-42. Frontal Fire Pattern.**

**(a) Frontal Fire Pattern.** The frontal fire pattern is most effective against an enemy armor column. This angle allows for flank shots and the gunners are not in the general observation area of the armor vehicle crew. The frontal fire pattern is least effective against an armor force deployed on line and assaulting directly toward the antiarmor weapons.

**(b) Cross Fire Pattern.** The cross fire pattern is used when enemy vehicles are deployed on line and assaulting directly toward the antiarmor weapons. This fire pattern requires that each weapon engage a target on the opposite flank. As targets are destroyed, fire is shifted toward the center of the formation. Cross fire creates flank shots and oblique shots. It requires good communication. The cross fire pattern decreases the time each gunner has to engage multiple targets compared to the frontal fire pattern, since the gunner is not engaging the enemy at the maximum effective range of his weapon relative to the FEBA.



**Figure 3-43. Cross Fire Pattern.**

**(c) Depth Fire Pattern.** The depth fire pattern is employed when targets are exposed in depth. One section engages the nearest targets while the other section engages the farthest targets. As targets are destroyed, fires shift toward the center. This is especially effective against armored units in column or march formations. Like the cross fire pattern, depth fire may begin with event-oriented initiation, but requires good communication for subsequent control.

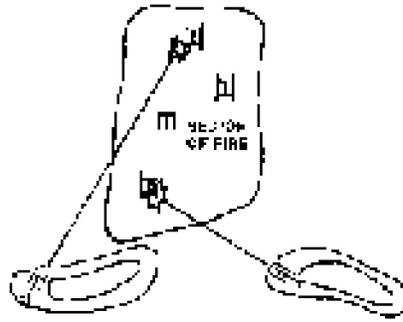


Figure 3-44. Depth Fire Pattern.

**f. Kill Windows.** The kill window is an exposed area between two covered areas that allows an ATGM gunner to track the target after firing until time of impact. The gunner must be aware of the time it takes the missile to reach various ranges after he fires. The TOW missiles time of flight out to its maximum effective range of 3750 meters is 20 seconds, the Dragon missiles time of flight out to its maximum effective range of 1000 meters is 11.2 seconds, and the Javelin missiles time of flight out to its maximum effective range of 2000 meters is 14.5 seconds. The gunner should assume worst case conditions--the enemy vehicle moving at its top speed, approximately 10 meters per second. (See Fig. 3-45.)

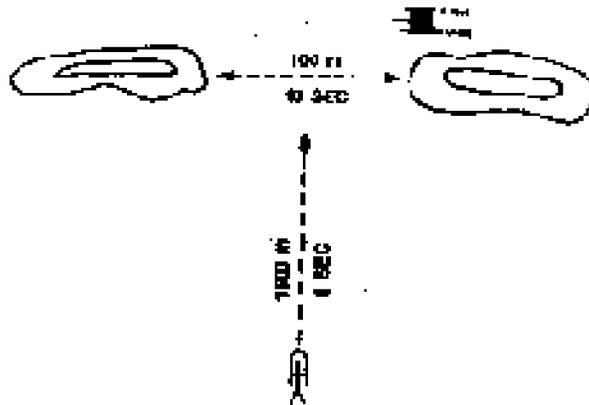
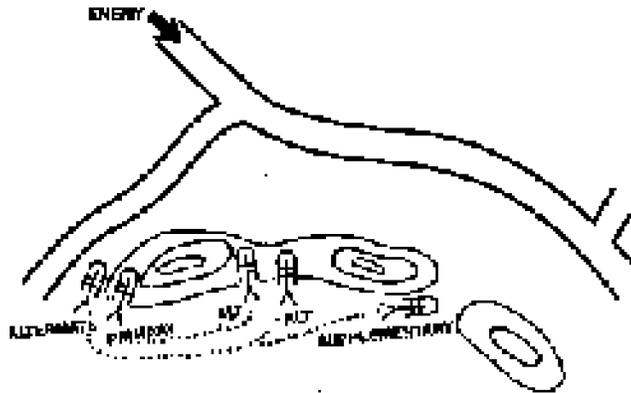


Figure 3-45. Kill Window.

**g. Primary, Alternate, and Supplementary Positions.** Primary, alternate, and supplementary positions all contribute to effective fire control. A **primary position** is a place for a weapon, a unit, or an individual to fight that provides the best means to accomplish the mission (MCRP 5-2A). The primary position is the best available position from which the assigned sector of fire can be covered. An **alternate position** is the position given to a weapon, unit, or individual to be occupied when the primary position becomes untenable or unsuitable for carrying out its task. The alternate position is located so that the individual can continue to fulfill his original task (MCRP 5-2A). A **supplementary position** is that location which provides the best sectors of fire and defensive terrain along an avenue of approach other than the primary avenue of approach the enemy is expected to attack along, for example, a flank avenue of approach (MCRP 5-2A). The supplementary position is a secondary position that does not cover the same sector of fire as the primary position. Supplementary positions are prepared to deal with an attack from a different direction. The unit carries out a different mission from a supplementary position. Where feasible, all antiarmor

weapons should be assigned primary, alternate, and supplementary positions. Covered and concealed routes between positions are essential to ensure rapid displacement and to prevent detection of movement. (See fig. 3-46.)

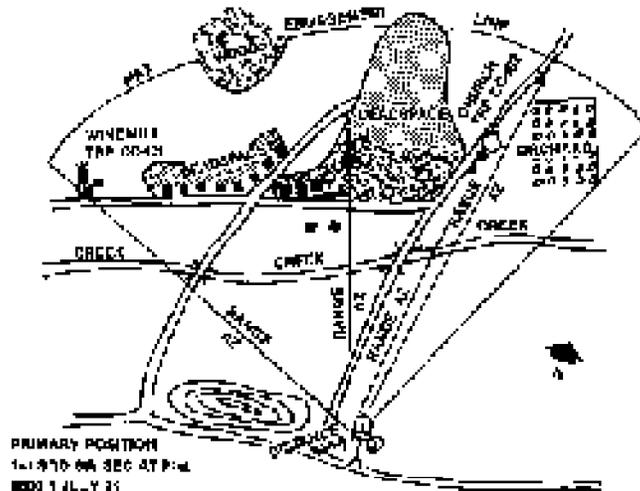


**Figure 3-46. Positions.**

**h. Range Cards.** A range card is an oriented sketch prepared for a *weapon* position. Two copies of the range card are made. One copy is retained by the crew and the other is forwarded to the next higher command. (See fig. 3-47.)

At a minimum, the range card should contain the following elements:

- Weapon positions (primary, supplementary, and alternate).
- Sectors of fire.
- Maximum engagement line.
- Range and azimuth to TRPs.
- Dead space.
- Magnetic north.
- Unit designation, time, and date.

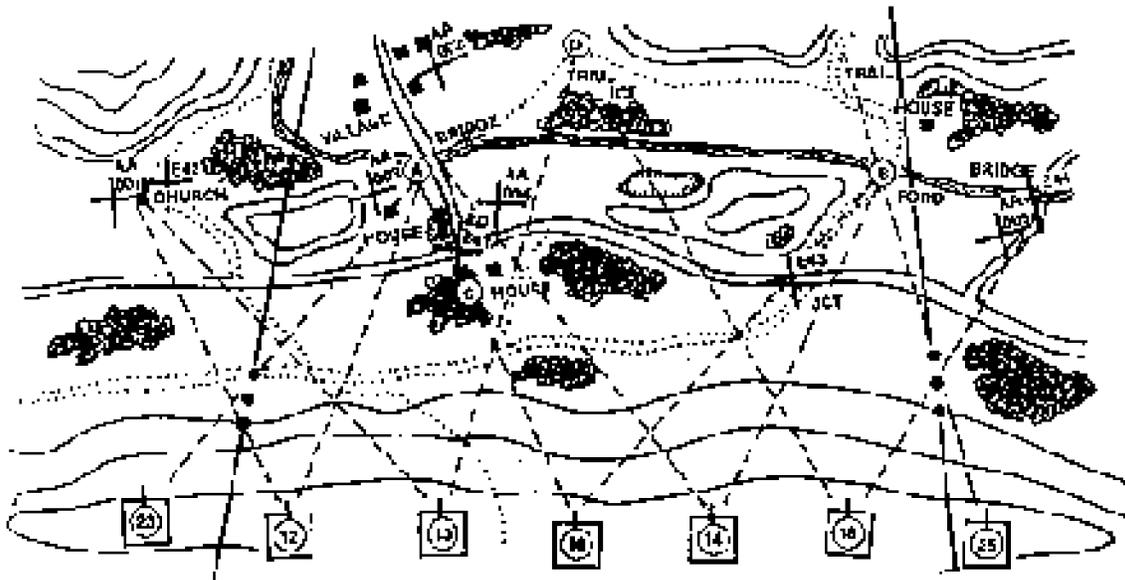


**Figure 3-47. Range Card.**

**i. Platoon/Section Sector Sketch.** A sector sketch is an oriented sketch prepared for a unit position. The sector sketch is a consolidation of the individual weapon range cards. Two copies of the sector sketch are made. One copy is retained by the preparer and the other is forwarded to the next higher command. Once the sector sketches are consolidated by the company commander and indirect fire targets are assigned, the sector sketch becomes the completed platoon fire plan sketch. Figure 3-48 is an example of a tank platoon sector sketch that has been developed into a platoon fire plan.

- Engagement area.
- Main terrain features and ranges to them.
- Primary and secondary sectors of fire.
- Maximum engagement lines.
- Trigger line (if used).
- Target reference points.
- Dead space.
- Obstacles.
- Indirect fire targets (sketch becomes the fire plan).

The reader should recognize that the fire control measures presented in this section are to be integrated with those more familiar control measures such as phase lines, check points, and the fire support control measures discussed in previous sections. Disengagement criteria--a critical fire control measure in the defense-- will be discussed in a later section.



**Figure 3-48. Platoon Fire Plan.**

### 3205. Tank Killer Teams

Tank killer teams, sometimes referred to as armor killer teams, are normally squad-sized, task-organized units with independent missions armed with MAWs and LAWs. Tank killer teams destroy enemy armor without becoming decisively engaged. They are also used to call for and adjust indirect fires and to report on enemy movement. Tank killer teams may use helicopters or vehicles for mobility. Their primary technique of engagement is the ambush with massed-surprise fire.

The roles assigned tank killer teams include but are not limited to the following missions:

- Employed in dead space forward of the FEBA to canalize the enemy into EAs.
- Employed at night near the FEBA along primary or secondary avenues of approach as an economy of force measure.
- Employed in gaps between positions that cannot be covered by direct antiarmor fires.

## Chapter 4

# Antiarmor in the Defense

The preceding chapter addressed *weapon* positioning. This chapter will discuss *unit* positioning. Certain principles apply to both unit and weapon(s) positioning and are repeated (e.g., mutual support). While the MAGTF commander is ever cognizant of weapon positioning factors, unit positioning represents the focus of planning at the higher levels of command. Unit positioning will be discussed within the framework of battlespace geometry. The defense is organized into three areas: the security area, the main battle area, and the rear area. The antiarmor defense actually begins well forward of the security area with MAGTF air assets engaging advancing enemy armor. As enemy armor continues into the security area and main battle area, it encounters ever-increasing resistance from MAGTF assets in predetermined engagement areas.

Success against large armored formations is the result of the proper focus and coherent planning beginning with the MAGTF commander down through his subordinate commanders and staffs. This MAGTF perspective helps to ensure the proper integration of assets to achieve the combined arms effect.

## Section 1. Defensive Doctrine

### 4101. Fundamentals of the Defense

The MAGTF commander considers the following fundamentals when conducting defensive operations:

- Maneuver
- Preparation
- Mass and Concentration
- Flexibility
- Offensive Action
- Use of Terrain
- Mutual Support.
- Defense in Depth
- Surprise
- Knowledge of the Enemy

Commanders may assume the defensive at one point as an economy of force measure to permit massing at another point. Ultimately, commanders conduct the defense only until they can resume the offense. The defense may be undertaken to:

- Destroy enemy forces.
- Retain or control terrain or prevent the enemy's capture of terrain.
- Reduce the enemy's capability to conduct offensive operations.
- Economize combat power, enabling the concentration of combat power elsewhere.
- Develop more favorable conditions for offensive operations.

### 4102. Organization of the Battlespace

The defensive sector is organized into areas: the security area, main battle area, and rear area. (See fig. 4-1.)

**a. Security Area.** The security area is the forward of the three defensive areas. It is the area forward of the FEBA out to the forward positions initially assigned to the security forces. The ground combat element commander may extend the lateral boundaries of subordinate units forward of the FEBA, giving them responsibility for the security area within sector to the forward limit of their boundaries, or he may assign a security force to operate across the entire ground combat element frontage (MCRP 5-2C). The Commander adds depth to the defense by extending the security area as far forward as tactically possible. Forces in the security area furnish information on the enemy and delay, deceive and disrupt the enemy and conduct counterreconnaissance. In NATO, the security area is called the covering force area (CFA). Forces in the security area are assigned screen, guard, or covering force missions. Actions in the security area are designed to cause the enemy to prematurely deploy into their attack formations and disrupt the enemy's plan of attack. Slowing the enemy's attack enables MAGTF forces particularly LAR and aviation, to strike the enemy's critical vulnerabilities (i.e. movement, resupply, fire support, and command and control). However, the establishment of security forces by a higher headquarters does not relieve any commander within the MAGTF of the responsibility for the security of his own position. Local security provides warning against immediate ground attack.

**b. Main Battle Area.** The main battle area is that portion of the battlespace in which the commander conducts close operations to defeat the enemy. The main battle area (MBA) is the area extending from the FEBA to the rear boundaries of its forward subordinate units. The commander positions forces throughout the MBA to defeat, destroy, or contain enemy assaults. Reserves may be employed in the main battle area to destroy enemy forces, reduce penetrations, or regain terrain. The greater the depth of the MBA, the greater the maneuver space for fighting the main defensive battle. The commander organizes the MBA by assigning defensive sectors, battle positions, or strong points to subordinate units. Regiments normally defend in sector. Battalion task forces and company teams may be assigned defensive sectors, battle positions, or strong points. Platoons normally defend as part of a company or from positions within a company sector, battle position, or strong point. The preponderance of antiarmor weapons are normally found in the MBA.

**c. Rear Area.** For any particular command, the area extending forward from its rear boundary to the rear of the area of responsibility of the next lower level of command. This area is provided primarily for the performance of combat service support functions (Joint Pub 1-02). This area is provided primarily for the performance of combat service support functions. Rear area operations include those functions of security and sustainment required to maintain continuity of operations by the entire MAGTF. The rear area may not always be contiguous with the main battle position. Based on the enemy armored threat, MAGTF antiarmor weapons may be allocated for rear area security to protect against a breakthrough by armored or mechanized forces .

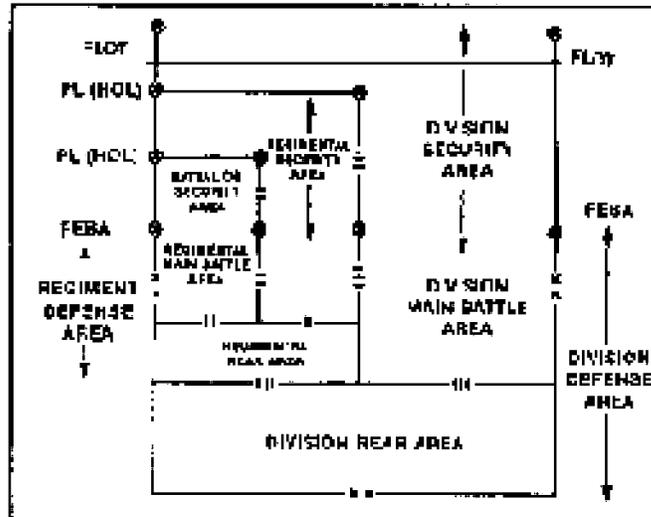


Figure 4-1. Organization of the Defense.

In addition to the three echelons of the defense, the following control measures contribute to the organization of the defense:

- (1) **Forward Edge of the Battle Area.** The FEBA is the foremost limits of a series of areas in which ground combat units are deployed, excluding the areas in which the covering or screening forces are operating, designated to coordinate fire support, the positioning of forces, or the maneuver of units (Joint Pub 1-02).
- (2) **Forward Line of Own Troops (FLOT).** The FLOT is a line which indicates the most forward positions of friendly forces in any kind of military operation at a specific time. The FLOT normally identifies the forward location of covering and screening forces (Joint Pub 1-02). However, in deep operations such as a turning movement by helicopter borne forces, the designation of the FLOT may not extend to include those forces.
- (3) **Handover Line (HL).** The HL is a control feature, preferably following easily defined terrain features, at which responsibility for the conduct of combat operations is passed from one force to another. (Joint Pub 1-02) The HL may be used by security forces delaying back toward the FEBA. At some point, the security forces do a *battle hand-off* to the stationary unit, passing control of all supporting arms and responsibility for the security area to the stationary force. The HL is designated by higher headquarters. The commanders of the security area and the MBA coordinate the exact location and may recommend changes to higher headquarters.

### 4103. Distribution of Forces

The commander organizes his forces into three basic echelons: security forces, main battle forces, and rear area forces.

**a. Security Forces.** Security forces are employed in the security area to provide early warning, to delay the enemy, and to deceive the enemy as to the true location of the MBA. Security forces may be assigned missions to screen, guard, or cover. The use of a security force does not preclude the requirement for all other elements of the force to provide their own local security. To ensure optimal unity of effort during security operations, a single commander is normally assigned responsibility for the conduct of operations in the security area. Mechanized forces

are well suited for security missions because of their long-range weapons and mobility when their operations are closely integrated with aviation elements providing Offensive Air Support (DAS and CAS). The commander may assign the following security missions:

(1) **Screen.** A security element screens a stationary force by establishing a series of positions along a designated screen line. The positions are located to provide overlapping observation. Areas that cannot be observed from these positions are normally patrolled. Screening forces report any sightings of enemy activity and engage enemy forces with fires. Maintaining contact, the screen falls back along previously reconnoitered routes to subsequent positions. Screening forces should avoid becoming decisively engaged.

(2) **Guard.** A security element guards a force by establishing a series of mutually supporting positions. The guard may establish a screen line forward of these positions. These positions immediately report any enemy contact and engage with fires at maximum range. The guard defends in place, attacks, or delays to rearward positions. Routes and subsequent positions have been previously reconnoitered.

(3) **Cover.** Covering forces compel the enemy to deploy prematurely; confirm the direction and strength of the enemy attack; conduct counter reconnaissance; destroy the enemy advance guard; canalize the enemy advance in accordance with the commander's plan; and provide the main force time to react. A covering force should be a self-sufficient combined arms force that is large enough to convince the enemy that they are a main battle force.

At some point, the defending commander must plan for the enemy force breaking through the security forces and approaching the main battle area. This requires transitioning friendly forces and control of the battle from security to main battle forces. Whenever the battle is transitioned, it requires coordination from the highest common commander.

**b. Main Battle Forces.** Main battle forces are employed to engage the enemy and slow, stop, canalize, disorganize and defeat his attack. They occupy positions within the MBA oriented on the main avenues of approach into the sector. Positions are organized in depth and should be mutually supporting. As in offensive operations, the commander weights his main effort in the defense with enough combat power and necessary support to ensure success. They need not be positioned on the FEBA, but should be able to engage the enemy effectively at or beyond it.

Commanders make maximum use of fires to destroy and disrupt enemy formations as they approach the main battle area. As the enemy closes, he is subjected to an ever-increasing volume of fires from main battle forces and all supporting arms. Obstacles and barriers are used to delay or canalize the enemy so that he is continually subjected to fires.

While the firepower of a mechanized force is an asset in any location, assignment to the FEBA may restrict mechanized forces' tactical mobility. When a mechanized force is operating independently, it may be required to establish a defense and a portion of the force would have to be assigned to the MBA. When this occurs, units task-organized with tanks are not normally assigned to the MBA. However, any mechanized units assigned to the MBA should be given large defensive sectors and freedom of maneuver within their sector.

a. **Counterattack.** A counterattack is an attack by part or ally of a defending force against an attacking enemy force, for such specific purposes as regaining ground lost or cutting off and destroying advance units, and with the general objective of denying the enemy his purpose for attacking in the first place. In many cases, the counterattack is a decisive action in defensive operations. It is the commander's primary means of breaking the enemy's attack or of regaining the initiative. Once commenced, the counterattack is the main effort. Its success

depends largely on surprise, speed, and boldness of execution. A separate counterattack force may be established by the commander to conduct planned counterattacks and can be made up of uncommitted or lightly engaged forces and the reserve.

b. Reserve. The reserve is the commander's tool to influence the course of the battle at the critical time and place and exploit opportunities. It is the force that provides flexibility to the commander by allowing him to strike the enemy at the time and place of the commander's choosing. The commander uses his reserve at the decisive moment in the defense and refuses to dissipate it on local emergencies. It is a designated force, as robust and mobile as possible, that exploits success, conducts counterattacks, contains penetrations, and regains the initiative. The less that is known of the enemy or his intention, the greater proportion of combat power must be held in reserve. The reserve is usually located in assembly areas or forward operating bases in the MBA. Once committed, the commander establishes or reconstitutes a new reserve.

Reserves are organized based on factors of METT-T. The tactical mobility of mechanized and helicopterborne forces make them well suited for use as the reserve. Mechanized reserve forces are best employed offensively. In suitable terrain, a helicopterborne reserve can react quickly to reinforce the MBA or block penetrations. However, helicopterborne forces often lack the shock effect desired for counterattacks. The MAGTFs inherent surge capability of aviation forces provides the commander flexibility for reserve tasking without designating the aviation combat element as the reserve.

### **c. Rear Area Forces**

Rear area forces protect and sustain the force's combat power. They provide for freedom of action and continuity of logistic and command and control support. Rear area forces facilitate future operations as forces are positioned and support is marshaled to enable the transition to offensive operations.

The security of the rear area is provided by three levels of forces corresponding to the rear area threat level. Local security forces are employed in the rear area to repel or destroy Level I threats such as terrorists or saboteurs. These forces are normally organic to unit, base, or base cluster where they are employed. Response forces are mobile forces, with appropriate fire support designated by the area commander, employed to counter Level II threats such as enemy guerillas or small tactical units operating in the rear area. The Tactical Combat Force (TCF) is a combat unit, with appropriate combat support and combat service support assets, that is assigned the mission of defeating Level III threats such as a large enemy armored or mechanized force. The tactical combat force is usually located within or near the rear area where it can rapidly respond to the enemy threat.

## **4104. Defensive Positions and Sectors**

Types of defensive positions are primarily defined, not by the physical organization of the ground, but the mission assigned the unit occupying the ground. While allowing for similarities, the following definitions are provided to eliminate some of the confusion that has accompanied previous doctrinal changes in the defense.

**a. Battle Position.** A defensive location oriented on the most likely enemy avenue of approach from which a unit may defend or attack. Such units can be as large as battalion task forces and as small as platoons. (MCRP

5-2A) A unit assigned to the battle position is located within the general outline of the battle position, but other forces may operate outside the battle position to provide early detection of enemy forces and all-around security . Battle positions are mutually supporting and are placed on terrain that dominates the armor avenues of approach. For attack helicopters, the battle position is an area designated in which they can fire and maneuver and fire into a designated engagement area or engage targets of opportunity.

**b. Blocking Position.** A defensive position so sited as to deny the enemy access to a given area or to prevent his advance in a given direction (Joint Pub 1-02).

**c. Delay Position.** A position taken to slow up the advance of the enemy without being decisively engaged (AR 310-25). The purpose of delaying is to trade space for time by slowing down the enemy's momentum and inflicting maximum damage without becoming decisively engaged.

**d. Strongpoint.** A key point in a defensive position, usually strongly fortified and heavily armed with automatic weapons, around which other positions are grouped for its protection (Joint Pub 1-02). A strongpoint is a heavily fortified, all around defensive position which cannot be overrun by tanks and which can be reduced by enemy infantry only after the expenditure of much time and overwhelming forces. It is normally occupied by a battalion or company. A strongpoint is established only after the commander determines that the position must be retained at all costs. It requires considerable engineering effort and detailed fire support planning. Restated, a strong point is a type of blocking position with an unusually high degree of preparation.

Subsequent battle or delay positions are planned with either event-oriented or on-order criteria for disengagement. Movement off a blocking position or a strongpoint position is almost always on order.

**e. Sector.** An area designated by boundaries within which a unit operates, and for which it is responsible (Joint Pub 1-02). Sectors may be assigned from division to squads. They may be used in conjunction with battle positions, blocking positions, delay positions, and strongpoints. Sectors may be used in the security area and MBA. Sector boundaries never split an avenue of approach. Defense in sector is the least restrictive mission.

## 4105. Types of Defense

There are two fundamental types of defense: the position defense and the mobile defense. In practice, Marine commanders tend to use both types simultaneously and rarely will one type or other be used exclusively.

A key characteristic of a sound defense is the ability of the commander to aggressively seek opportunities to seek offensive action and take initiative away from the enemy. With this in mind, the decision to conduct a hasty or deliberate defense is based on the time available or the requirement to quickly resume the offense. The enemy and the mission will determine the time available.

A hasty defense is normally organized while in contact with the enemy or when contact is imminent and time available for the organization is limited. It is characterized by the improvement of natural defensive strength of the terrain by utilization of fighting holes, emplacements, and obstacles. The capability to establish a strong reconnaissance effort may be limited because the defense is assumed directly from current positions. The hasty defense normally allows for only a brief leader's reconnaissance and may entail the immediate engagement by security forces to time for the establishment of the defense.

Depending on the situation, it may be necessary for a commander to initially attack to seize suitable terrain on which to organize his defense. In other situations, the commander may employ a security force while withdrawing the bulk of his force some distance rearward to prepare a defense on more suitable terrain. A hasty defense is improved continuously as the situation permits, and may eventually become a deliberate defense.

A deliberate defense is normally organized when out of contact with the enemy or when contact is not imminent and time for organization is available. A deliberate defense normally includes fortifications, strongpoints, extensive use of barriers, and fully integrated fires. The commander normally is free to make a detailed reconnaissance of this sector, select the terrain to defend, and decide the best distribution of forces.

The advantage of a deliberate defense is that it allows time to plan and prepare the defense while not in contact with the enemy. A deliberate defense is characterized by a complete reconnaissance of the area to be defended by the commander and his subordinate leaders, use of key terrain, and the establishment of mutually supporting positions. The force normally has the time to create field fortifications, barriers, and emplace obstacles.

**a. Position Defense.** The type of defense in which the bulk of the defending force is disposed in selected tactical localities where the decisive battle is to be fought. Principle reliance is placed on the ability of the forces in the defended localities to maintain their positions and to control the terrain between them. The reserve is used to add depth, to block, or to restore the battle position by counterattack (Joint Pub 1-02). The position defense focuses on the retention of terrain by absorbing the enemy into a series of interlocked positions from which he can be destroyed, largely by fires, together with friendly maneuver. Principal reliance is placed on the ability of forces in defended positions to maintain their positions and to control the terrain between them. Position defense is the DOD/NATO term for what was formerly referred to as the area defense. The commander conducts a position defense when-

- The force must defend specific terrain that is militarily and politically essential.
- The defender possesses less mobility than the enemy.
- Maneuver space is limited or the terrain restricts the movement of the defending force.
- The depth of the battlespace is limited.
- The terrain restricts the movement of the defender.
- There is sufficient time to prepare positions
- The employment of weapons of mass destruction by the enemy is unlikely.

**b. Mobile Defense.** Defense of an area or position in which maneuver is used with organization of fire and utilization of terrain to seize initiative from the enemy (Joint Pub 1-02). The mobile defense destroys the attacking enemy through offensive action. The mobile defense requires depth and focuses on the destruction of the enemy by permitting him to advance into a position that exposes him to counterattack by a strong mobile reserve. Terrain and space are traded to draw the enemy ever deeper into the MAGTF's defensive area, causing him to overextend his force and expose his flanks and lines of communications to attack. A mobile defense requires mobility greater than that of the attacker. The MAGTF can use its transitional capability to generate mobility through organic mechanized and armor forces, helicopterborne forces, and Marine aviation.

The following circumstances favor the conduct of a mobile defense:

- The defender possesses equal or greater mobility than the enemy.
- The frontage assigned exceeds the defender's capability to establish an effective position defense.
- The available battlespace allows the enemy to be drawn into an unfavorable position and exposed to attack.
- Time for preparing defensive positions is limited.

- Sufficient mechanized and aviation forces are available to allow rapid concentration of combat power .
- The enemy may employ weapons of mass destruction.
- The mission does not require denying the enemy specific terrain.

Figure 4-2 depicts the fundamental difference in principle between the position and mobile defense regarding distribution of forces.

The position defense is normally used to retain terrain while the mobile defense is used to destroy enemy forces. Clearly, the position defense weights its forces forward while the mobile defense weights its forces toward its reserve or counterattack force. In the position defense, the reserve is normally used to reestablish the FEBA following penetration by the enemy. In the mobile defense, the reserve or counterattack force is used to destroy the enemy.

Conceptually, these two defenses define the extreme types of defense. They are traditional concepts that provide a context in which to discuss defense. However, actual defenses will normally include aspects of both position and mobile defense. Figure 4-3 depicts the spectrum of the defense and the weighting of techniques toward one extreme or the other.

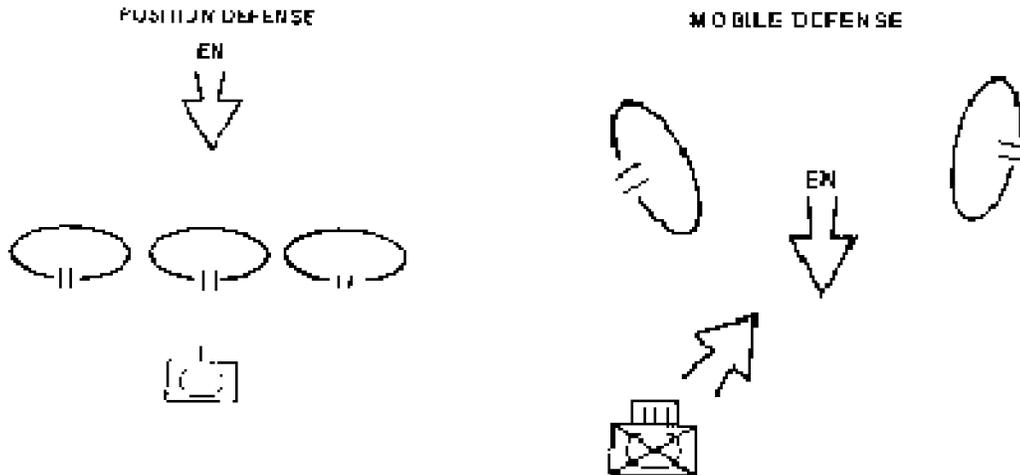
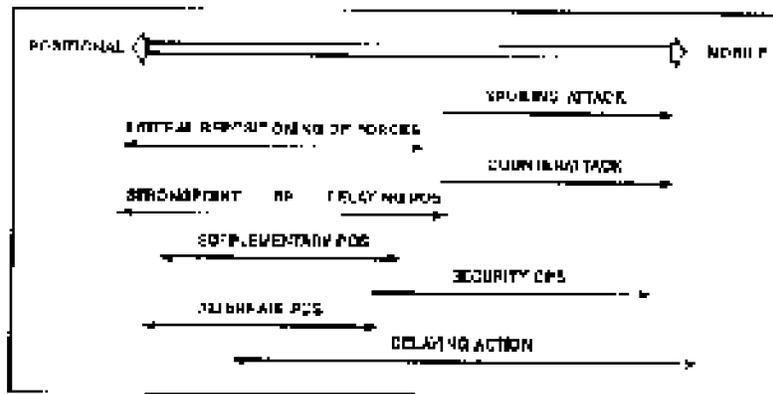


Figure 4-2. Defensive Concepts.



**Figure 4-3. Defense Spectrum.****4106. Offensive Action in the Defense**

Offensive action in the defense allows the commander to regain the initiative and shape the battle. This may be achieved by actual physical destruction of an enemy unit or by disrupting the tempo of his operations. The turning movement, counterattack spoiling attack, and attacks made by stay behind forces are examples of the commander's offensive options in the defense.

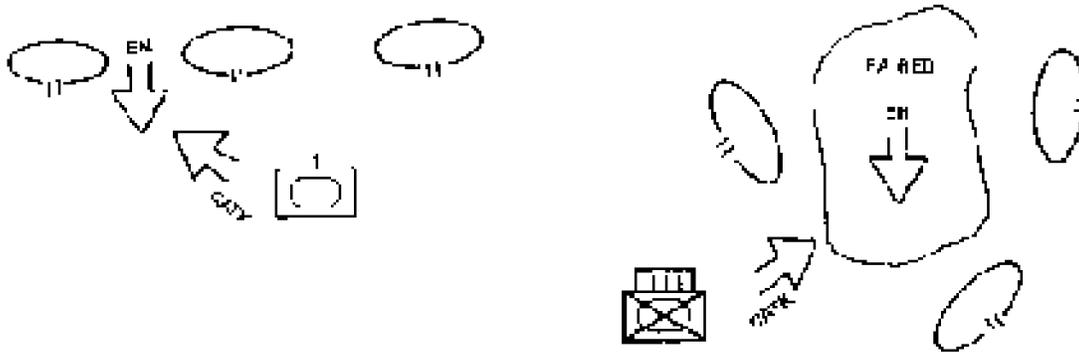
**a. Turning Movement.** A turning movement is a variation of the envelopment in which the attacking force passes around or over the enemy's principal defensive positions to secure objectives deep in the enemy rear to force the enemy to abandon his position or divert major forces to meet the threat. (Joint Pub 1-02). Normally, the main effort executes the turning movement as the supporting effort fixes the enemy force. The goal of a turning movement is to force the enemy to abandon his position or reposition major forces to meet the threat. Typical objectives of the main effort in a turning movement may include: Critical logistics nodes, command and control nodes, and lines of communication. A turning movement is a form of maneuver characterized by deep battle fought by a larger sized MAGTF e.g. MEF.

**b. Counterattack.** A counterattack is an attack by part or all of a defending force against an enemy attacking force, for such specific purposes as regaining ground lost or cutting off or destroying enemy advance units, and with the general objective of denying to the enemy the attainment of his purpose in attacking. In sustained defensive operations, it is undertaken to restore the battle position and is directed at limited objectives. (Joint Pub 1-02) The counterattack is the decisive element of defensive action. The counterattack is the commander's primary means of breaking the enemy attack or of regaining the initiative. Once launched, the counterattack becomes the main effort. Success depends largely on surprise, speed, and boldness of execution. (See fig. 4-4.)

Counterattacks may be conducted forward of or within the MBA. Ideally, a counterattack is executed based on a plan with a designated EA or objective. However, a counterattack may be launched from a frag order. Timing and coordination with other elements of the defense is imperative. Counterattacks are conducted by the reserve or by the least engaged unit. Mechanized forces are employed in the counterattack, whenever possible, due to their firepower and tactical mobility.

There are two types of counterattacks:

1. Preplanned. Routes, timing, and fire support are predetermined and executed at the decisive point in the battle.
2. Hasty. May have little or no preparation but are executed to exploit a vulnerability revealed by the enemy.



**Figure 4-4. Counterattacks.**

**c. Spoiling Attack.** A spoiling attack is a tactical maneuver employed to seriously impair a hostile attack while the enemy is in the process of forming or assembling for an attack. (Joint Pub 1-02) It is a preemptive, limited objective attack aimed at preventing, disrupting, or delaying the enemy's ability to launch an attack. A spoiling attack may be either a hasty or deliberate attack, depending on the time for preparation. It may be conducted like a raid with a planned withdrawal.

Like the counterattack, the circumstances in which it is conducted normally preclude full exploitation. Like the counterattack, a spoiling attack is normally conducted by all or a part of the reserve. This may require another reserve force to be temporarily formed. Aviation and mechanized forces are ideally suited for conducting spoiling attacks due to their mobility and firepower.

**d. Stay Behind Forces.** Stay behind forces are mobile units that counterattack or harasses enemy combat forces from the rear, or attacks and/or ambushes enemy command and control, combat support (CS), and combat service support (CSO) elements. Stay behind forces may be as large as a mechanized battalion task force or as small as an infantry tank killer team. *The concept of stay behind forces involves considerable risk.*

Regardless of the mission assigned, the success of the mission at some point will depend upon being bypassed by the enemy and eventually being able to disrupt the tempo of the enemy mechanized forces.

A stay behind unit may be initially positioned in the security area or within the MBA. A stay behind force may be required to conduct a breakout and link up or exfiltrate back through friendly positions. Sufficient CS and CSS assets are allocated as required.

Figure 4-5 depicts a tank company firing on a second echelon mechanized battalion. A return route through friendly positions is planned. A scout section is providing a screen forward.

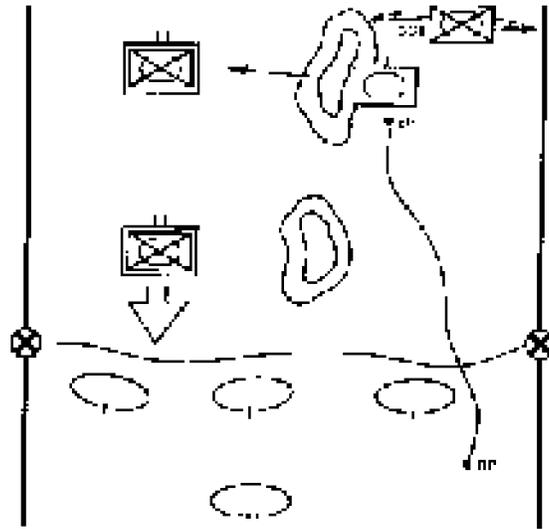


Figure 4-5. Stay Behind Forces.

## Section II. Organization of a MAGTF Antiarmor Defense

### 4201. MAGTF Air and LAR Operations

Air assets define the furthestmost reach of the MAGTF when fighting the *deep battle*. The MAGTF commander may direct fixed-wing and attack helicopter operations forward of the security area against enemy armor. The goal is to attack the enemy either in predetermined or hastily established EAs while the enemy armor is not fully deployed. This presents a better array of targets for air attack. This tactic is also used against enemy second echelon units while the first echelon units are being engaged by friendly ground units. As enemy armor enters the security area, it is engaged by LAR units supported by air and other supporting arms. LAR units may be reinforced with mechanized assets.

LAR battalion is a mobility asset that exemplifies the principle of economy of force. Its principal tasks are *reconnaissance, security, and limited offensive or delaying operations*. Control of LAR battalion by the MAGTF commander is normally exercised through the ground combat element (GCE) commander however, based on METT-T, the MAGTF commander may employ LAR battalion in support of the entire MAGTF. For example, a LAR unit may be combined with aviation combat element (ACE) assets, and Combat Service Support (CSS) assets to form a task force which can be positioned well forward of GCE elements.

### 4202. Division

The division will normally assign sectors within the MBA to its regiments. The commander may further designate specific battle positions or strongpoint positions that are critical to the overall defensive effort. If the division is conducting a mobile defense, a division level EA may be designated. This EA would normally accommodate a regimental sized enemy force. Avenues of approach at division level are those that will normally accommodate a minimum of a fully deployed battalion sized force. Likewise, the division commander should visualize his defense in terms of battalion positions when assigning regimental sectors. If the division is conducting a position defense, the designation of EAs are delegated to the regiments.

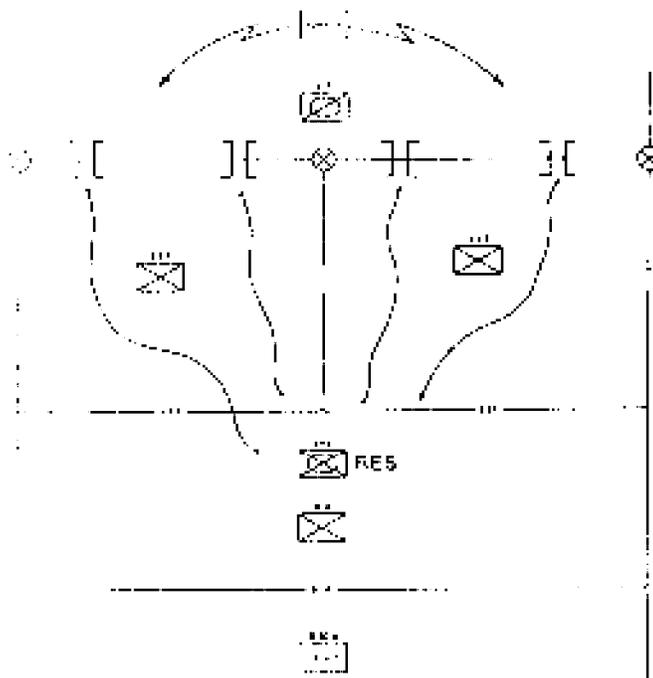
**a. Security Area.** Security forces are assigned screening, guard, or covering force missions in the security area. A security force is normally task organized and may include dedicated artillery, air defense, engineers, and attack helicopters in its task-organization. The security area is normally the area where the advancing enemy armor is first engaged by friendly forces.

A *screening* element has the primary task to observe and report information. The *guard* protects the main force from attack, direct fire, and ground observation, by fighting to gain time, while also observing and reporting information. A *covering* force is a force operating apart from the main force for the purpose of intercepting, engaging, delaying, disorganizing, and deceiving the enemy before the enemy can attack the main force. A mission to screen is included in the covering force mission. It differs from a guard force in that it is organized to operate independently, is organized with its own artillery, and may include offensive action characterized by limited counterattacks or spoiling attacks.

A covering force mission against a former Soviet-type mechanized force would normally require a mechanized regiment- or battalion-sized task force reinforced with appropriate CS and CSS units. The covering force operates apart from the main force to engage, delay, disrupt, and deceive the enemy before he can attack the main force.

LAR units and mechanized task forces are well suited for operations in the security area. The division would normally employ the LAR battalion in a screen or guard mission. LAR units have the capability to destroy enemy reconnaissance units and combat recon patrols. The LAR battalion would normally have to be reinforced with mechanized units and/or air assets to perform a guard or covering mission.

Units operating in the security area normally assume another mission following displacement through friendly lines. These missions include but are not limited to the reserve, rear area security, and flank security. (See fig. 4-6.)



**Figure 4-6. Marine Expeditionary Force/Division Screen.**

**b. Main Battle Area.** The division's MBA is normally organized into regimental sectors. (See fig. 4-7.) Battle positions or strongpoints may be designated by the division commander within the regimental sectors. The TOW, Javelin, Dragon, and various LAW weapons are the primary ground antiarmor weapons within the regimental sectors. Normally mechanized units would not be assigned to the FEBA because their mobility and firepower are far better suited for the reserve mission. However, when a mechanized force is assigned to the MBA, the majority of the tank units will be normally be assigned to the reserve.

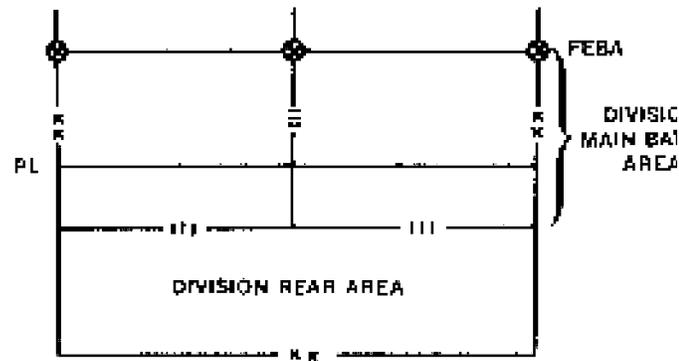


Figure 4-7. Division Main Battle Area.

The Division normally controls movements of its regiments within the MBA by the use of phase lines. However, maximum latitude is normally granted regiments between phase lines. This allows regiments to maneuver their units between positions.

**c. Rear Area.** In addition to normal security requirements, the rear area may require an antiarmor capability located in its immediate vicinity. This requirement is normally met by incorporating TOW, Javelin, or Dragon assets into the local rear area security. The division reserve is often used to prevent major armored or mechanized attacks into the rear area.

### 4203. Regiment

A regiment may be required to establish a defense incorporating a security area, MBA, and rear area within a division sector. Regiments may use either a mobile or position defense depending upon availability of assets. In both the position and mobile defense, the overall scheme of maneuver makes the greatest possible use of maneuver and offensive action. A regiment can conduct counterattacks, and spoiling attacks, and conduct attacks by stay behind forces if it possesses sufficient mobility, firepower, and CSS assets.

**a. Organization of the Defense.** The security area will normally be under task-organized forces designated by and reporting to the division. It may include some forces from the regiment that would revert to regimental control after moving through the HOL. However, the regiment is responsible for the area between the HOL and the FEBA and may desire to position some forces in this area.

The regiment organizes the MBA by assigning to subordinate battalion--sectors, battle positions, strongpoints, or a combination of all three. As a general rule, the regiment will assign mechanized forces to the reserve to maximize their tactical mobility.

**(1) Sectors.** Sectors are the least restrictive measure assigned by the regiment to the battalions. This method allows more freedom to maneuver and decentralized fire planning. Normally, battalion commanders have total freedom to maneuver within their sector. Like the division, the regiment utilizes phase lines within the sectors to control movement. (See fig. 4-8.)

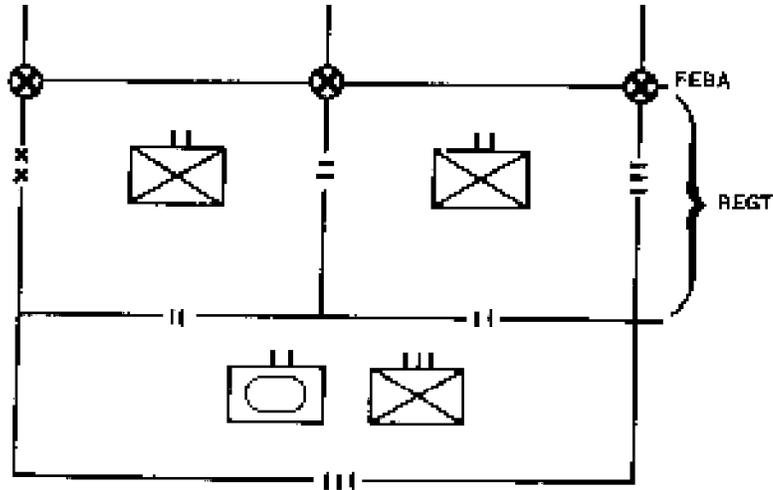


Figure 4-8. Sectors.

**(2) Battle Positions.** Battle positions (BPs) are used when the regimental commander desires greater control over the maneuvering and positioning of his battalion task forces. If the regimental commander designates the BPs, the battalion moves from it's BP on order or based upon disengagement criteria established by the regimental commander. Figure 4-9 depicts a combination of battle positions and sectors.

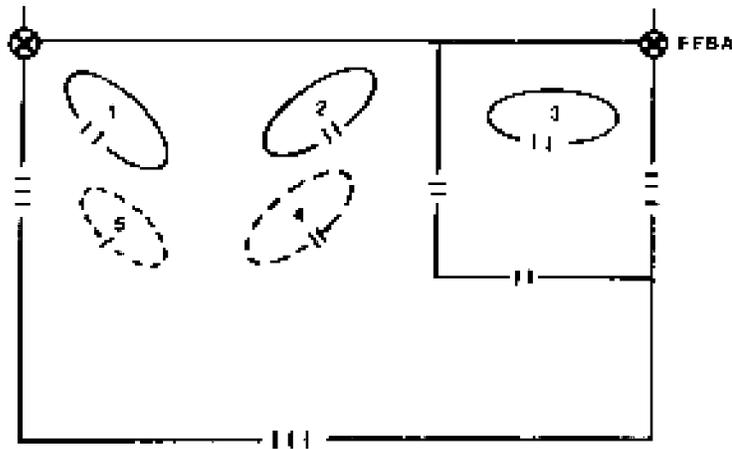
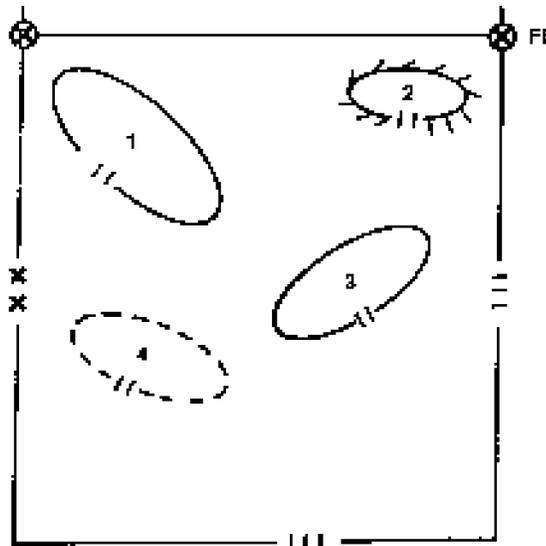


Figure 4-9. Battle Positions/Sectors.

**(3) Strongpoint.** If the regimental commander determines that certain terrain is critical to the defense, he will normally designate a strongpoint position. (See fig. 4-10.)



**Figure 4-10. Strongpoint/Battle Positions.**

**b. Reserve Force.** A regiment may designate a reserve, or else require the battalions to obtain permission before employing their reserves. When establishing a reserve, the guiding principle is to utilize mechanized forces and attack helicopters when available.

**c. Rear Area Operations.** A regiment will normally assign TOW sections and Javelin or Dragon squads to support its rear area against any armor penetrations. LAR units may be assigned to the regiment and be utilized in the rear area following completion of their security role in the security area.

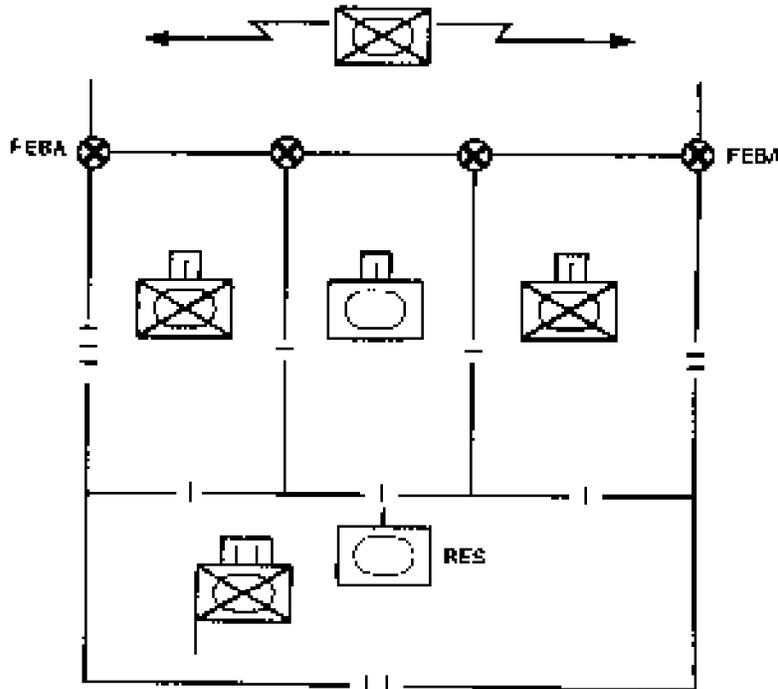
**4204. Battalion**

**a. Security Area.** In the security area, a battalion-sized mechanized task force may participate as part of the covering force, or it may be assigned a screening or guarding mission. This section will address an infantry battalion defending in the MBA as part of a regiment.

**b. Types of Defense.** A battalion will normally defend using one or more types of defense: sector, battle position, and strongpoint. A battalion will normally form at least a platoon-sized reserve of antiarmor if available. The following graph summarizes the factors that a commander considers in selecting a battle position or a sector.

FACTOR	BATTLE POSITIONS	SECTOR
Avenues of Approach	Well Defined, Enemy can be canalized	Multiple Avenues
Terrain	Dominates avenues of approach	No dominating terrain
Area of Operations	Narrow	Wide
Mutual Support between Companies	Achievable	Not Achievable
Higher commander's ability to control	Good	Degraded

**c. Defend In Sector.** Defense in sector is the most common defense mission in antiarmor operations. Company sectors are oriented on battalion avenues of approach (platoons size or larger). Defend in sector is the least restrictive mission. Figure 4-11 depicts a battalion task force with three company teams in sector and a tank company in reserve.



**Figure 4-11. Defense in Sector.**

The battalion commander may choose to employ companies in battle positions. This technique restricts maneuver and complicates flank coordination by the companies, but it gives greater control of the overall defense to the battalion commander. The use of on-order battle positions provides flexibility and depth to the defensive plan. However, the battalion must have sufficient mobility assets to ensure quick movement between positions. Figure 4-12 illustrates a defense incorporating battle positions, strongpoints, and sectors.

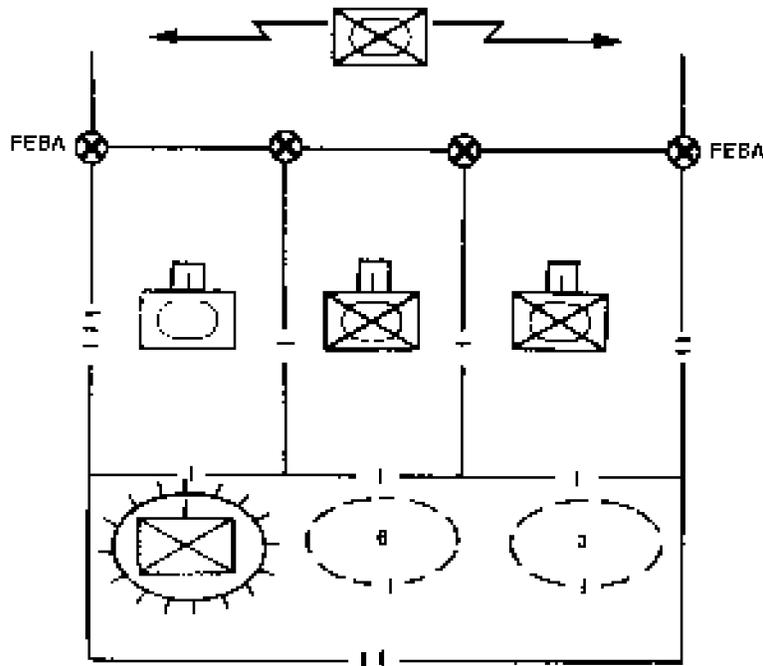


Figure 4-12. Sector/Battle Positions/Strongpoint.

**d. Defense of a Battle Position.** A battalion assigned a battle position occupies the general area of the position. Security forces may operate well forward to the flanks of battle positions for early detection of the enemy and for all around security. Units can maneuver in and outside of the battle position as necessary to adjust fires or to seize opportunities for offensive action in compliance with the commander's intent. Figure 4-13 illustrates a battalion battle position with company battle positions.

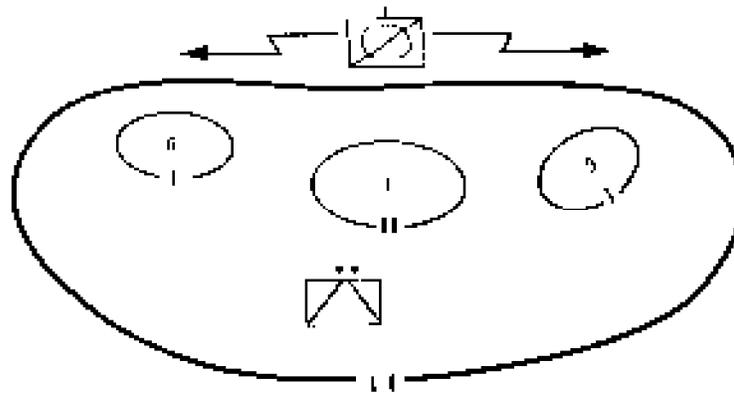
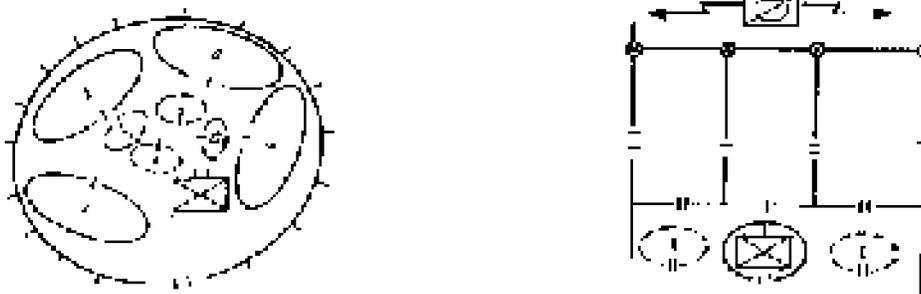


Figure 4-13. Battalion Battle Position.

**e. Defense of a Strongpoint.** A strongpoint may be battalion size to platoon size. Battalion strongpoints can be established in isolation when tied to restrictive terrain on their flanks or on armor high speed avenues of approach tied to defensive positions of units on the flanks of the strongpoints. Strongpoints may be on the FEBA or in depth in the MBA. Defense in depth is achieved through multiple positions within the strongpoint. All positions within a

strongpoint must be mutually supporting. Mechanized forces are rarely assigned to strongpoints. Infantry with antiarmor assets and engineer support normally defend strongpoint positions. (See fig. 4-14.)



**Figure 4-14. Battalion Strongpoint.**

**f. Reserve Operations.** A battalion may operate as a reserve force for a regiment. The reserve possesses mobility and firepower necessary to engage enemy armor. The reserve may be assigned one of the following missions:

- Counterattack.
- Spoiling attack.
- Reinforce.
- Rear operations.

### **4205. Company**

The company may function in the security area, MBA, or rear area. Normally, it fights as part of a larger organization.

**a. Main Battle Area.** The company should only be assigned a defensive sector when there is a single enemy avenue of approach along a corridor and little ability for the enemy to move laterally cross compartment. Normally the company is assigned a battle position which covers one or more EAs. This enables the task force commander to mass the fires of several company teams or other maneuver units on a single or series of EAs. It also allows the battalion task force commander to maneuver a company to other battle positions.

**b. Company Reserve.** The reserve may be positioned in the MBA area or rear area. It may be assigned a battle position blocking the most likely location for an enemy penetration. Ideally this position cannot be observed by enemy forces and provides covered, concealed, high speed routes to execute planned counterattack and reinforcement missions.

**c. Team Battle Positions.** The company commander may assign battle positions to his subordinate platoons. Considerations for assignment of subordinate platoons are shown below.

**(1) Dismounted Infantry.** Dismounted infantry are assigned a battle position which protects tanks, AAVs, and themselves from dismounted assault. This position is normally not collocated with tanks. The position should be well prepared with overhead protection when possible. The position may be part of a strongpoint. Small clusters of

buildings may provide much of the advantage of a strongpoint and should be considered if it supports other elements of the team.

**(2) Assault Amphibians (AA)** AA platoons supporting the infantry may be collocated with the infantry or placed in overwatching positions to provide direct fire support with heavy machine gun fires from the AAV's upgun weapon station.

**(3) Tank Platoons.** Tank platoons are positioned to cover EAs with both close and long range fires. Tanks also mutually support mounted and dismounted infantry.

**(4) TOW/Dragons/ Javelins.** ATGMs attached or collected with a company team should position themselves with infantry nearby for protection against dismounted assault. ATGMs may be positioned to fire short or long range, depending on the method of engagement: HAW-MAW-LAW or Massed Surprise Fires.

**d. Reserve Operations.** A mechanized or tank company team, or elements of these task organized units may be designated as a reserve for a regimental or battalion-sized force.

**e. Rear Area.** A company will normally be assigned a sector as part of a battalion operation in the rear area.

## 4206. Maneuvering and Battle Positions

The battalion commander takes advantage of the mobility and long-range fires of his unit by shifting fires of a given unit to a different EA or by maneuvering his force to alternate or supplementary battle positions. Once a battle position is identified, the enemy can be expected to deliver massed direct fires, suppressive indirect fires, and screening and obscuration fires with smoke to counteract the battalion's ability to both acquire and engage targets within the EA. Second echelon forces may also attack from a different direction to either mass forces or flank the battalion's EA. If the battalion possesses sufficient mobility, the commander should prepare for all of these contingencies by preparing alternate and supplementary battle positions for company teams and TOW sections. Movement to alternate and supplementary company and antiarmor unit positions are normally controlled by the battalion commander in accordance with his scheme of maneuver. Care should be taken not to maneuver several units simultaneously, reducing the direct fire pressure placed on the enemy within the EA.

### a. Types of Positions

**(1) Alternate Positions for Companies.** Alternate positions are normally physically separated from primary positions both laterally in and in depth to counteract the effects of enemy fires. However, alternate positions still cover the same EA. This is the likely minimal distance where the effects of enemy indirect fires can be overcome. Several alternate positions may be planned for each company team. Movement to alternate positions will also disorient attacking enemy forces and help confuse enemy commanders of non committed units as to the strength and location of friendly forces. Movement to alternate positions must be rehearsed.

**(2) Supplementary Positions for Companies.** Supplementary positions for companies cover different EAs. The supplementary position need not be any specific distance unless the force is under direct attack or suppressive fire.

**(3) Alternate and Supplementary Positions Within Company Battle Positions.** Alternate and supplementary positions may be planned for platoons. They serve the same functions as stated above. However, the battle position is rarely large enough to allow movements of extended distance.

**b. Levels of Preparation.** Battalion and company commanders will normally assign a level of preparation for battle positions. The subordinate tactical commander may raise the level of preparation but may not lower it. There are three levels of preparation: *occupy, prepare, reconnoiter*.

**(1) Occupy.** A unit occupies the position it will initially defend. This position is fully prepared and reconnoitered before the defense is initiated. The unit will have this position completed and occupied and will be ready to fight not later than the time specified in the mission statement.

**(2) Prepare.** The unit will take all actions necessary to prepare the position for the unit's mission. The troops must generally accomplish the following tasks:

- Position security
- Physically sight each weapon in its fighting positions (primary, supplementary, and alternate).
- Establish fire control measures to include fire plan sketches, position stakes, and possibly TRP markers for tanks and ATGMs.
- Camouflage fighting positions.
- Clear fields of fire.
- Construct fighting positions to improve available cover and concealment.
- Recon and prepare routes between weapon positions.
- Coordinate with higher, adjacent, and supporting units. Coordinate the locations of companies and platoons, boundaries, and fire control measures.
- Conduct rehearsals.

**(3) Reconnoiter.** A unit instructed to reconnoiter a position will send one or more representatives to conduct a physical reconnaissance of that position. The recon party should determine the following:

- What fighting positions are available in and around the battle position.
- What covered and concealed routes are available to enter and leave the fighting positions from the rear and to allow maneuver between primary, alternate, and supplementary positions.
- What fields of fire are available to each fighting position.

**c. Execution Matrix.** Various matrixes can be developed for the offense and the defense. CSS, artillery, and communication matrixes are just a few of the examples. This discussion will focus on an execution matrix for the

defense. (See figs. 4-15 and 4-16.) An execution matrix is a simple tool that helps commanders and subordinates in three ways:

- The matrix helps the commander keep track of the plan and visualize various phases of the plan during the planning stage.
- The matrix makes it easier to brief the plan and aids subordinates in understanding the plan.
- The matrix aids in the conduct of the operation. As enemy action forces require adjustment to plans, a matrix is a useful tool to keep track of the situation.

The matrix essentially contains the bulk of the significant information contained in paragraph 3 of the operation order. In a clear and concise manner, it outlines exactly where units are, where the units are expected to go if necessary, and what they are to do after arriving there. Each commander can recopy the matrix on his own map and update as necessary. The matrix graphically portrays the commander's intent.

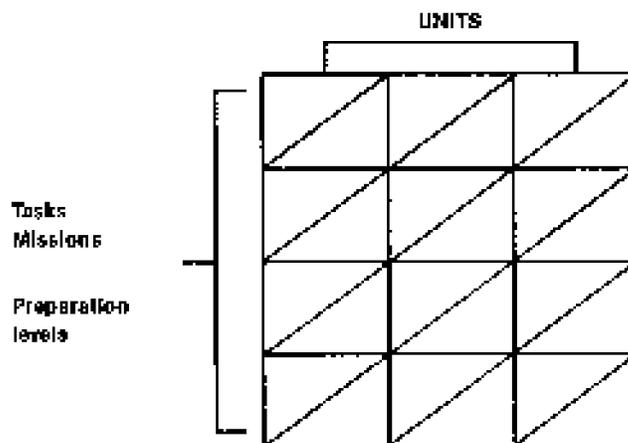
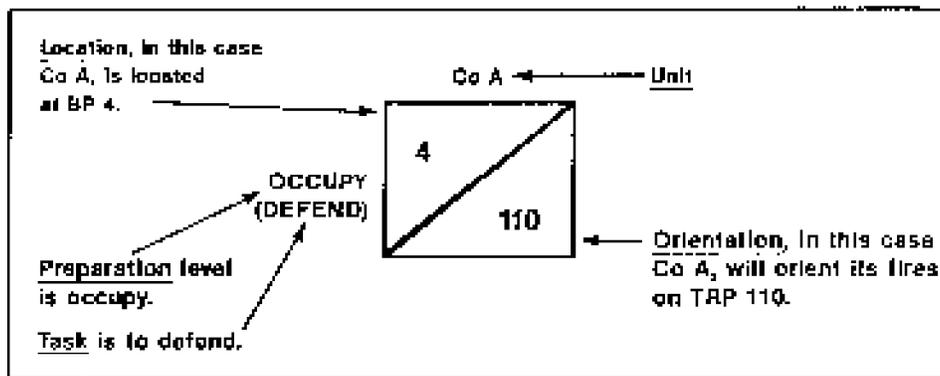


Figure 4-15. Execution Matrix.

	Co A	Co B	Co C	TANK Co	MORTARS
OCCUPY (DEFEND) (DELAY)	11 114	STRONG POINT 12 NH EA JIM	13 EA JOE	17 (DELAY) 116-118	FIRING POSITION 1 (FP1) 100-100 PRIORITY TO TANK CO
PREPARE (DELAY)				18 EA JACK	FP1 EA JACK PRIORITY TO TANK CO
PREPARE (DEFEND)	14 NH EA JIM		15 NH EA JIM	19 RESERVE	FP2 EA JIM PRIORITY TO B CO
RECON (DEFEND)	16 112				
COUNTER-ATTACK	21 114		13 EA JOE	ROUTE BLUE TO BP 12 EA JACK	FP1 EA JACK PRIORITY TO TANK CO

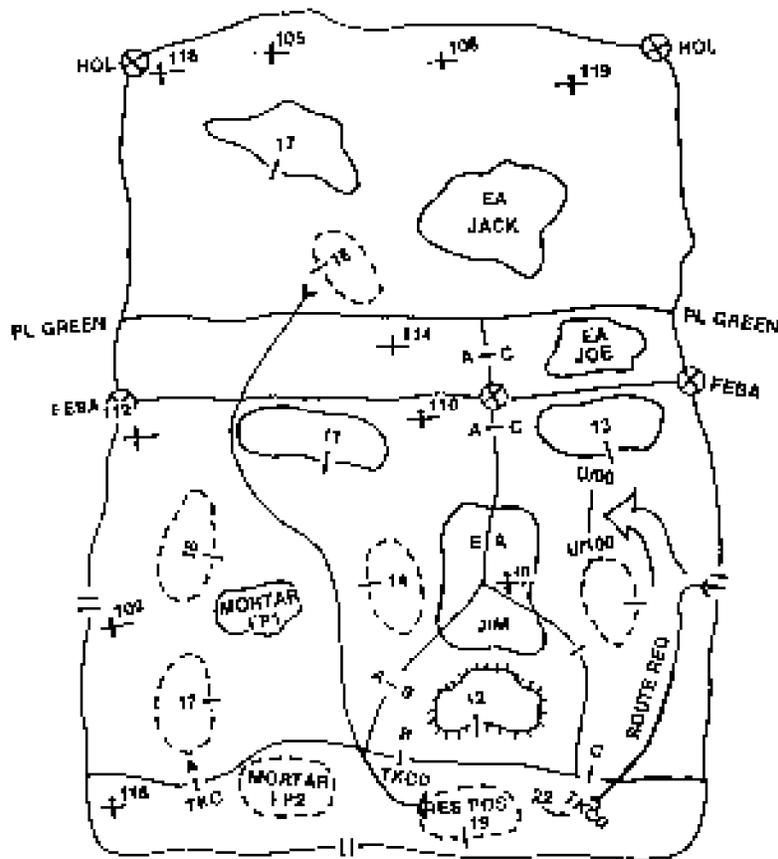


Figure 4-16. Completed Execution Matrix/Overlay.

**d. Contents of the Matrix.** There is no set formula for the size and shape of the matrix or for exactly what information goes into the matrix. Some general guidelines are provided as follows:

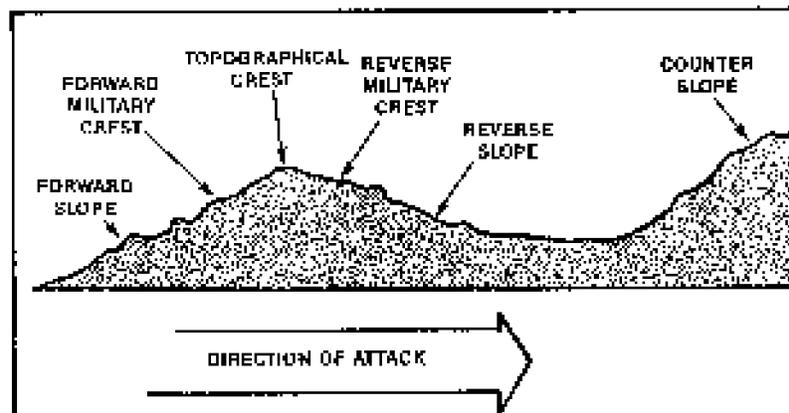
- Tasks/missions and preparation levels for positions are normally placed on the left side of the matrix.
- Maneuver units and supporting units are placed at the top of the matrix.

The number of boxes is dependent upon the number of units and the number of tasks included in the plan.

The individual boxes are divided diagonally. The top left half of the box denotes the battle position or location of the unit, and the bottom right half denotes where the unit is to orient their fires.

### 4207. Reverse Slope Defense

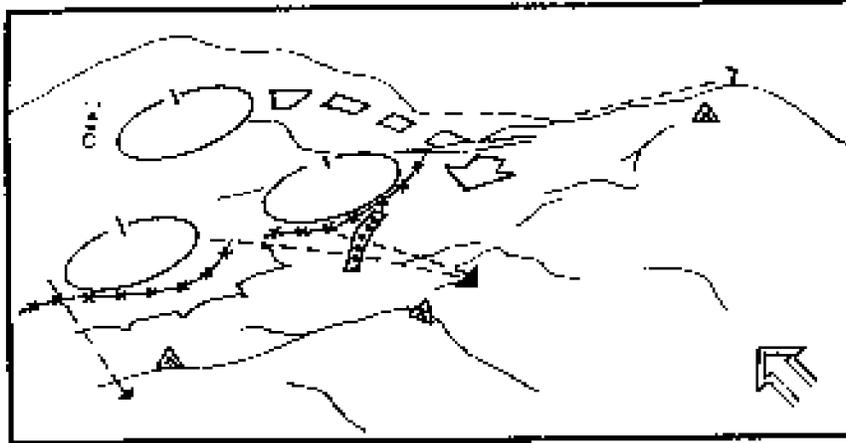
A reverse slope is any slope which descends away from the enemy. (Joint pub. 1-02.) (See fig. 4-17.)



**Figure 4-17. Military Topography.**

A reverse slope defense is a variation of the position defense. A reverse slope defense is organized so that the main defensive positions are masked from enemy observation and direct fire by a topographical crest. A reverse slope aids the defender in bringing massed surprise fires to bear against an attacking enemy. While the crest is not occupied in strength, control of the crest by fire and employment of obstacles is the key to the success of a reverse slope defense.

The reverse slope defense can be especially effective against mechanized forces. (See fig. 4-18.) The intent is to isolate the enemy's lead units from follow-on forces. It establishes an EA into which the enemy moves directly after reaching the crest of a hill or ridge line. The result is surprise, isolation, and defeat of a manageable portion of the attacker's force. The topographical crest marks the farthest limit of the EA.



**Figure 4-18. Reverse Slope Defense.**

A battalion rarely conducts a reverse slope defense along its entire front; however, there may be situations where subordinate units and weapon systems may be employed on the reverse slope.

**a. Tactical Considerations.** The commander may choose to conduct a reverse slope defense--

- When the forward slope is untenable due to the density or accuracy of enemy fires.
- When the crest and forward slope offer little cover or concealment.
- When the forward slope has been lost or not yet seized.
- When units on the flanks can adequately cover the forward slope.
- When terrain on the reverse slope offers better fields of fire than terrain on the forward slope.
- To avoid an unfavorable salient or reentrant in the forward friendly disposition.
- To vary his tactical pattern, in order to deceive or surprise.
- When forced to assume a hasty defense while in contact with or proximity to the enemy.

**b. Advantages.** A reverse slope defense has the following advantages:

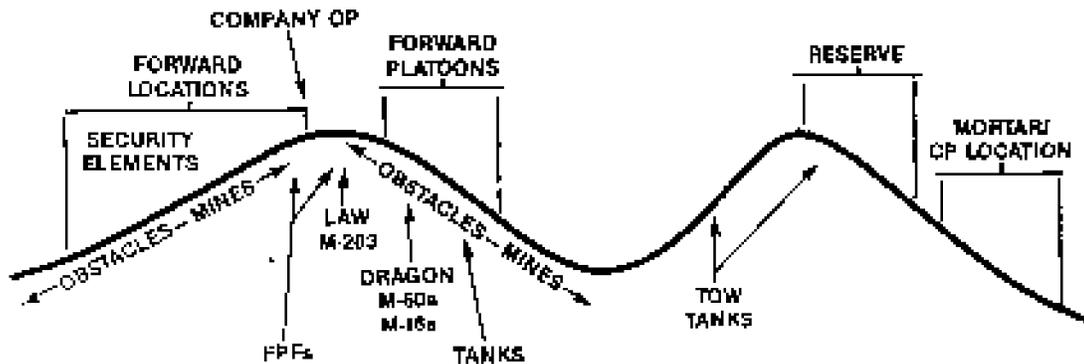
- A crest forward of the main defensive positions limits enemy observation, reducing the effectiveness of indirect fires and aviation, and degrades his direct fire weapons.
- The defender may be able to bring massed surprise fires to bear on the enemy as he crests the high ground.
- Units on the reverse slope have more freedom of movement until the crest is lost.
- The defense may deceive the enemy as to the true location and organization of the main defensive positions, saving the main positions from artillery preparation fires.

**c. Disadvantages.** A reverse slope defense has the following disadvantages:

- Once the security elements withdraw, the enemy can advance largely unimpeded until he has crested the high ground in front of the main defensive positions.
- Once cresting the high ground, the enemy has the advantage of attacking downhill.
- Difficulty in maintaining observation of the enemy.

- Obstacles in the forward slope may not be effectively covered by fire.
- The effective range of direct-fire weapons may be limited. Normally, the HAW-MAW-LAW technique cannot be utilized and standoff range of HAWs and MAWs are sacrificed.

**d. Weapons Positions.** Figure 4-19 depicts a likely array of weapons' positions.

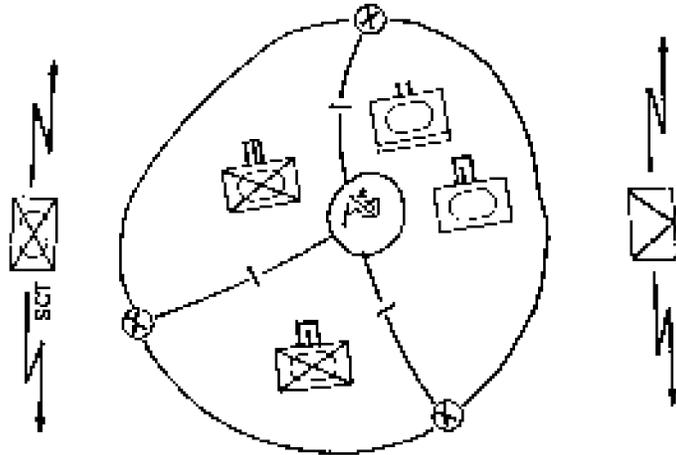


**Figure 4-19. Weapons Positions.**

Fire support planning should place special emphasis on denying the enemy occupation and use of the topographical crest. While the main defensive positions are located on the reverse slope, the commander should establish security detachments on the forward slope. The plan for the counterattack should include clearing or regaining the crest from the enemy. Once successful, a reverse slope defense may have limited value a second time because the element of surprise is lost.

#### **4208. Perimeter Defense**

A perimeter defense is a defense without an exposed flank, consisting of forces deployed along the perimeter of the defended area. (Joint Pub 1-02). It is a position defense in which the defending unit is disposed to meet attacks from all directions simultaneously. The term perimeter defense is usually applied to battalions and smaller units. (See fig. 4-20.) The general form of a perimeter is also used when the battalion task force or company team must prepare and defend from a strongpoint.



**Figure 4-20. Perimeter Defense.**

**a. Tactical Considerations.** The commander may establish a perimeter defense when--

- Operating independently.
- Isolated from friendly units by enemy action.
- Required to hold or protect an area such as a bridge or airfield.

**b. Organization.** A perimeter defense employs the bulk of combat power on the perimeter while maintaining an adequate reserve. However, a perimeter defense inherently lacks depth and restricts a defending mechanized unit from maneuvering and maximizing its firepower and mobility. This makes a perimeter defense especially vulnerable to an armor attack. The tactical commander minimizes these vulnerabilities by--

- Placing security as far out as possible.
- Orienting antiarmor weapons on EAs.
- Constituting a mechanized reserve.

A battalion normally establishes a perimeter 2 to 4 kilometers in diameter. The perimeter is divided into company sectors with boundaries and coordinating points. Security elements and patrols (mounted and dismounted) are employed outside of the perimeter. The reserve defends a portion of the second line of defense behind the perimeter elements and counterattacks against an enemy penetration to restore the FEBA. Organic or attached CS and CSS elements are normally placed in the center of the perimeter for protection.

## 4209. Urban Terrain and Antiarmor Operations

Central to any urban pattern is the hub or built-up area. Although it may vary in size from village to major urban complex, the effects of a hub remain constant. (See fig. 4-21.) Urban areas give the defender a great advantage, similar to that of a strongpoint. An attacking mechanized force will normally try to bypass an urban area because fighting within an urban area is primarily a dismounted infantry battle. Threat mechanized units normally lack sufficient troop density and their artillery, and armored firepower and mobility are seriously degraded. Urban operations are slow moving, requiring high expenditures of ammunition, and create high casualty rates. It consists of decentralized actions with inherent difficulties in command, control, and communications.

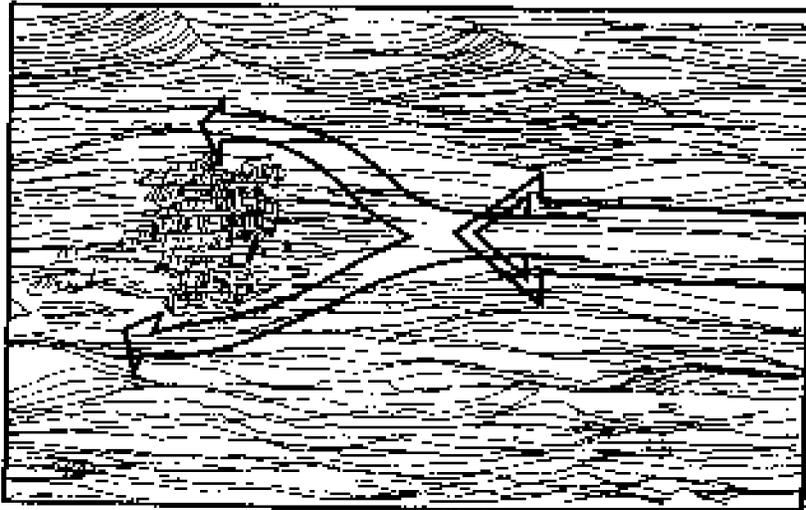
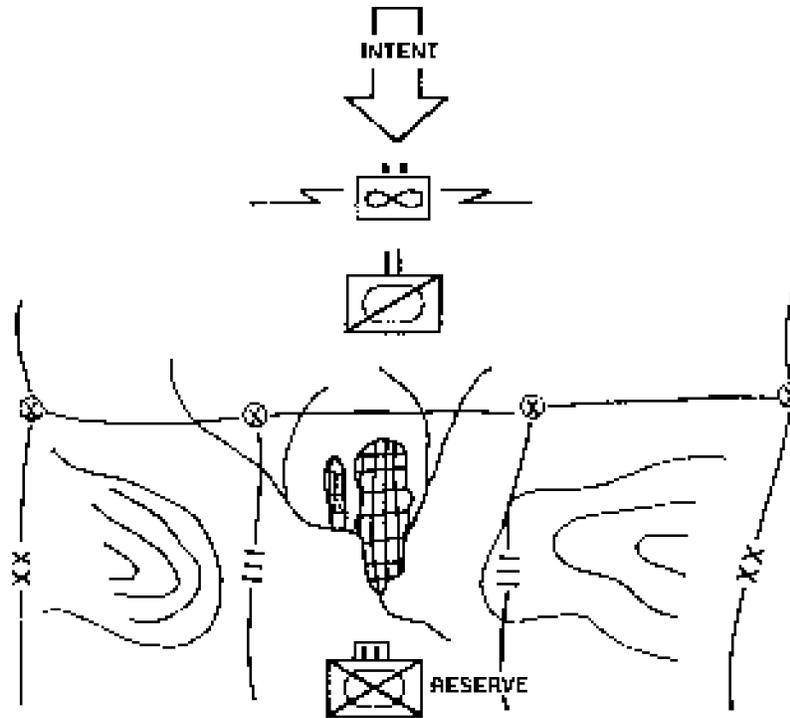


Figure 4-21. HUB Phenomenon.

For the MAGTF, the hub may serve as the pivot or anchor for its defense or as an element of a defense in depth. As shown, the hub is an obstacle which blocks the attacker's advance. Where adjacent natural terrain permits, a hub will normally be bypassed. This requires a change in direction of advance and may reduce offensive momentum and cohesion. As the attacker slides off the leading edge of the hub and begins his bypass operation, his vulnerability to flank attacks and ambushes along the new axis of advance increases.

**a. Organization of the Defense.** Commanders at each level must decide how best to integrate manmade features into their overall scheme. If the retention of a built-up area is required, the defense may assume the characteristics of a position defense organized in depth and supported by strong mobile forces.

A division would normally employ its mechanized forces outside of the built-up area in reserve or counterattack roles against the enemy's flank. (See fig. 4-22.)



**Figure 4-22. Mechanized Force in Built-Up Area.**

The security area is established well forward of the built-up area. The MBA may contain the built-up area if it is critical to the defense of the urban area. When this situation occurs, it is important to initiate the defense of the urban area as far forward as possible to facilitate the defense of the built-up area and to avoid protracted fighting in the cities. Accordingly, EAs are established forward, to the flanks, and within (if possible). The division will normally assign the regiments sectors and may designate certain strongpoints. The regiments and battalions may assign subordinate units either sectors, strongpoints, or battle positions or a combination of the three. The functions and organization of the rear area are not significantly changed in an urban environment.

The principles discussed for a division and regiment also apply to a battalion. The battalion may assign its companies sectors, strongpoints, or battle positions or a combination of the three. Figure 4-23 demonstrates a battalion-sized unit integrating the built-up area into its defense. Note, an EA is positioned forward and a smaller EA is established on the flank to take advantage of the *hub phenomenon*.

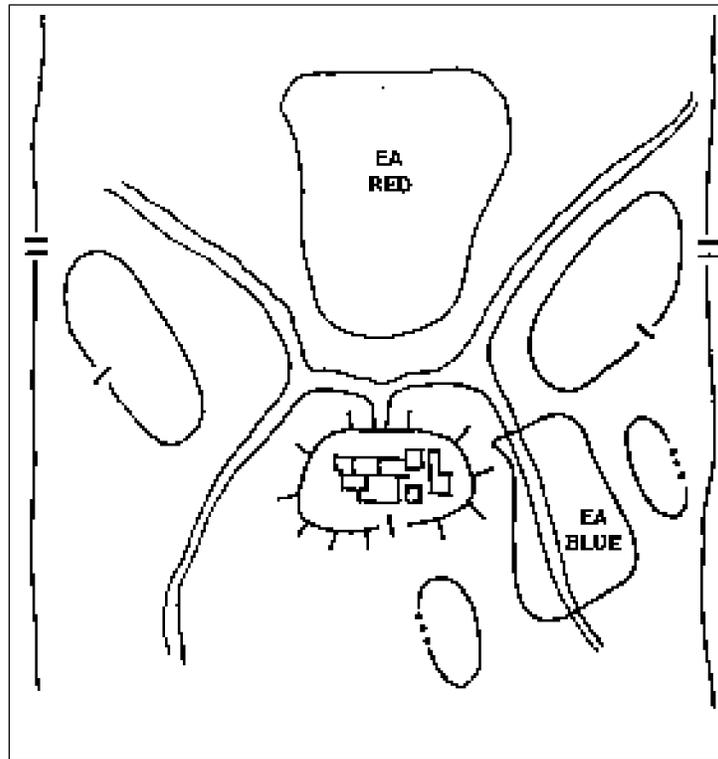


Figure 4-23. Battalion Defense.

Figure 4-24 illustrates a battalion task force in the defense with company sectors and platoon battle positions.

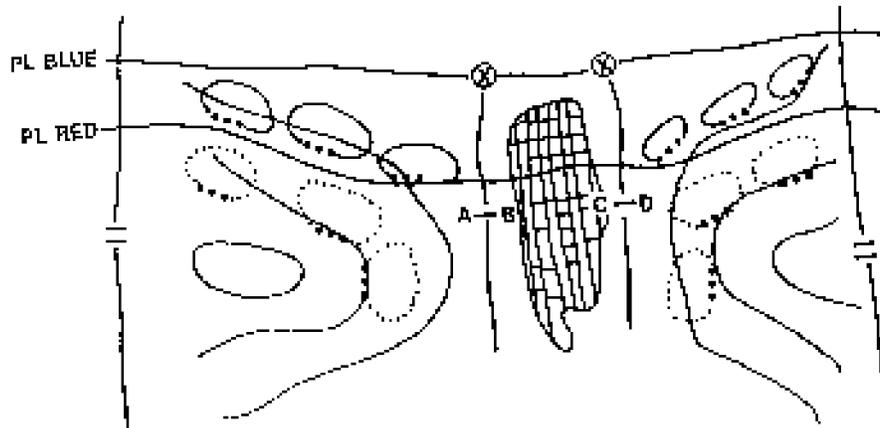


Figure 4-24. Battle Position.

See MCWP 3-35.3, *Military Operations on Urbanized Terrain (MOUT)* for further discussion of the defense within the built-up area.

**b. Employment of Tanks.** Tanks are best employed defending outside the urban area. When they are used within the built-up area, they are normally employed by section to support strongpoints. When possible, positions should be selected that provide use of their long-range fire. Additional concealment and protection from enemy

antiarmor weapons should be sought by selecting positions behind walls or by driving inside structurally sound buildings. Tanks should always be employed with infantry for close in protection when fighting in a built-up area.

**c. Employment of AAVs.** AAVs used in the defense of an urban area are normally employed by section and protected by dismounted infantry. They may conduct all of the functions shown in the offense. When they are used for direct fire support, overwatch positions should be selected which provide long-range fires. Like tanks, they should utilize buildings and walls for cover and concealment.

**d. Employment of TOWs, Dragons, and Javelins.** TOWs, Dragons, and Javelins have more utility in the defense than they do in the offense. There is more time to select and prepare positions to overcome obstacles which may interfere with the flight of the missile. Their fires should be restricted to armored targets. Positions should be selected which provide for long range fires. Both TOWs and Dragons can be fired from enclosed areas providing it is a sturdy, ventilated structure and has a ceiling height of at least 7 feet and floor size of at least 6 by 10 meters for TOWs and 4.5 by 5 meters for Dragons. Due to their soft-launch capability, Javelins can fire within an enclosed area with a reduced danger from backblast and flying debris. Javelins not only have less of a firing signature, but also require less interior volume inside a room to be fired safely than does a Dragon. The Javelin is capable of being fired safely and with no performance degradation from a 10 foot x 12 foot room with an 8 foot ceiling. A 1 meter by 2 meter ventilation area is recommended. The Javelin adds flexibility by increasing the number of usable firing positions in an urban defense.

## 4210. Combat Service Support

Logistics support must be coordinated during the planning and execution phases of each defensive operation. The combat and field trains are located as far to the rear as possible but close enough to be responsive to maneuver units. All CSS activities must look beyond the defense to support opportunities for maneuver units during the transition to the offense. At each tactical level, the commander and the operations officer must coordinate with the G-4 (S-4) to ensure a given operation is supportable.

## 4211. Defense Control Measures

There are three types of control measures that are utilized in the defense--indirect fire, direct fire, and maneuver.

**a. Indirect Fire Control Measures.** See MCWP 3-16, *Tactics, Techniques, and Procedures for Fire Support Coordination*, for review.

- Coordinated fire line.
- Fire support coordination line (FSCL).
- Restrictive fire line.
- Boundaries.
- Airspace coordination area.
- Free fire area.
- No fire area.
- Restrictive fire area.
- Target reference point.

**b. Direct Fire Control Measures.** See chapter 3 for review.

- Engagement area.
- HAW-MAW-LAW and massed fire methods of engagement.
- Target reference point
- Fire commands
- Fire patterns.
- Priority of engagement

**c. Maneuver Control Measures.** MCRP 5-2A, *Operational Terms and Graphics*, provides detailed discussion on these control measures.

- Handover line.
- Forward line of own troops.
- Battle position.
- Strongpoints.
- Delay position.
- Blocking position.
- Disengagement criteria.
- Sectors.
- Coordinating points.
- Phase lines.
- Contact points.
- Checkpoints.
- Passage points.
- Passage lanes.
- Routes.
- Main supply routes.
- Assembly area.

## Section III. Delay Against Mechanized Forces

A delaying operation is an operation in which a force under pressure trades space for time by slowing down the enemy's momentum and inflicting maximum damage on the enemy without, in principle, becoming decisively engaged. (Joint Pub 1-02). The delaying force must have mobility roughly equal to the enemy force.

Delaying operations are conducted:

- When a force's strength is insufficient to defend or attack.
- To attrit the enemy.
- To draw the enemy into an unfavorable situation like a mobile defense.
- When the enemy intent is not clear and the commander desires time and intelligence.
- By the security element to protect and to provide early warning for the main force.
- By the security force to deceive the enemy as to the location of the MBA.
- To allow time to reestablish the defense or to prepare for offensive action.

### 4301. Fundamentals of the Delay

The fundamentals of the delay are essentially the same as those for the defense. A delay differs in that decisive engagement is avoided if at all possible. Special consideration is given to the following fundamentals:

**a. Centralized Control and Decentralized Execution.** Each commander must have freedom of maneuver against the enemy while the rearward movement of units must be coordinated by a higher headquarters to prevent gaps through which the enemy can bypass or envelope friendly units.

**b. Maximum Use of Terrain and Obstacles.** Terrain that provides long-range fires and covered withdrawal routes are utilized for delay positions. Engagement areas are selected that make maximum use of natural obstacles. Other obstacles are emplaced to canalize and delay the enemy and positioned to support the disengagement.

**c. Maximum use of fires.** Long range fires, to include offensive air support, are brought to bear against the enemy to destroy high payoff targets and to force the enemy to deploy.

**d. Force the Enemy to Deploy and Maneuver.** Repeatedly forcing the enemy to deploy into assault formations and to maneuver will delay his advance.

**e. Maintain Contact With the Enemy.** This prevents the enemy from advancing unimpeded and keeps the friendly unit commander aware of their location.

**f. Avoid Decisive Engagement.** Units decisively engaged lose their freedom of maneuver and cannot continue to delay.

### 4302. Techniques for Delaying

A delaying force will normally be assigned sectors in which to delay and the initial delay positions. Additionally, phase lines may be imposed by the higher headquarters to control the timing of the delay. This process could begin at MEF or division level and be repeated at the regimental and battalion levels.

**a. Delay Missions.** There are two basic types of delay missions that may be assigned to a regiment or battalion.

**(1) Delay in Sector.** This is the least restrictive mission. There is usually no requirement to hold key or decisive terrain.

**(2) Delay in Sector (Forward of a Specified Line for a Specified Time).** This is a high-risk mission that requires preventing enemy forces from reaching a specified area earlier than the specified time or event, regardless of the cost. The task force commander normally limits the maneuver from delay position to delay position, or restricts crossing a particular phase line based on a specific time or event.

**b. Methods of Delay.** Units conducting a delaying operation can delay from successive positions or from alternate positions or a combination of both. The technique selected will be dependent on the width of the assigned sector, the nature of the terrain, and the forces available.

**(1) Delay From Successive Positions.** This is a technique for delaying in which all the delaying unit's main battle forces are positioned forward in a single echelon. (See fig. 4-25.) Units delay continuously on and between battle positions throughout their sectors, fighting rearward from one position to the next, holding each as long as possible or for a specified time. The force may retain a small reserve.

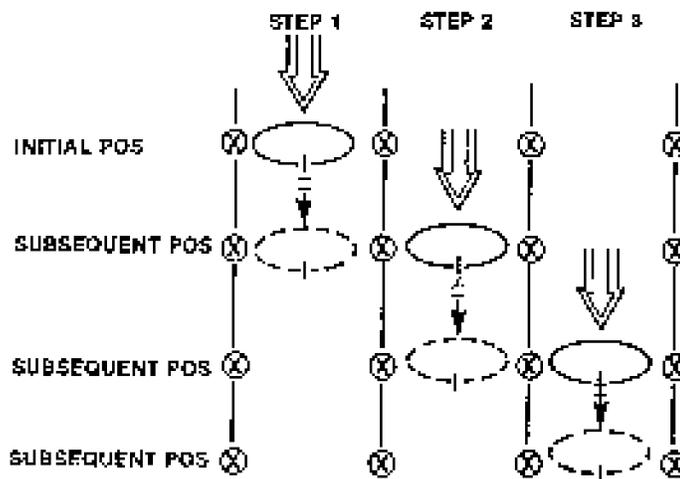


Figure 4-25. Delay From Successive Positions.

**(2) Delay From Alternate Positions.** This is a technique in which a unit delays in sector with two subunits deployed in depth. (See fig. 4-26.) While the first subunit is fighting, the second occupies the next succeeding position to the rear and prepares to assume the fight.

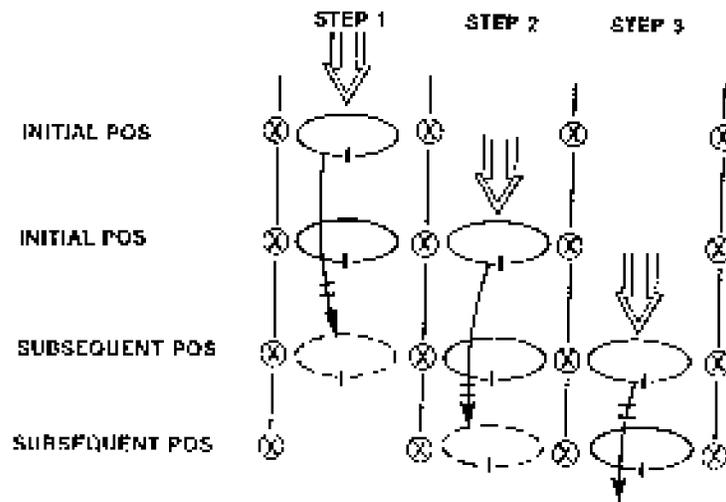


Figure 4-26. Delay From Alternate Position.

The first subunit delays back to the second position, disengages and passes through or around the second subunit. It then prepares to resume the action from a third position further to the rear, while the second subunit takes up the fight.

### 4303. Employment of Delaying Forces

LAR and mechanized forces are ideally suited for delay operations because of their long-range weapons and mobility. Helicopterborne and truck mounted forces may conduct a delay in restrictive terrain that prohibits the enemy force from enveloping the delaying force. For example, mountainous terrain with restricted avenues of approach.

Most operations within the security area involve those principles normally associated with the delay. Indeed, the actions of companies and platoons moving within the MBA to other battle positions are often indistinguishable from classic delay maneuvers.

Chapter 2 describes enemy offensive doctrine. Following the enemy's reconnaissance, he will lead with an advance guard battalion, which is led by an advance guard consisting of a combat recon patrol and a forward security element, both organized around tank units. When these units are engaged, the main body of either the advance guard or a regiment will attempt to envelope friendly forces. If their bypass is successful, their second echelon forces will attempt to destroy the bypassed units. Conversely, the enemy could fix with his lead echelon and bypass with the second. Either way, delaying commanders at every level must optimize the capabilities of their forces to avoid decisive engagement or encirclement by the enemy.

**a. Reconnaissance Units.** Reconnaissance units may be employed as stay behind forces to observe the enemy and engage concentrations of enemy forces with supporting arms. When positioned along avenues of approach, consideration should be given to planning FASCAM targets which may delay second echelon enemy forces at critical times. Reconnaissance units may also be withdrawn from forward positions and placed along the flanks to provide early warning of enemy forces attempting to envelope or flank friendly delay positions. Again, reconnaissance elements can control supporting arms at critical times to disrupt the enemy.

**b. LAR Units.** LAR units are normally initially employed as part of the security force. Subsequently, they may be employed as stay behind forces to attack specific enemy combat support or service support units in order to disrupt his attack. LAR units may also be employed for flank security or as a reserve. LAR units also possess the speed and mobility to conduct raids deep into the enemy's rear areas.

**c. Mechanized Infantry** Mech-pure units normally do not engage enemy armored forces from a delay position where decisive engagement is not desired. Their primary mission at delay positions is to provide local security to the GCE antiarmor assets such as tanks and ATGMs. Retention of infantry on the position during decisive engagement begins may result in unnecessary casualties. Normally, the infantry should displace to subsequent delay positions or prepare final delay positions in the event decisive engagement is required.

**d. TOWs and Javelins.** TOW units may be employed in sections for mutual support with mechanized infantry providing local security. In a HAW-MAW-LAW type of engagement, TOW units occupy delay positions and engage enemy at long-range (3750m). TOW units represent a highly mobile economy of force asset that may be employed anywhere from the security area to the rear area. Javelins may be employed similarly. With its 2,000m(+) range, some standoff may still be achieved. However, this distance can be quickly traversed by an enemy armored/mechanized threat unless terrain and/or obstacles favor the delaying force. Although man portable, Javelins should be provided with some type of increased mobility (AAV or HMMWV) if employed as a mutually supporting antiarmor element with TOW elements. The Javelin's soft-launch and fire-and-forget capabilities enable gunners to engage and displace to a new firing position often before the firing signature or the gunner can be observed by the enemy. Employing TOWs and Javelins in a combined arms role as mutually supporting antiarmor elements allows a commander of a delaying force to exploit each systems standoff capabilities. The commander can position TOW equipped elements to engage attacking enemy forces at maximum effective range (3750m) and continue to engage them until the Javelin equipped elements accept battle handover at 2000+. Each element can potentially cover the other element's displacement to subsequent firing positions.

**e. Tanks.** During a delay, tanks are employed as the primary weapon to engage enemy tanks which lead the enemy advance guard and main body forces. Their high rate of fire, armor protection against enemy artillery and mobility, make tanks best suited for this mission. Tanks may also be retained in a reserve to support the disengagement of forces decisively engaged or to conduct counterattacks.

**f. Engineers.** Engineers are normally employed in general or direct support of the delaying force with a priority of tasks assigned. Available mechanized infantry units may be utilized to assist the engineers. There are two primary tasks which the engineers will be required to accomplish: countermobility and mobility. Both tasks may be critical in a delay operation. Obstacles are positioned to canalize the enemy into EAs and to delay the enemy during disengagement from a delay position. Equal consideration should be given to preparing or improving withdrawal routes for the delay forces.

#### **4304. Employment of the Reserve**

The establishment and employment of a reserve is highly desirable. Normally, a reserve is not maintained at the company level. The composition of reserve forces and the tasks they may be required to accomplish are shown below:

- *Contain penetrations.* Infantry units prepared to accept decisive engagement, TOW units, and tank units can accomplish this task.

- *Counterattack.* Counterattack to reduce penetrations, take advantage of an exposed enemy flank, or to extricate a decisively engaged friendly unit. Tank units are best suited for this mission.

- *Conduct a spoiling attack.* A reserve force may conduct an attack disrupting the enemy's tempo and cohesion, forcing the early deployment of following forces and supporting arms.

### 4305. Planning and Conducting a Delay Operation

**a. Time Factors.** Planning a delay operation against a mechanized force differs from other forces in that greater consideration must be given to time-distance factors and the enemy's ability to use restrictive terrain. When encountering a delay position, the enemy may attempt to fix the delaying force with his lead element and bypass or to envelop the delaying force with his second echelon utilizing wooded areas or other types of restricted terrain. The mechanized commander must anticipate this tactic and analyze the time and distance required by the enemy to execute such a plan. A similar time-distance analysis is required of the delaying force's ability to disengage and move to a new delay position. These analyses will enable the commander to hold a position as long as possible without becoming decisively engaged or cut off.

**b. Disengagement.** Disengagement is the act of physically breaking contact with the enemy. A unit has disengaged when the enemy can neither observe or engage the unit with direct fire. Basic considerations for disengaging are shown below:

- Battle positions should be sited to facilitate disengagement.
- Disengagement should be conducted quickly to conceal the intention from the enemy and to effect a clean break before the enemy can react.
- Disengagement is conducted before decisive engagement. Detailed study and use of terrain is required.
- The sequence subordinate units will withdraw is planned in detail.
- When possible, units disengage by echelon.
- Disengagement may include rearward passages of lines.
- Heavy volumes of direct and indirect fires are used to assist the disengagement.
- Withdrawal routes (primary and alternate) to the next position should be clearly marked and unobstructed.

Disengagement criteria may be established for units and individual type of weapons. *Disengagement break lines* are locally imposed locations forward of the battle position that key a unit or a type of weapon system to move based on the presence of certain numbers or types of enemy vehicles. For example, six tanks reaching a certain distance from a battle position may signal a TOW section to disengage and displace to a new firing position.

Normally, the order of weapon system disengagement will be defined in the company commander's operations order. TOWs and Javelins normally initiate the engagement and leave first due to their vulnerability to indirect fire and tank

fired high explosive fragmentation rounds. Mechanized infantry is followed lastly by tanks. In periods of reduced visibility or in close terrain the enemy infantry threat may require that tanks and AAVs displace first.

Control measures used in the delay are as follows:

- Phase lines of all higher commands.
- Supplemental phase lines.
- Checkpoints.
- Delay positions (sometimes called battle positions).
- Sectors.
- EAs and TRPs.
- Contact points.
- Passage points.
- Assembly areas, MSR, and logistics release points.
- Coordinating points.
- Routes and lanes.
- Trigger points and disengagement break lines (company level).

**c. Conduct.** The delay is conducted as aggressively as possible by commanders at each level of command. The commander must centrally control the operation but allow decentralized execution by his subordinates. They should be allowed as much freedom of maneuver as possible. The following actions are taken to conduct a delay.

- (1) All but essential personnel and material are withdrawn early to facilitate movement during the operation.
- (2) Reconnaissance elements are forward to provide timely information on the enemy.
- (3) The initial delaying positions will normally be the only positions that can be organized, prepared, and occupied deliberately. Subsequent positions will normally be hastily prepared and occupied.
- (4) The HAW-MAW-LAW method of engagement is normally used against the approaching enemy.
- (5) Each position is defended until it is threatened with decisive engagement.
- (6) When maximum delay has been achieved, movement to the next position begins.
- (7) If decisive engagement of a unit occurs, the commander may take all of the following actions:
  - Allocate priority of all fire support to the threatened unit.
  - Direct adjacent units to engage enemy targets forward of the threatened unit.
  - Reinforce the unit.
  - Conduct a counterattack to disengage.
- (8) The reserve may be a designated unit or the least engaged unit. Reserve missions are--
  - Reinforcing.
  - Assisting in disengagement.

- Providing overwatch.
- Assuming another unit's mission.
- Counterattack.
- Blocking.
- Spoiling attack.

(9) The delay must end with a planned operation such as a defense, a withdrawal, or an attack.

## Section IV. Fire Support and the Engagement Area

The battlespace is a continuum extending from the farthest range of the MAGTF's assets to the MAGTF's rear area. Applying the fundamentals of combined arms, the MAGTF confronts approaching armored forces with a variety of lethal combinations or packages of weapons systems. The MAGTF commander views the EA as a focal point at which enemy armor units are attacked and destroyed or disrupted. While an EA is ideally arrayed to utilize direct and indirect fire weapons systems in concert, EAs well forward of the FEBA may involve only aircraft or aircraft and long-range indirect fire weapons. EAs may be quickly established to account for fleeting opportunities. For example, an EA may be hastily established 100 to 200 kilometers forward of the FEBA in response to an immediately identified enemy armored column with aircraft and LAR as the only MAGTF assets utilized.

This chapter will address aircraft and indirect fire weapons systems in an antiarmor defense. The focus remains on the engagement of enemy armored columns and support units, *not* piecemealed armor assets supporting dismounted infantry operations.

### 4401. Definition

Fire support is the assistance to elements of the MAGTF engaged with the enemy rendered by other firing units, including (but not limited to) artillery, mortars, naval surface fire support, and offensive air support. (MCRP 5-12C). The mission of fire support is to delay, disrupt, or destroy enemy forces in support of the scheme of maneuver.

Fire support is selective and focused--it is always considered within the context of maneuver--either immediate or eventual maneuver. Conversely, maneuver is dependent on fire support. Maneuver and fire support are concurrent, not sequential preoccupations of the commander.

### 4402. Offensive Air Support

Offensive air support (OAS) is air operations conducted against enemy installations, facilities, and personnel to directly assist the attainment of MAGTF objectives by destruction of enemy resources or the isolation of his military force (MCWP 3-23, *Offensive Air Support*). Offensive air support is one of the six functions of Marine aviation. OAS is used to *destroy or neutralize or delay* the enemy.

**a. Types of OAS.** OAS may be subdivided by categorizing operations according to the degree of coordination required with the supported ground unit. These categories are Close Air Support (CAS) and Deep Air Support (DAS).

**(1) Close Air Support.** Air action by fixed- and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces (Joint Pub 1-02).

Applying the fundamentals of combined arms, the MAGTF commander integrates CAS with other forms of fire support and the fire and movement of ground forces. At times, CAS is the best firepower delivery means available to rapidly mass a lethal capability, exploit tactical opportunities, or save friendly lives. CAS also gives the ground force commander flexibility in force employment by augmenting organic supporting fires. CAS missions can be flown in support of ground forces on either side of the FSCL. CAS is closely integrated with the fire and movement of all

MAGTF elements. To preserve this integration, the ground commander of the supported ground unit through his Forward Air Controller (FAC or FAC/A) requests and/or approves all CAS missions in his area of responsibility.

The three-dimensional mobility of aircraft provides commanders with the means to strike the enemy swiftly and unexpectedly. The speed, range, and maneuverability of aircraft allow the attack of targets that other supporting arms may not be able to effectively engage because of limiting factors, such as type of target, range, the terrain, or the friendly scheme of maneuver.

Although attack helicopters and fixed wing aircraft can both provide CAS, employment considerations differ. Fixed wing aircraft provide advantages of range, speed, and ordnance loads specifically designed to counter armored threats, whereas attack helicopters provide advantages of excellent responsiveness and the ability to operate in adverse weather conditions.

**a. Attack Helicopters.** Attack helicopters can operate from naval shipping, but normally operate from main operating bases that are fairly close to the battle area. Forward Arming Refueling Points (FARPs) are often located in the forward area for enhanced responsiveness of support. The attack helicopter occupies a niche between ground weapon system and fixed-wing CAS aircraft by allowing the MAGTF to cover gaps in the capabilities of assigned forces. In many situations such as poor weather, intense jamming, or during fast moving battles, the attack helicopter may be the only type of OAS available. However, the attack helicopter is generally more vulnerable to ground fire than fixed wing aircraft.

Attack helicopters may be used to attack specific targets at specific locations or they may be assigned missions similar to a maneuver element.

When given a mission of flank or forward security or as a reaction force, attack helicopter's primary importance rests with its mobility. In this instance, commanders should avoid overly restricting attack helicopters in fire support planning.

Attack helicopters may support a mechanized task force or LAR units that are conducting security operations forward or to the flanks of a defensive position. Attack helicopters are ideal for supporting spoiling or counterattacks. Attack helicopters may be used in a delay to engage the enemy once the ground element has disengaged.

**b. Fixed Wing Aircraft.** Fixed wing aircraft can be based on main operating bases on land and naval ships afloat, well behind the battle area. These locations offer the widest range of support, such as available ordnance, mission equipment, and logistics. Fixed wing aircraft can be deployed to forward operating bases, which decreases transit time and increases time on station but may limit flexibility of munitions available.

Fixed wing aircraft provide the MAGTF commander with advantages in range, speed, and a heavy loadout of ordnance when attacking an armored threat. The greatest limitation of fixed wing aircraft is generally time on station. The variety of ordnance which can be delivered against armored vehicles includes: Precision Guided Munitions, General Purpose Bombs, Anti-personnel Rockets, and Cluster Bomb Units.

**(3) Deep Air Support.** Air action against enemy targets at such a distance from friendly forces that detailed integration of each mission with fire and movement of friendly forces is not required. DAS missions can be flown on either side of the FSCL; the lack of a requirement for close coordination with the fire and maneuver of friendly forces is the qualifying factor (MCRP 5-2C).

DAS differs from CAS because it does not require close integration with friendly forces. Air interdiction and armed reconnaissance are DAS tasks.

**(a) Air Interdiction.** Air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces, at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required. (Joint Pub 1-02)

**(b) Armed Reconnaissance.** A mission with the primary purpose of locating and attacking targets of opportunity; i.e., enemy materiel, personnel, and facilities, in assigned general areas along assigned ground communication routes, and not for the purpose of attacking specific briefed targets (Joint Pub 1-02). Aircraft conducting armed reconnaissance ordinarily operate at low altitudes making them easy targets for modern air defense weapons. Accordingly, armed reconnaissance missions require a low threat environment.

**b. Types of Missions.** CAS missions are executed as either preplanned air support or *immediate* air support, as determined by the degree of prearrangement. *Preplanned CAS* is air support in accordance with a program, planned in advance of operations (Joint Pub 1-02). *Immediate CAS* is air support to meet specific requests which arise during the course of a battle and which by their nature cannot be planned in advance (Joint Pub 1-02). Both preplanned and immediate air support are executed in response to specific requests.

Fixed-wing aircraft are most effective against armored columns not fully deployed for combat. When ground units are engaging enemy armor with direct fire weapons, fixed-wing aircraft are often diverted to attack second echelon or reinforcing units. Planning should allow for shifting air assets from one EA to another in a rapid manner.

**c. Suppression of Enemy Air Defenses (SEAD).** SEAD consists of activity which neutralizes, destroys, or temporarily degrades surface-based enemy air defenses by destructive and/or disruptive means. SEAD fires should precede air strikes. The purpose of SEAD is to minimize the loss or damage to friendly aircraft during planned air strikes by neutralizing these weapons.

**d. LAR and Aviation.** Attack helicopter and fixed-wing assets provide increased flexibility and firepower for a unit defending against enemy armor. At the tactical and operational levels, a combination of LAR and ACE assets provide the supported commander with a unit capable of exceptional speed, range, and lethality. The concept of a MAGTF security force composed of LAR and ACE assets is discussed in MCWP 3-14, *Employment of LAR*. This force, operating well forward of the GCE, allows the MAGTF commander to see and shape the battlefield. LAR and ACE assets can engage enemy armor at the farthest possible point from friendly positions.

The introduction of LAR/ACE assets capable of deep operations provides the MAGTF commander with one more transitional capability to influence the action, but poses additional coordination problems. To ensure unity of effort among the diverse units operating in the MAGTF's area of influence, the MAGTF commander should assign the primary responsibility for the coordination of operations in this area to a subordinate.

While activities in the MAGTF area of influence are the responsibility of the MAGTF commander, the assignment of a *deep battle coordinator* allows timely decisions to be made based on the MAGTF commander's intent. The ACE commander is well suited for this task. The ACE commander possesses the requisite means for integrating the activities of both air and ground elements for exploiting opportunities in this area. Accordingly, it may be necessary

for the MAGTF commander to assign LAR assets to the ACE commander. Likewise, the ACE as commander may find it beneficial to designate the LAR unit commander as a mission commander and subordinate aviation assets to him.

## 4403. Indirect Fire Support

Fire support assets and priority of fires are allocated based on the most dangerous enemy avenues of approach (As are established here). They are normally suballocated to units on those approaches and shifted as the battle develops. Priority of fires is initially given to the forward security elements (e.g., LAR or mechanized units) and then shifted to the units on the FEBA when the security elements pass through the HOL. The allocation of fire support may be constantly shifted based on the factors of METT-T. It is no longer SOP that each infantry regiment will have an artillery battalion in DS. For example, an infantry regiment designated the main effort may have two or more artillery battalions providing support.

**a. Uses of Indirect Fire Support.** Indirect fires should be integrated with direct fire weapons to ensure the maximum benefit of combined arms. Indirect fire support includes but is not limited to the following uses:

- Disrupts, slows, and disorganizes the enemy and forces him to button-up at long range.
- Is employed against enemy overwatch or base of fire elements.
- Provides illumination for target acquisition at night.
- Covers disengagement, movements, and counterattacks.
- Destroys dismounted infantry with close-in barrage fire.
- Provides smoke for obscuration.
- Provides smoke at the rear of an assaulting unit to provide contrast for easier target acquisition.
- Delivers FASCAM on enemy armor avenues of approach .
- Kills armor with DPICM (against light armor) and Copperhead (any armor).
- Delivers counterbattery fire.
- Provides SEAD.

**b. Fire Support Means.** A basic understanding of the employment of each indirect fire support weapons system is imperative for the proper use of combined arms.

(1) **Artillery.** Artillery is positioned to provide close, deep, and counterfire support in coordination with maneuver forces. The intent is to disrupt and weaken the enemy's offensive action and to provide windows of opportunity for

friendly offensive action. Control of fire support assets is more centralized for defensive operations against an enemy armored force. Artillery and other indirect fire support means must be massed against armor to be effective.

**(2) Naval Surface Fire Support.** NSFS ships can deliver a large volume of high velocity projectiles within a short period. NSFS can deliver suppression (there is no immediate suppression mission for NSFS), neutralization, and destruction fires. NSFS direct accuracy, high muzzle velocity, and flat trajectory provide effective penetration and destruction of targets which present an appreciable vertical surface.

**(3) Mortars.** Mortars at the battalion and company level are normally deployed to support secondary avenues of approach. They can provide responsive fires to support the maneuver of company teams and platoons between battle positions. During night operations, mortars assume a greater role when there may be a requirement for illumination and the threat of a dismounted infantry attack is usually greater.

#### 4404. Fire Support Planning

The fire support plan defines the way artillery, mortars, NSFS, and CAS aircraft will be used to complement the scheme of maneuver, and it provides instructions for executing those fires. It may include air defense assets. It ranks targets in priority order, matches them with the available fire support systems, eliminates duplication of targets, and allows fires to be executed quickly without specific direction from the commander once the battle starts.

A fire support plan is developed before any operation and continues throughout the operation based on enemy contact and continuous intelligence gathering efforts. There is continuous interaction between the commander, staff, and his fire support agencies. The plan is constantly refined as the operation continues.

**a. Time-Distance Factors.** Fire support planning against armor is similar to other operations EXCEPT the movement, tempo, and distances covered are greater than those encountered against enemy dismounted infantry. Additionally, the target effects for a given type munition is less on enemy armor than on dismounted troops. These differences must be considered at the outset of the planning process. Figure 4-27 provides some basic speed/time considerations for fire support planning.

This table provides the time required to travel 1 kilometer or 1 mile while using specified march speeds. The travel times are calculated based on rates of march (miles/kilometers in one hour) and include time for scheduled short halts and time lost due to road and traffic conditions.

**b. Targeting Considerations.** Targets and targeting are discussed in detail in MCWP 3-16, *Tactics, Techniques, and Procedures of Fire Support Coordination*. Multiple armor targets call for special considerations. When fires are desired on several targets, groups and series of targets may be established.

**(1) Groups.** A group of targets consists of two or more targets on which simultaneous fires are desired. In the defense, a group of targets can be used to destroy enemies stopped at minefields or to destroy vehicles waiting to cross rivers or bridges. Individual targets in the group can be selected based on how the commander thinks the enemy would form at these activities (See fig. 4-28).

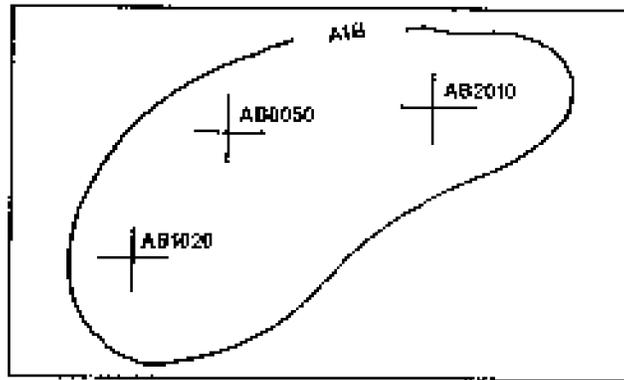


Figure 4-28. Target Group.

**(2) Series.** A series of targets is a number of targets or groups of targets planned to be fired on in a predetermined sequence. In the defense, the series allows for fires which are tied to speed; but, in this case, it is the speed at which the enemy will attack. A series of linear targets may be planned to destroy the enemy attack echelons. Attack of linear targets 1,000 meters apart (3 minutes at 20 kilometers per hour) may keep fire continuously falling on the enemy (See fig. 4-29). Additionally, series work well in the defense with CAS TOTs to facilitate integration of indirect fires in concert with aviation delivered fires.

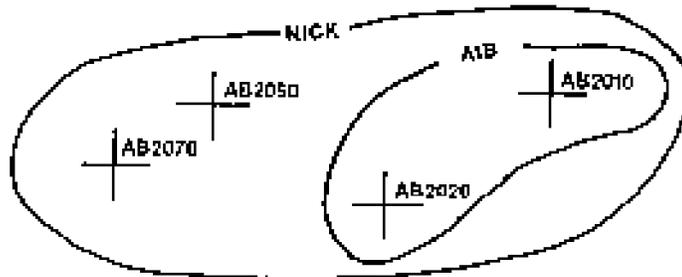


Figure 4-29. Target Series.

## Section V. Engineering Operations and the Engagement Area

Engineers conduct a wide variety of tasks in support of the MAGTF. Tasks range from CS support to general engineering support. Engineering facilitates MAGTF maneuver by breaching, building and maintaining the barriers, bridging, expeditionary airfields, and roadways that move, sustain, and protect the force.

**Combat Engineering** enhances the MAGTFs momentum by physically shaping the battlespace. It's purpose is to allow the MAGTF to generate mass and speed while reinforcing natural battlespace restrictions in order to limit the enemy's ability to maneuver and generate tempo.

**General Engineering** involves activities that provide facilities, utilities, and bulk fuel for operations. General Engineering contributes to the sustainment of the MAGTF by enhancing the throughput in the area of operations.

The four functional areas of engineer effort are *mobility, countermobility, survivability, and general engineering*. While all four functional areas may be applicable to anti armor operations, survivability and countermobility are the primary engineering tasks associated with the EA. These tasks are often interrelated. Preparation of fighting positions for large equipment (e.g. tanks ) or the creation of obstacles requires lead time and planning for engineers to mobilize equipment, supplies, and personnel to provide support. Commanders should involve engineers as early as possible during the planning of the EA.

For an in-depth discussion of the following subjects, see MCWP 3-17, *Engineer Operations*

### 4501. Definitions

The following definitions will assist the reader in understanding the four functional areas:

**Obstacle.** Any natural or cultural (manmade) obstruction that canalizes, delays, restricts, or diverts movement of a force. The effectiveness of an obstacle is enhanced considerably when covered by fire. Obstacles can include abatis, antitank ditches, blown bridges, built-up areas, minefields, rivers, road craters, terrain, and wire (MCRP 5-2C). There are two categories of obstacles--existing and reinforcing.

**a. Existing Obstacles.** Existing obstacles are already present on the battlefield and not placed there through military effort. They may be natural such as lakes or mountains, or they can be cultural such as towns or railroad embankments (FM 5-102).

**b. Reinforcing Obstacles.** Reinforcing obstacles are placed on the battlefield through military effort and are designed to strengthen the existing terrain to slow, stop, or canalize the enemy. They include a road crater, a log crib, or a minefield. Scatterable mines are reinforcing obstacles emplaced by various delivery systems such as artillery or aircraft. (FM 5-102)

### 4502. Survivability

Survivability is the creation of structures or the shaping of the battlespace that allows the force to avoid or withstand hostile environments without losing the ability to accomplish the mission. It includes all aspects of protecting personnel, weapons, and supplies. In order for the MAGTF to survive, it must be able to reduce exposure to threat

acquisition, targeting, and engagement. Engineering operations play a key role in survivability in the areas of constructing fortifications, protective obstacles, strong points, and sustainment.

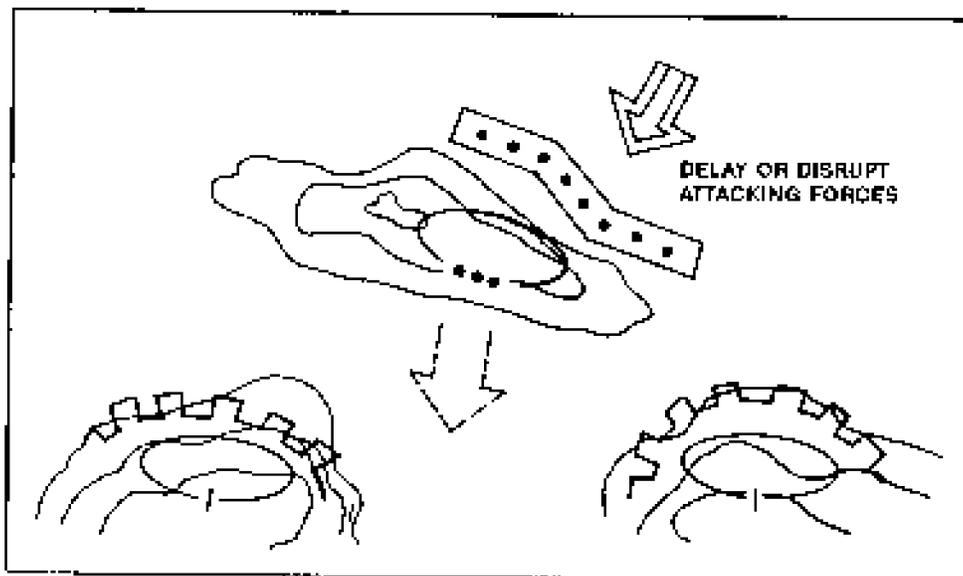
**a. Fortifications.** Engineers construct fighting positions for combat vehicles, direct fire weapons systems, artillery, and air defense. Fortifications provide protection and build confidence in Marines so that they will be able to use their weapons and fight effectively where they otherwise could not survive.

**b. Protective Obstacles.** Like final protective fires, protective obstacles provide the force with a combat *edge* during the enemy's final assault that may make the difference between success and failure. Protective obstacles also are used to impose a delay or channelize an attacker. Protective obstacles may also allow the defender time to break contact and displace to another battle position. Antipersonnel and antitank mines are used to limit the ability of the assaulting force to close with the defender. These mines are sited according to terrain and are covered by defending fires. These hasty minefields are installed adjacent to a battle position and are removed when the position is no longer occupied. These are the only obstacles that can be employed outside of designated obstacle zones and belts.

**c. Strongpoints.** Strong points are heavily fortified battle positions which cannot be overrun quickly or bypassed easily by enemy forces. They consist of an integrated series of exceptionally well protected fighting positions, connected by covered routes, and reinforced with extensive protective obstacles. They are designed to withstand air strikes, artillery fire strikes, and mounted /dismounted assaults. The enemy can reduce them only by expending much time and overwhelming force.

In an anti armor defense utilizing battle positions or sectors, engineer effort is first directed toward structuring the EA and only later to the preparation of unit positions. Establishing strongpoints requires extensive engineer effort preparing the position first and only then turning to the EA.

Figure 4-30 depicts two company-sized strongpoints overlooking a platoon battle position. Note that the minefield is a protective obstacle that slows the enemy's advance long enough to allow the friendly platoon to delay from its position.



**Figure 4-30. Strongpoints.****4503. Countermobility**

Countermobility is the construction of obstacles and emplacement of minefields to delay, disrupt, and destroy the enemy by reinforcement of the terrain. The primary purpose of countermobility operations is to slow or divert the enemy, to increase time for target acquisition, and to increase weapon effectiveness (MCRP 5-2C).

The intent of countermobility operations is to attack the enemy's ability to execute his plan by disrupting his combat formations, interfering with his command and control, and confusing his commanders to create a vulnerability that friendly forces can exploit. The secondary intent is to destroy or disable his vehicles. This is accomplished with an integrated system of obstacles and fires.

**a. Obstacle Effects.** Obstacles integrated with fires are designed to produce one of four primary obstacle effects on the enemy. Obstacle effects:

- (1) Drive fire and obstacle integration planning
- (2) Focus subordinate fires
- (3) Focus the obstacle effort
- (4) Multiply the effects of firepower

All tactical obstacles produce one of the following obstacle effects--disrupt, turn, fix, or block. (MCWP 3-17)

**(1) Disrupt.** A tactical task or obstacle effect that integrates fire planning and obstacle effort to break apart an enemy's formation and tempo, interrupt the enemy's timetable, or cause premature commitment of enemy forces, or the piecemealing of his attack. (MCRP 5-2A) These obstacles disrupt march and assault formations, force the enemy to commit of breaching assets prematurely, and cause separation between the enemy's forward combat elements and his supply trains. A piecemeal attack is more easily defeatable.

**(2) Turn.** A tactical obstacle effect that integrates fire planning and obstacle effort to divert an enemy formation off one avenue of approach to an adjacent avenue of approach or into an EA. (MCRP 5-2A) Turning obstacles move and manipulate the enemy by enticing or forcing him to move in a desired direction, splitting his formation, canalizing him, or by exposing his flank.

**(3) Fix.** A tactical obstacle effect that integrates fire planning and obstacle effort to slow an attacker within a specified area-- normally an EA. (MCRP 5-2A). In delaying operations, fixing obstacles generate the time necessary for the delaying force to break contact and disengage or move to subsequent positions.

**(4) Block.** An obstacle effect that integrates fire planning and obstacle effort to stop an attacker on a specified avenue of approach or to prevent an enemy from exiting an engagement area. Blocking obstacles stop an attacker along a specific avenue of approach. (MCRP 5-2A) Obstacles never, by themselves, serve to block an enemy force. Rather, blocking obstacles are complex, employed in depth, and integrated with fires in order to prevent the enemy from proceeding

**b. Individual Obstacles.** There are four general categories of individual tactical obstacles. The individual obstacles are those in obstacle groups, directed obstacles, reserve obstacles, and situational obstacles.

**(1) Individual obstacles in obstacle groups.** Individual obstacles are tailored to the obstacle group effect and the threat. For example, minefield densities, composition, pattern, depth, and frontage have specific norms for achieving the disrupt, turn, fix, and block obstacle effect. When employed, tank ditches are used to complement turning and blocking obstacle groups. Leaders ensure individual obstacle siting is consistent with the obstacle group's intent and integrated with weapons systems covering the engagement area.

**(2) Directed and reserve obstacles.** A directed obstacle is an obstacle directed by a higher commander as a specified task to a subordinate unit. A reserve obstacle is an obstacle for which the commander restricts the execution authority. The commander usually specifies the unit responsible for obstacle emplacement, handover, and execution. The commander must clearly identify the conditions under which the obstacle is to be executed.

**(3) Situational obstacles.** A situational obstacle is a tactical, obstacle-emplacement capability held in reserve. Execution is triggered by friendly actions, enemy actions, or a combination of the two. Reserve obstacles and situational obstacles are different. A situational obstacle can be shifted to different locations, whereas a reserve obstacle is located at a specific key location. A situational obstacle must be within the executing maneuver unit's obstacle control measure.

Situational obstacle contain the three components of obstacle intent (obstacle effect, a target, and a relative location) and require integration into the decision support template to be executed effectively. The plan must identify the trigger action and execution criteria at a specific decision point and the necessary subunit instructions to emplace and cover the obstacle. There are three possibilities for employing situational obstacles; the first is to plan and execute the obstacle at the highest level of command; the second is to identify the obstacle intent and allocate the resources to a subordinate unit to execute; the third is to allocate the resources for a subordinate unit to plan and execute.

**c. Obstacle Control Measures.** Obstacle-control measures are used to ensure subordinates emplace obstacles that support the commander's scheme of maneuver and do not interfere with future operations. Obstacle control measures fall into 3 categories:

**(1) Obstacle Groups.** Obstacle groups are one or more individual obstacles grouped to provide a specific obstacle effect. For example, three obstacles are planned to turn the enemy into the battalion's engagement area. While each obstacle could have a different effect (fix, turn, disrupt, or block) the overall effect would turn the enemy into an engagement area.

**(2) Obstacle Belts.** Obstacle belts are a collection of obstacle groups that provide a specific effect. In the same way that obstacle groups use individual obstacles to achieve a desired effect, a series of groups are used to disrupt, turn, fix, or block the enemy on a larger scale. Belts also serve as a control measure to support the units scheme of maneuver. Planning and coordination with higher and adjacent units is required and ensure that obstacles don't conflict with the higher or adjacent units obstacle plan.

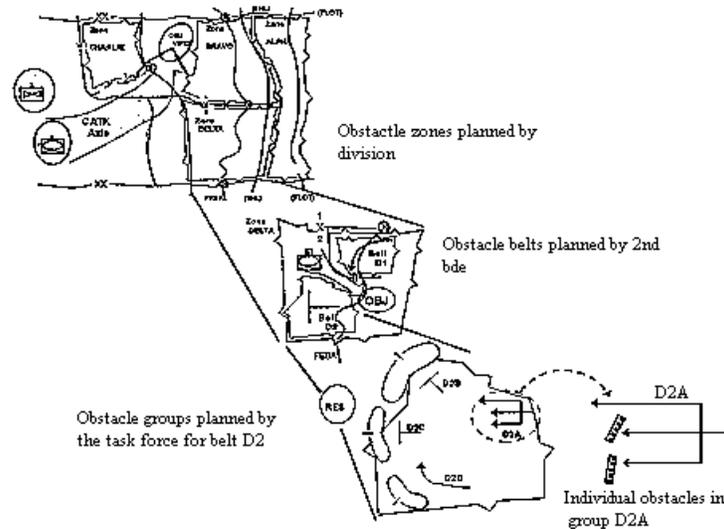


Figure 4-32. Obstacle Belts.

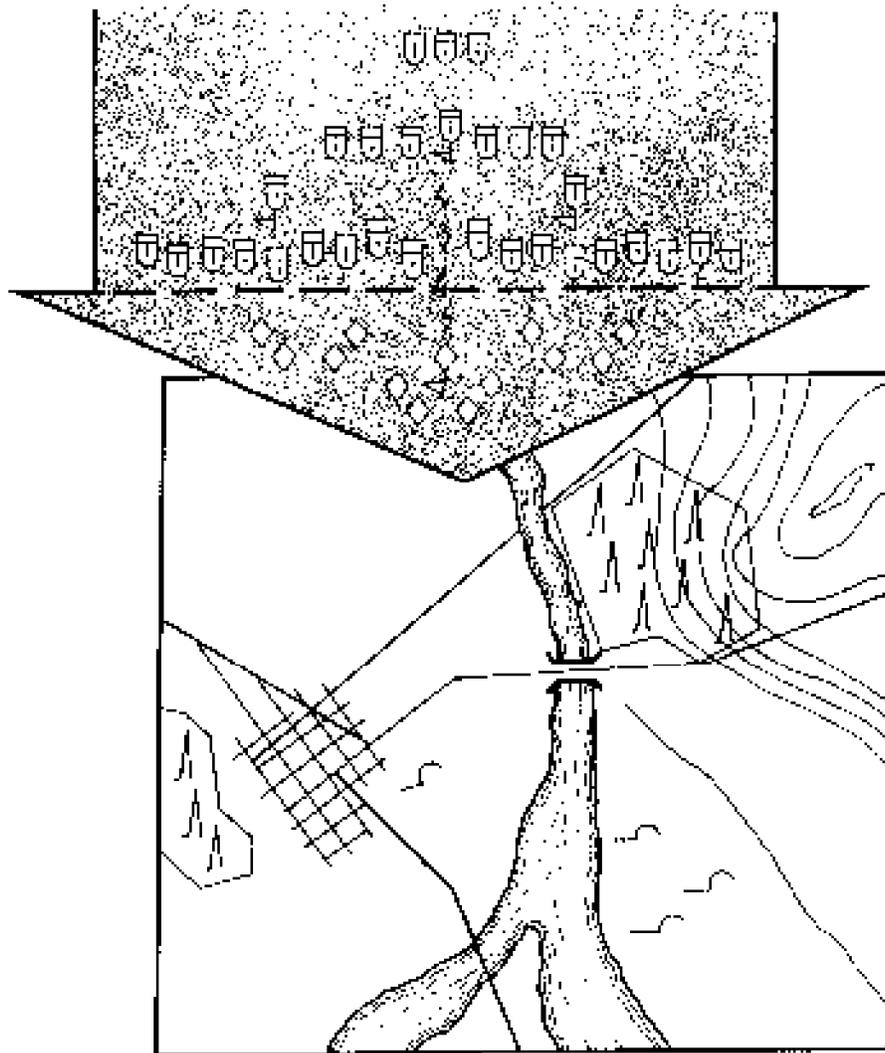
**(3) Obstacle Zones.** Obstacle zones are used in the plans of division or MEF and are composed of a group of obstacle belts. Obstacle zones are based on subordinate unit areas of operation and are planned so they do not impede future operations.

#### 4504. Existing Obstacles

All ground movement, friendly or enemy, is governed by the existing obstacles whether they are natural or cultural (man-made). The commander can greatly control the enemy's movement by using the existing obstacle inherent in the terrain and by strengthening and extending these through the creation of reinforcing obstacles. This section will address some specific types of existing obstacles.

**a. Drainage Features.** Drainage or surface water features include rivers, streams, canals, lakes, ponds, marshes, swamps, and bogs. Such features are obstacles whenever the water becomes deep or turbulent or the wetness makes soil conditions degrade crosscountry movement. A river over 150 meters wide and over 1 or 2 meters deep is a major obstacle; however, the presence of bridges and fords may limit its obstacle value. River bottom soil trafficability, water current speed, and slope of the and soil composition of embankments are key determinants of vehicular ability to traverse water obstacles. Most tanks, APCs, and IFVs can ford water 3 to 5 feet deep. Trucks can normally ford about 3 feet of water.

**b. Soil.** Soil trafficability, especially when considered in conjunction with climatic conditions, is a very important factor in evaluating cross-country movement. Normally, soil trafficability affects wheeled support vehicles more than armored vehicles. A tank has a very low ground pressure, normally 8 to 12 pounds per square inch, which allows it to move on soft soil easier than trucks (See fig. 4-33).



**Figure 4-33. Armored Unit Approaches Obstacle.**

**c. Slope.** Slope is the inclined surface of a hill, mountain, ridge, or any other part of the earth's land surface. Short vertical slopes, or *steps* higher than 1 foot will slow wheeled vehicles, 4 foot *steps* will stop most armored vehicles. In evaluating terrain for cross-country movement, slopes of 45 percent (about 24 degrees) is commonly used as the reasonable upper limit for tanks and 30 percent (about 17 degrees) for trucks.

**d. Vegetation.** Forest vegetation is the primary concern in cross-country vehicular movement. Forests with trees 20 to 25 centimeters (8 to 10 inches) in diameter are tank obstacles, and 5 centimeters (2 inches) stands will stop most wheeled vehicles.

**e. Cultural Features.** Cultural features are the works of man such as stone walls, hedgerows, dikes, canals, embankments, cuts, fills, and built-up areas. The obstacle value of a cultural feature depends on its size or extent,

location, and construction. The natural obstacle value of built-up areas can be readily reinforced, and those which are properly located to control approaches or key terrain can be developed into formidable strongpoints.

Though the previous terrain considerations have focused on the tank as a measure of an individual obstacles value, the primary concern by MAGTF commanders and their subordinates is the effect of terrain on a combined arms formation, not individual tanks.

## 4505. Reinforcing Obstacles

There are a multiple number of reinforcing obstacles that the commander can use to knit together, strengthen, and extend the existing obstacles. These options allow the commander to change the military characteristics of the terrain to fit his tactical plans and to disrupt those of his enemy. Reinforcing obstacles can be broadly categorized as the following:

- Demolition obstacles.
- Constructed obstacles.
- Land mines.
- Contamination.
- Expedient obstacles.

These categories are not mutually exclusive--some obstacles appear in more than one category and some (such as mines) are commonly used to strengthen others

**a. Demolition Obstacles.** These are obstacles created by the detonation of explosives. Demolition obstacles include:

- Removal or destruction of a useful structure or cultural features such as demolishing a bridge or tunnel, or the cratering of a road, highway, railroad, or airfield runway or taxiway.
- Effects of demolishing existing structures, cultural features, or trees. Some examples would be the debris or rubble from demolition of structures of all types, the flooding from destruction of a dam, or an abates.
- Earth or rock that has been moved by the use of explosives. Examples would be the creation of large craters and ditches.

For more detailed information about demolitions, see MCRP 3-17A, ENGINEER FIELD DATA.

**b. Constructed Obstacles.** Constructed obstacles include a wide variety of obstacles ranging from hastily cut tank ditches to extensive concrete and steel obstacles such as *dragons teeth*. In this category are obstacles constructed of barbed wire or barbed tape, including standard double apron and four strand fences, concertina fences, low wire and tangle foot, and randomly placed wire entanglements. It also includes timber obstacles such as log cribs and hurdles, log posts, and non explosively constructed abates. The tank ditch is a very effective obstacle used with anti armor weapons. It is not exceptionally labor intensive, since the 621 B Scraper Tractor and the D-7G Dozer are utilized (See fig. 4-34).

**c. Land Mines.** Mines can be employed miles ahead of the FLOT to disrupt, fix, turn or block the momentum of the enemy without endangering friendly forces. Unlike other obstacles that can only assist weapon systems in

inflicting casualties, mines are themselves effective killers or destroyers of enemy armored vehicles. Psychologically, mines can unnerve a force by creating uncertainty, low morale, and even unwillingness to fight. The general categories of land mines are **Conventional Mines** and **Family of Scatterable Mines (FASCAM)**.

**Conventional Mines.** Conventional landmines consist of a small amount of high explosives contained in a metallic or nonmetallic casing fitted with a fuse and/or a firing device for actuation by enemy vehicles or personnel. The general types of conventional mines are:

- (1) Antipersonnel mines
- (2) Antitank mines
- (3) Chemical mines
- (4) Anti-helicopter Mines

**Family of Scatterable Mines( FASCAM)** are air, artillery, mechanical or hand emplaced. They can be either antipersonnel or antitank mines. FASCAM provides the commander with a vastly expanded capability to used mines. Scatterable mines have the advantages of increased speed of emplacement, reduced logistical burden per mine, and increased effectiveness (See fig. 4-35).

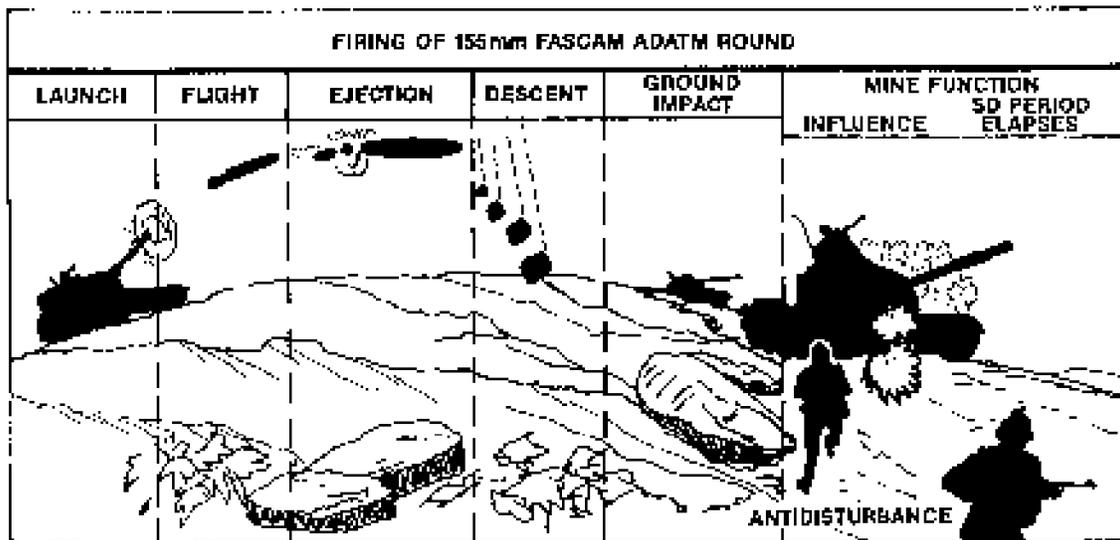


Figure 4-35. FASCAM.

In addition to minefields of widely varying dimensions and densities, mines are used in smaller numbers to--

- Temporarily protect unit positions.
- Strengthen existing obstacles.
- Make other reinforcing obstacles more difficult to breach.
- Mine fords and approaches to streams.
- Block roads or other narrow gaps.

- Close gaps and lanes in large minefields or other linear obstacles.

**d. Contamination.** Contamination can be nuclear or chemical in nature. Clearly, it is more effective against dismounted infantry than mechanized forces. Nuclear and chemical contamination are both difficult to predict and control because they are largely dependent on winds for placement and subject to weather and other environmental factors. Their usefulness is limited. Should unexploded ordnance or mines be suspected of containing contaminating materials, commanders should notify Explosive Ordnance Disposal. For more information see MCWP 3-17.2 MAGTF EOD.

**e. Expedient Obstacles.** Expedient obstacles offer an almost unlimited potential for use. All types of nonstandard log obstacles can be built, the complexity depending on the time and manpower available. Bulldozers can be used to push over selected trees to make an abatis or push boulders into a road to block tanks. The wreckage of destroyed towns, cities, or industrial areas offers a rich storehouse of materials to be used in making expedient obstacles.

## 4506. Obstacle Employment Principles

The following principles govern the employment of obstacles to maximize their effect as combat multipliers:

**a. Reinforcing Obstacles Are Integrated With Observed Fires.** The principal purpose of integrating obstacle locations with fires is to enhance the effectiveness of those fires. The obstacle serves to develop the target in a predetermined position, thus increasing the hit probability of the fires (See fig. 4-36).

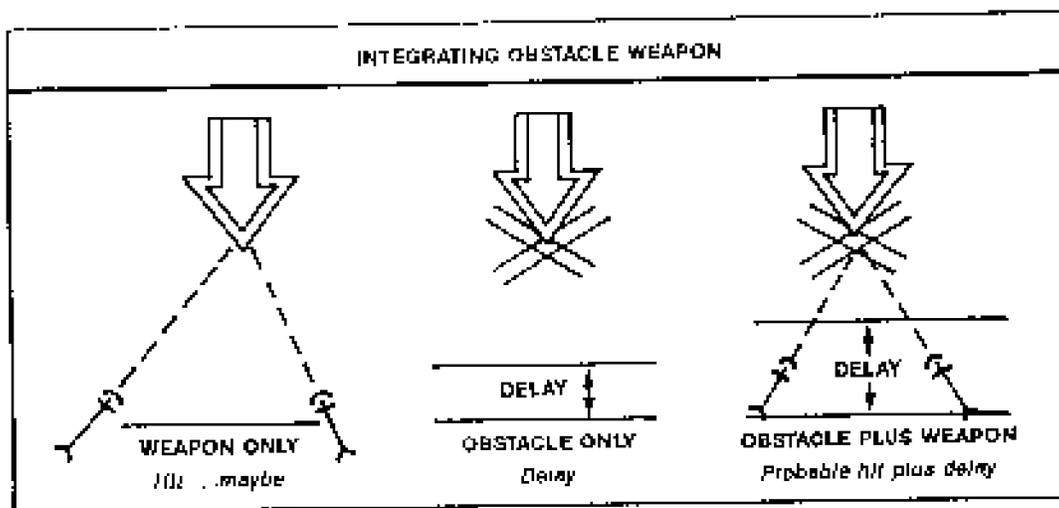


Figure 4-36. Obstacle/Weapon Integration.

**b. Reinforcing Obstacles Are Integrated With the Scheme of Maneuver.** Mutually supporting obstacles and groups of obstacles are sited so as to stop or delay the enemy and to attempt to divert or lead him into previously selected kill zones. Secondly, obstacles must allow for the friendly scheme of maneuver through the use of gaps (space between barriers/obstacles) and lanes (routes through obstacles) (See fig. 4-37).

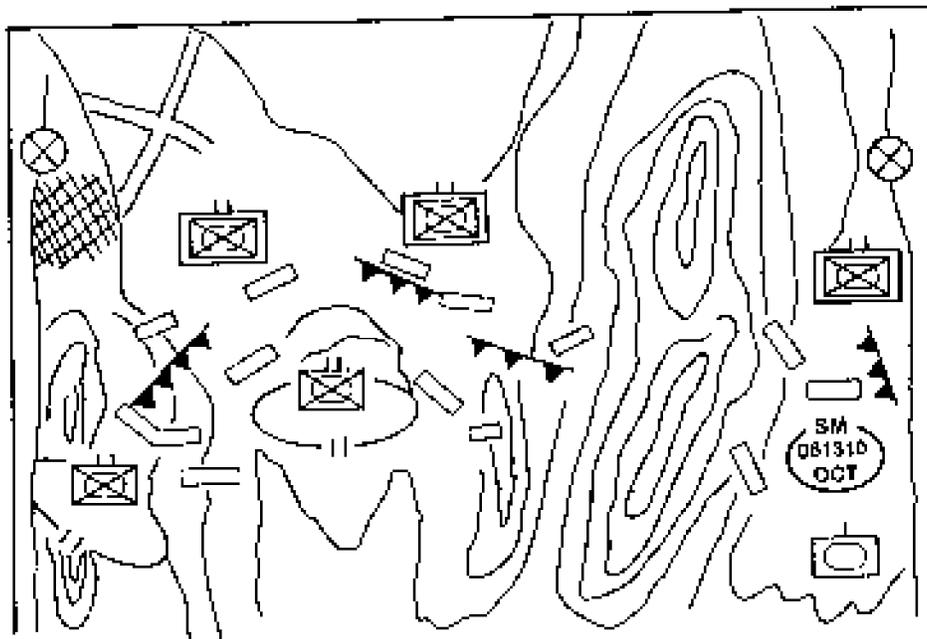


Figure 4-37. Supporting the Maneuver Commander's Plan.

**c. Reinforcing Obstacles Are Integrated With Existing Obstacles and Other Reinforcing Obstacles.** Reinforcing obstacles are sited to take the maximum advantage of natural and cultural obstacles. Reinforcing obstacles are integrated with each other to assure that probable bypass routes are closed. For example, destruction of a major highway through a wooded area is largely ineffective if any nearby road or opening that offers a ready bypass route is left open.

**d. Reinforcing Obstacles Are Employed in Depth.** A series of simple obstacles arranged one behind the other along a probable axis of advance is far more effective than one large, elaborate obstacle. Obstacles must be far enough apart that each will require a new deployment of the enemy's counter obstacle forces and equipment.

**e. Reinforcing Obstacles Are Employed for Surprise.** A defender can retain a degree of initiative even when defending by using obstacles so as to obtain surprise. Scatterable mines permit rapid mining anywhere in the battle area, confronting the attacker with a completely new situation almost instantly. Also, sudden detonation of concealed obstacles in front of the attacking enemy or within his formations produces surprise.

## Section VI. Intelligence

The key to the MAGTF defeating an enemy armored force is effective command and control and the correct and timely application of its mobility and firepower against the enemy. This requires timely, accurate and pertinent intelligence. Intelligence is knowledge of the enemy and the surrounding environment that is needed to support decisionmaking. It results from the collection, processing, integration, analysis, evaluation, and interpretation of available information concerning the threat and environment. Commanders are responsible for their intelligence operations. A key tool they use to focus this is the identification of their priority intelligence requirements (PIR). PIRs are intelligence requirements (IR) associated with a decision that will critically affect the overall success of the command's mission.

Intelligence operations have four objectives:

- (1) Reduce uncertainty by providing accurate, timely, and relevant knowledge about the threat and the surrounding environment.
- (2) Estimate possible enemy courses of action (COAs) and provide insight into possible future actions on the basis of those existing conditions and capabilities..
- (3) Aid in identifying friendly vulnerabilities that the threat may exploit.
- (4) Assist in the development and evaluation of friendly COAs.

Just as important as gaining intelligence about the enemy is the requirement of protecting friendly forces through counterintelligence (CI). CI constitutes active and passive measures intended to deny a threat force valuable information about the friendly situation, to detect and neutralize hostile intelligence collection, and to deceive the enemy as to friendly capabilities and intentions. It denies threat forces information that might increase the effectiveness of hostile operations against friendly forces. In so doing, CI increases uncertainty for the enemy, thereby making a significant contribution to the success of our operations.

(See MCWP 2-1, *Intelligence Operations*, for a comprehensive discussion of the planning and execution of MAGTF intelligence and reconnaissance operations.)

### 4601. MAGTF Intelligence and Reconnaissance Units

The following are the principal Marine Corps intelligence, reconnaissance and target acquisition units within or supporting a MAGTF. Intelligence and reconnaissance units are normally under the staff cognizance of the unit intelligence officer; target acquisition units are normally under the staff cognizance of the unit operations officer or FSC.

- Marine Corps Intelligence Activity (MCIA).
- Marine Corps Imagery Support Unit (MCISU), I MEF (Note: provides Corps-wide support).
- Intelligence Battalion
  - Headquarters Company
    - ◆ Ground sensors platoon (GSP)
    - ◆ Systems support platoon

## Section VI. Intelligence

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- (3) Aid in identifying friendly vulnerabilities that the threat may exploit.
- (4) Assist in the development and evaluation of friendly COAs.

Just as important as gaining intelligence about the enemy is the requirement of protecting friendly forces through counterintelligence (CI). CI constitutes active and passive measures intended to deny a threat force valuable information about the friendly situation, to detect and neutralize hostile intelligence collection, and to deceive the enemy as to friendly capabilities and intentions. It denies threat forces information that might increase the effectiveness of hostile operations against friendly forces. In so doing, CI increases uncertainty for the enemy, thereby making a significant contribution to the success of our operations.

(See MCWP 2-1, *Intelligence Operations*, for a comprehensive discussion of the planning and execution of MAGTF intelligence and reconnaissance operations.)

### 4601. MAGTF Intelligence and Reconnaissance Units

The following are the principal Marine Corps intelligence, reconnaissance and target acquisition units within or supporting a MAGTF. Intelligence and reconnaissance units are normally under the staff cognizance of the unit intelligence officer; target acquisition units are normally under the staff cognizance of the unit operations officer or FSC.

- Marine Corps Intelligence Activity (MCIA).
- Marine Corps Imagery Support Unit (MCISU), I MEF (Note: provides Corps-wide support).
- Intelligence Battalion
  - Headquarters Company
    - ◆ Ground sensors platoon (GSP)
    - ◆ Systems support platoon

- Production & Analysis Company (P&A Co)
    - ◆ All-source fusion platoon (forms the core of the production and analysis cell during operations).
    - ◆ Imagery intelligence platoon (IIP)
    - ◆ Topographic platoon (topo plt)
    - ◆ Direct support teams (DST)
  - Counterintelligence/Human Intelligence Company (CI/HUMINT Co)
    - ◆ Counterintelligence platoon
    - ◆ Interrogator-translator platoon
    - ◆ HUMINT support teams (HST)
- Radio battalion.
  - Force reconnaissance company.
  - Unmanned aerial vehicle (UAV) squadron, Marine Aircraft Wing
    - VMAQ squadron, MAW.
  - Reconnaissance Battalion, Marine Division.
  - Scout-Sniper Platoon, Infantry Battalions.
  - Target Acquisition Battery, Artillery Regiment.
  - Light Armored Reconnaissance Battalion, Marine Division.
  - Engineer reconnaissance elements, Combat Engineer Battalion, Marine Division.

## 4602. Fundamentals of Intelligence

a. Intelligence Operations. The primary focus of Marine Corps intelligence operations is the generation of *tactical intelligence*, that is, intelligence that supports the planning and conduct of tactical actions.<sup>1</sup> Intelligence reduces uncertainty and supports the decisionmaking process by:

- (1) Describing the battlespace
- (2) Identifying key factors in the battlespace that can influence operations
- (3) Defining and evaluating threat capabilities
- (4) Assessing enemy intentions
- (5) Helping assess friendly force vulnerabilities and operational patterns that the enemy may exploit.

b. Intelligence Functions. In providing support to the commander, Marine intelligence organizations carry out six specific intelligence functions:

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<sup>1</sup>Although the focus is on tactical intelligence, MAGTFs will draw on both strategic and operational intelligence resources and, in certain circumstances, be prepared to conduct intelligence operations at the operational and even strategic level.

- Production & Analysis Company (P&A Co)
    - ◆ All-source fusion platoon (forms the core of the production and analysis cell during operations).
    - ◆ Imagery intelligence platoon (IIP)
    - ◆ Topographic platoon (topo plt)
    - ◆ Direct support teams (DST)
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<sup>1</sup>Although the focus is on tactical intelligence, MAGTFs will draw on both strategic and operational intelligence resources and, in certain circumstances, be prepared to conduct intelligence operations at the operational and even strategic level.

(1) **Support the commander's estimate.** Intelligence supports the formulation and subsequent modification of the commander's estimate of the situation by providing as accurate an image of the battlespace (weather, terrain, political, cultural, sociological, etc.) and the threat as possible. In this manner, intelligence supports commanders and planners long before a mission is received, and then supports initial planning, decisionmaking, and execution. One of the principal tools used in this function is intelligence preparation of the battlespace (IPB). IPB is a systematic, continuous process of analyzing the threat and environment in a specific geographic area (typically out to the supported commander's area of interest). IPB helps to provide an appreciation for the characteristics of the area of operations and the enemy capabilities, weaknesses, and COAs. This knowledge affords the commander an understanding of the battlespace, friendly vs. threat capabilities assessments, and the opportunity to exploit enemy vulnerabilities.

(2) **Develop the situation.** Situation development provides continuing knowledge of unfolding events to help update the image and understanding of the current and near-term future situation. It is a dynamic process that is used to assess the current situation and confirm or deny the adoption of specific COAs by the enemy while uncovering new vulnerabilities that may be exploited. It helps refine our understanding of the battlespace and reduces uncertainty and risk. Situation development occurs during execution and provides the basis for adapting plans or exploiting opportunities.

(3) **Provide indications and warning (I&W).** I&W serve a protective purpose, providing early warning of potential hostile action. They help prevent surprise and reduce risk from enemy actions that run counter to planning assumptions.

(4) **Support to force protection.** Force protection is the set of comprehensive security measures, activities, and operations that are undertaken to guard the force against the effects of enemy action. Intelligence supports force protection by identifying, locating, and countering an enemy's intelligence collection, sabotage, subversion, and terrorism capabilities. Support to force protection requires detailed and accurate assessments of threat force capabilities and intentions and facilitates efforts to deny the enemy the opportunity to take offensive action against our forces.

(5) **Support to targeting.** Intelligence supports targeting by identifying target systems, critical nodes, and high-value targets (HVT) and high-payoff targets (HPT) as well as by providing the intelligence required to most effectively engage these targets.

(6) **Support to combat assessment.** Combat assessment is the process used to determine the overall effectiveness of military operations and identify requirements for future actions. Intelligence supports the entire combat assessment process and is directly responsible for battle damage assessment (BDA), which is one of the principal components of combat assessment (the other two being *munitions effects assessment*, or MEA, and *reattack recommendations*, or RR, both G/S-3 responsibilities). BDA is the timely and accurate estimate of the damage resulting from the application of military force on threat and other targets. BDA estimates physical damage to a particular target, functional damage to that target, and the capability of the entire target system to continue its operations.

### c. Intelligence Responsibilities

(1) **Commander.** *Intelligence is an inherent and essential responsibility of command.* Commanders must come to think of command and intelligence as inseparable, just as they commonly think of command and operations as inseparable. They must study and understand both the theory and the practice of intelligence doctrine. They must be personally involved in the conduct of intelligence activities, providing guidance, supervision, judgment, and authority to ensure a timely and useful product. The commander's involvement in the intelligence process encompasses the following specific responsibilities:

(a) Focus and prioritize the intelligence effort, to include other functional support to intelligence operations (e.g., communications support).

(1) **Support the commander's estimate.** Intelligence supports the formulation and subsequent modification of the commander's estimate of the situation by providing as accurate an image of the battlespace (weather, terrain, political, cultural, sociological, etc.) and the threat as possible. In this manner, intelligence supports commanders and planners long before a mission is received, and then supports initial planning, decisionmaking, and execution. One of the principal tools used in this function is intelligence preparation of the battlespace (IPB). IPB is a systematic, continuous process of analyzing the threat and environment in a specific geographic area (typically out to the supported commander's area of interest). IPB helps to provide an appreciation for the characteristics of the area of operations and the enemy capabilities, weaknesses, and COAs. This knowledge affords the commander an understanding of the battlespace, friendly vs. threat capabilities assessments, and the opportunity to exploit enemy vulnerabilities.

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(a) Focus and prioritize the intelligence effort, to include other functional support to intelligence operations (e.g., communications support).

- (b) Participate in the intelligence process
- (c) Use intelligence in decisionmaking
- (d) Support the intelligence effort
- (e) Evaluate the results of intelligence activities

(2) **Unit Intelligence Officer.** The commander directs the intelligence effort. The intelligence officer manages this effort for the commander, acting as the principal advisor on intelligence and implementing activities that carry out the commander's intelligence responsibilities. *The intelligence officer is a full participant in the commander's decisionmaking process, ensuring that intelligence is effectively used throughout the command during all phases of mission planning and execution.* Key responsibilities of the intelligence officer are to:

- (a) Facilitate understanding and use of intelligence in the planning and execution of operations.
- (b) Support situation development and the commander's estimate of the situation through the identification of enemy capabilities, strengths, and vulnerabilities as well as opportunities and limitations presented by the environment.
- (c) Assist the commander in developing his PIRs; and other staff principals with identifying and prioritizing their intelligence requirements (IR).
- (d) Ensure that the command's IRs are received, understood, and acted on by organic and supporting intelligence assets.
- (e) Develop and supervise integrated collection, production and dissemination plans and supporting integrated intelligence, counterintelligence and reconnaissance operations.
- (f) Supervise the development and dissemination of all-source intelligence products that are tailored to the unit's mission, concept of operations, and IRs.
- (g) Monitor the effective flow of intelligence throughout the command.
- (f) Provide BDA data and analysis to assist the combat assessment process.

#### d. **Characteristics of Effective Intelligence**

(1) Intelligence should be ***objective***—as free as humanly possible of bias or distortion. Intelligence can be distorted if we attempt to make it conform to preconceived notions, fail to view the situation from the enemy's perspective, or manipulate the intelligence product to support a particular decision or conclusion.

(2) Intelligence should be ***thorough***, meaning that it satisfies the intelligence requirements of the commander. Thoroughness does not imply completeness and certainty to the last detail, but rather sufficient depth to assist the commander in reaching sound decisions and developing effective plans. Intelligence personnel should not only identify for the commander what is known but also what is not known. The commander may then assess the risks and decide what actions are worth these risks.

(3) Intelligence should be ***accurate***, meaning that it should be factually correct. Sound estimates of the enemy's capabilities and intentions must agree with the facts at hand.

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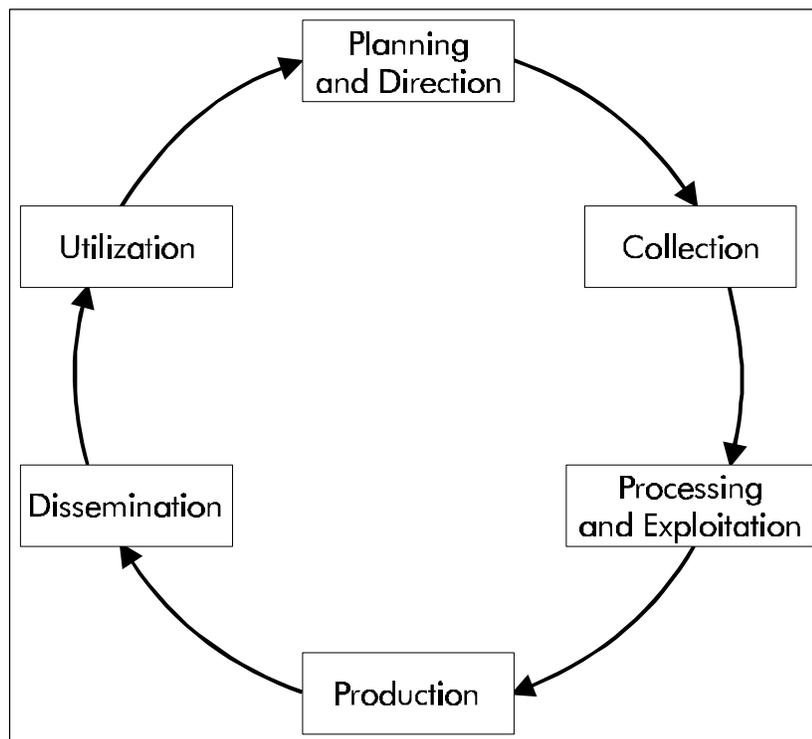
(4) As intelligence does not exist for its own sake, but as the basis for taking effective action, it must be *timely*, meaning that it must arrive in the hands of appropriate decisionmakers in time to affect tactical decisions.

(5) Intelligence should be *usable*. It should be concise and clear and often is best conveyed via coherent images—meaningful mental pictures that are immediately and easily understood—rather than present the commander with a mass of unfocused data.

(6) Intelligence should be *relevant* in that it supports the commander's planning and decisionmaking requirements. Relevance means that intelligence is pertinent to the level of command for which it is intended. It also means that commanders are provided intelligence bearing significantly on the situation at hand and that they are not burdened with information and intelligence of minimal or no importance.

(7) Finally, intelligence must be *available*—which means that it is readily accessible to appropriate commanders. Availability is a function of both timeliness and usability, but it is also a function of an effective information management system that allows commanders at various levels to readily access the intelligence they need. Availability also means that relevant basic intelligence has been developed in advance and that intelligence assets are maintained in readiness to develop other intelligence products as needed. Finally, availability is a function of effective use of security classifications that protect sources of information while at the same time ensuring that commanders have reasonable access to intelligence.

f. **Intelligence Cycle.** The intelligence cycle consists of six steps: *planning and direction, collection, processing and exploitation, production, dissemination, and utilization*. (See figure 4-38.) These steps define a sequential and interdependent process for the conduct of intelligence, counterintelligence and reconnaissance operations, and the development of intelligence. Intelligence operations are conducted within the framework of the intelligence cycle; the entire cycle or a specific step within the cycle may be the focus of a particular intelligence activity. Moreover, *all* intelligence, regardless of the scope of the requirement or level of command, is developed by following these steps. No one phase of the cycle is more important than the others—all of the phases are interdependent.



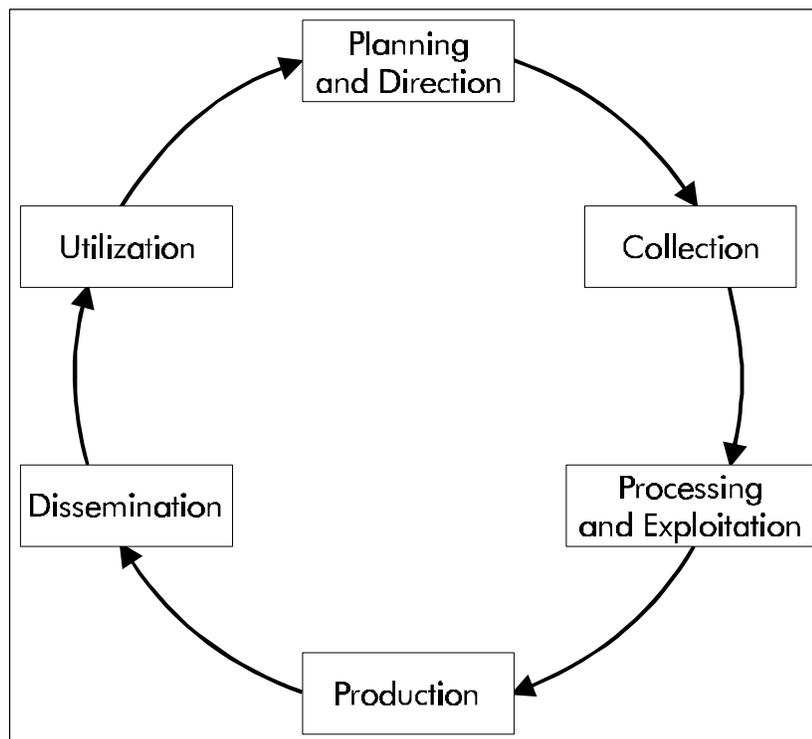
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**Figure 4-38, The Intelligence Cycle**

(1) **Planning and Direction.** The planning and direction phase consists of those activities that identify the commander's PIRs and other pertinent IRs, and provide the means for satisfying those requirements. It includes *requirements development*, the identification and IRs and designation of PIRs; *requirements management*, which assesses the importance of each PIR and IR to mission success, what gaps exist, and what specific information and assets are needed to satisfy it; and the development of integrated *collection, production and dissemination plans* and *supervision of supporting intelligence operations* to accomplish these and acquire, develop and rapidly share the intelligence needed by commanders.

(2) **Collection.** Collection is the gathering of intelligence data and information to satisfy the identified requirements. Functions carried out during the execution of collection operations include mission planning, position of intelligence and reconnaissance assets in locations that are favorable to satisfying collection objectives, data collection, reporting, and overall supervision of collection operations.<sup>2</sup>

(3) **Processing and Exploitation.** Processing and exploitation involves the conversion of collected data into information that is suitable for the production of intelligence. Processing is largely a technical function that does not add meaning to the data but that instead is necessary to convert the data into a form that commanders, planners, or intelligence personnel can understand and use. Some types of data require minimal processing and may even take place automatically during collection, while others require extensive processing, which can affect the timeliness and accuracy of the resulting information.

(4) **Production.** Production is the activity that converts information into intelligence. It involves the evaluation, interpretation, integration, analysis, and synthesis of all information that is relevant to a particular IR to answer the question that has been asked. Production fuses new information and existing intelligence from all sources to provide meaningful knowledge that can be applied to the decisionmaking process. During the production phase, information is evaluated to determine pertinence, reliability, and accuracy; analyzed to isolate significant elements; integrated with other relevant information and previously developed intelligence; interpreted to form logical conclusions that bear on the situation and support the commander's decisionmaking process; applied to estimate possible threat courses of actions, outcomes and effects on friendly operations; and then placed into the product format that will be most useful to its eventual users.<sup>3</sup>

*Intelligence preparation of the battlespace (IPB)* is the primary analytical methodology used to produce intelligence. In addition, it furnishes a framework for the integration of intelligence and operations throughout the PDE&A cycle. IPB is a systematic, continuous, mission-focused process of defining the battlespace environment, describing the battlespace effects, analyzing and evaluating the threat, and determining the enemy's courses of actions.<sup>4</sup>

(5) **Dissemination.** Dissemination is the timely conveyance of intelligence to users in an appropriate form. Determination of the form of intelligence productions, selection of the means to deliver intelligence, and design and operation of the supporting communications and information systems are key aspects of the dissemination process.<sup>5</sup>

(6) **Utilization.** Intelligence has no inherent value; its value is realized through its support to operations. Thus, the intelligence cycle is not complete until the intelligence that has been developed is used in

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<sup>2</sup> See MCWP 2-11, *MAGTF Intelligence Collection* (draft), for additional information on intelligence collection.

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<sup>4</sup> See MCWP 2-12 MCRP 2-12A/FM 34-130, *Intelligence Preparation of the Battlespace* (draft), for additional information on IPB and intelligence production.

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decisionmaking during planning and/or execution. It also provides the basis for the continuous functioning of the intelligence cycle by determining whether IRs have been completely satisfied and which will require additional intelligence development efforts.

f. **Centralized Management and Support to the GCE.** Depending upon the mission, situation, designated main and supporting efforts, and MAGTF task organization, a wide range of intelligence, counterintelligence, and reconnaissance support is available to support GCE intelligence requirements (IR) and operations, either via attachment or direct support (see table 4-1)

Radio Battalion  
 Force Reconnaissance Company  
 UAV Squadron, MAW  
 Ground Sensor Platoon, Intelligence Bn  
 Imagery Intelligence Platoon, Intelligence Bn  
 Topographic Platoon, Intelligence Bn  
 Direct Support Teams, Intelligence Bn  
 CI/HUMINT Company, Intelligence Bn  
 Light Armored Reconnaissance Battalion  
 Scout-Sniper Platoons, Infantry Battalion  
 Counterbattery Radar Platoon, Artillery Regiment  
 Engineer reconnaissance, Combat Engineer Battalion

Table 4-1, MAGTF Intelligence & Reconnaissance Units

Some are organic (e.g., GCE reconnaissance units), some may be either attached or placed in direct support (e.g., DSTs, interrogator-translators, unmanned aerial vehicles missions or remote receive station detachments, radio battalion SIGINT support teams, HSTs, topo plt GEOINT support teams, etc.), and some will be via MAGTF or other general support intelligence operations (e.g., tactical signals intelligence operations). In total, this reinforces or supports the GCE's capabilities to plan and direct, collect, product, disseminate or otherwise draw on a variety of intelligence targeted on its areas of influence and interest and tailored to its unique requirements -- both for current operations and to support .

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## Section VII. Electronic Warfare

Deploying electronic warfare assets far forward with LAR and other forward units provides the MAGTF commander with an increased capability to target and attack enemy electronic systems. The mobile electronics warfare support system (MEWSS), which is organic to the radio battalion, is an electronic warfare system which is mounted in an LAV. This system can be employed with LAR and other highly mobile units without impeding the mobility of the unit.

### 4701. Definitions

**Electronic Warfare--** is any military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. Also called EW. There are three major subdivisions within electronic warfare: electronic attack, electronic protection, and electronic warfare support.

- a. electronic attack (EA)--**That division of electronic warfare involving the use of electromagnetic, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability. EA includes actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum, such as jamming and electromagnetic deception.

Electronic attack includes:

- (1) **electronic jamming--** The deliberate radiation, reradiation, or reflection of electromagnetic energy for the purpose of preventing or reducing the enemy's effective use of the electromagnetic spectrum, and with the intent of degrading or neutralizing the enemy's combat capability.
- (2) **electromagnetic deception--** The deliberate radiation, reradiation, alteration, suppression, absorption, denial, enhancement, or reflection of electromagnetic energy in a manner intended to convey misleading information to an enemy or to electromagnetic-dependent weapons, thereby degrading or neutralizing the enemy's combat capability.

Among the types of electronic deception are:

- (a) **manipulative electronic deception--** Actions taken to eliminate revealing, or convey misleading, electromagnetic telltale indicators that may be used by hostile forces.
- (b) **simulative electronic deception--** Actions taken to simulate friendly, notional or actual capabilities to mislead hostile forces.
- (c) **imitative electronic deception--** The introduction of electromagnetic energy into enemy systems that imitates enemy missions.

- b. Electronic Protection (EP)--** That division of electronic warfare involving passive and active means taken to protect personnel, facilities, and equipment from any effects of friendly or enemy employment of electronic warfare that degrade, neutralize, or destroy friendly combat capability.

- c. electronic warfare support (ES)--** That division of electronic warfare involving actions tasked by, or under direct control of an operational commander to search for, intercept, identify, and locate sources of intentional or unintentional radiated electromagnetic energy for the purpose of immediate threat recognition. Thus, electronic warfare support (ES) provides information required for immediate decisions involving electronic warfare operations and other tactical actions such as threat avoidance, targeting, and homing. ES data can be

used to produce signals intelligence (SIGINT), both communications intelligence (COMINT) and electronics intelligence (ELINT).

- a. **Signals Intelligence (SIGINT)** is a category of intelligence comprising either individually or in combination all communications intelligence, electronics intelligence, and foreign instrumentation signals intelligence, however transmitted.
- b. **Communications Intelligence (COMINT)** is the technical and intelligence information derived from foreign communications by other than the intended recipients.
- c. **Electronic Intelligence (ELINT)** is the technical and geolocation intelligence derived from foreign noncommunications electromagnetic radiation emanating from other than nuclear detonations or radioactive sources.

## 4702. Planning and Employment Considerations

EW is a complex aspect of military operations that occurs in an increasingly crowded electromagnetic spectrum. EW must be fully integrated with MAGTF and joint operations in order to achieve its full potential, such integration requires careful planning. In order to be fully integrated into an operation, EW planning must begin in the earliest stages of operation planning. EW planners must coordinate their planned activities with other users of the electromagnetic spectrum as well as third party participants that EW does not wish to disrupt. EW is centrally planned and decentrally executed.

EA and ES activities are performed by EW units as a result of specific tasking from the MAGTF commander. These taskings, if given, appear in the operations order given to a unit by higher headquarters. If a unit discovers that the enemy is using a radio frequency, this information is reported to higher headquarters through intelligence channels.

EP activities are practiced by all MAGTF units. These measures include such actions as daily changes in frequencies and unit call signs, use of encrypting devices, authentication procedures, and use of frequency hopping radios. EP measures are normally prescribed in the MAGTF, GCE, ACE, CSSE communications plan.

Employment of MEWSS with an LAR unit does not automatically imply that the LAR unit commander has total freedom to employ the MEWSS. The MEWSS's activities will normally be controlled by the radio battalion, who will employ the system in accordance with the MAGTF commander's guidance. The specific tasks which the LAR unit commander can use the MEWSS to accomplish will be prescribed in the operations order given to the LAR unit by higher headquarters.

Employment of the MEWSS in SEAD operations must be closely coordinated with ACE attack aircraft and EW platforms, as well as with LAR and other fire support coordination agencies. This close coordination will reduce the potential for one unit's activities interfering with the activities of another and thus produce the maximum degradation of enemy air defense systems.

## Chapter 5

# Antiarmor Exercise

The following exercise is intended to demonstrate antiarmor capabilities of the MAGTF. The area of operations roughly approximates the Twentynine Palms, California desert terrain.

### 5001. General Situation

I MEF was directed to defend in zone the Kumri oil fields against possible enemy armor attacks. The GCE is composed of the following major units:

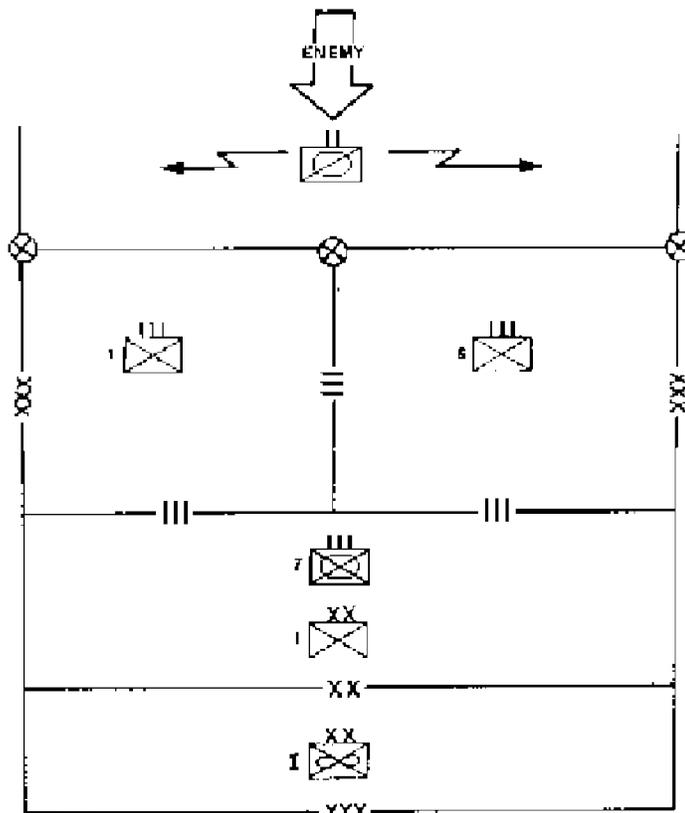
#### 1ST MarDiv

- 1st Marines
- 5th Marines
- 7th Marines (rein)
  - 3rd Tk Bn (+)
  - 3rd AA Bn
- 11th Marines
- 1st Cbt Engr Bn
- 1st LAR Bn
- 1st Recon Bn

The enemy consists of a motorized rifle division (MRD) with three motorized rifle regiments (MRRs; 30 tanks per MRR), one independent tank battalion (40 tanks), and two artillery battalions (total 36 gun tubes).

### 5002. Special Situation #1

The GCE commander has two regiments forward defending in zone in relatively static positions and the LAR Bn in the security area. The 7th Marines--a mechanized regiment--possesses the entire tank force (41 tanks) and three AAV companies. The 7th Marines is the designated reserve (See fig. 5-1).



**Figure 5-1. General Situation.**

Without knowing the GCE Mission statement, would you consider the GCE to be in a mobile or position defense? (See chapter 4, par. 4105.)

The GCE commander will probably initially assign priority of fires to which major unit? (See chapter 4, par. 4403.)

The LAR Bn is approximately 30 kilometers forward of all friendly troops (including recon elements). The graphic control measure that would indicate the LAR Bn's location on a GCE or MEF overlay is called: FEBA, FLOT, or CFL? (See chapter 4, par. 4102.)

The LAR Bn may be assigned one of three missions in the security area--screen, guard, or cover. If assigned a guard or cover mission, LAR Bn would require reinforcement. What are some options available to reinforce the LAR Bn? (See chapter 4, par. 4201.)

The LAR Bn, when conducting security operations in the defense, will probably plan what type of operation to implement its mission statement? If the LAR Bn eventually returns through friendly lines while under enemy pressure, what control measure will it utilize to facilitate the transfer of responsibility for the security area and control of supporting arms to the units on the FEBA? (See chapter 4, secs. I and II.)

What options are available for flank security of the GCE? Does the use of LAR units in the security area relieve the regimental commanders of the responsibility of the area immediately forward of their positions? (See chapter 4, par. 4103 and sec. III.)

The GCE commander has directed that LAR Bn assume a guard mission forward of the FEBA and requested attack helicopters support for LAR Bn. LAR Bn has been designated as the GCE's main effort with priority of fires. LAR Bn has planned a delay in sector in successive positions. The GCE commander designated a HOL about 3 kilometers forward of the FEBA. The HOL will also define LAR Bn's final delay position. Regimental commanders designated security elements of TOW and Scout HMMWVs to provide immediate security out to the HOL (See fig. 5-2).

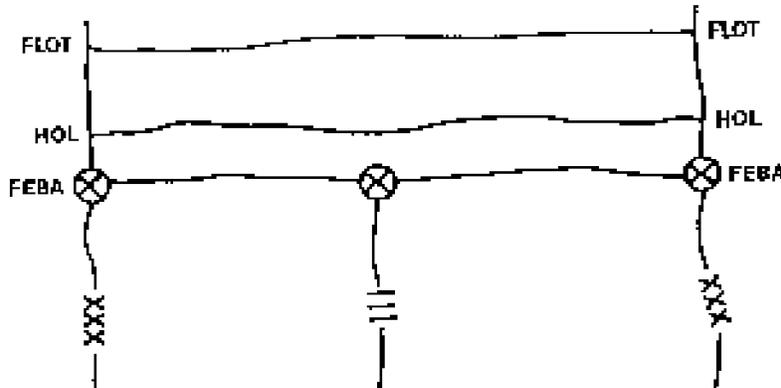


Figure 5-2. Situation #1.

### 5003. Special Situation #2

The MAGTF commander desires to attack the enemy as far forward as possible with as much firepower as possible. What are some options that the MAGTF commander has to fight the *deep battle*? Is it necessary to use major GCE elements when attacking the enemy well forward of the FEBA? (See chapter 4, sec. IV.)

Who is the MAGTF commander likely to assign as *deep battle coordinator*? What organizations are likely to plan EAs deep into enemy territory? (See chapter 4, secs. IV and V.)

Is enemy armor most vulnerable to air strikes in a column or when it is fully deployed in an assault formation? (See chapter 2.)

The MAGTF commander has designated the ACE commander to establish EAs well forward of the FLOT. These EAs will be used by fixed-wing aircraft in DAS missions. SRIG and the ACE coordinated the insertion of Force Recon personnel and ground sensors at some of the designated EA sites.

### 5004. Special Situation #3

The LAR Bn anticipates first encountering the MRD's reconnaissance followed by its advanced guard or Forward Security Element (FSE). The main force of MRRs will follow. The enemy tanks are the T-72 model with spaced and reactive armor. (See chapter 2.) The LAR Bn, supported by attack helicopters, believes it can destroy the reconnaissance and FSE units prior to moving through the HOL.

What weapons found in the LAR Bn and on the attack helicopters are effective against enemy armor? (See chapter 3.)

During the initial delay against the reconnaissance and FSE elements, the LAR Bn plans on ambushing most of the enemy armor at ranges of 600 meters or closer. What is this engagement technique called? Against larger enemy armor formations with many T-72's, the LAR units will likely use what engagement technique to force the enemy to deploy as early as possible?

The EAs established during a delay operation will likely be forward or inside of the initial delay positions? (See chapter 4, sec. III.)

The TOW and Javelin missiles have a standoff range versus an enemy tank, terrain permitting. Which technique of engagement maximizes this attribute? (See chapter 3, sec. III.)

Considering that the T-72s are more heavily armored than the LAV antitanks (ATs) and that the LAR Bn is conducting a delay, what disengagement criteria would be appropriate for LAR units? (See chapter 4, sec. III.)

Once the LAR Bn has crossed the HOL, what other missions might it be assigned? Missions for the attack helicopters? (See chapter 4, par. 4103 and sec. IV.)

#### **5005. Special Situation #4**

The GCE assigned sectors to its regiments, thereby allowing each regiment to develop its own EAs. The GCE commander visualized his defense in terms of battalion positions and enemy avenues of approach accommodating a fully deployed MRB.

What are the primary antiarmor weapons within the regimental sectors? (See chapter 4, par. 4202.)

What are two offensive missions that may be assigned the mechanized regiment in reserve? (See chapter 4, par. 4108.)

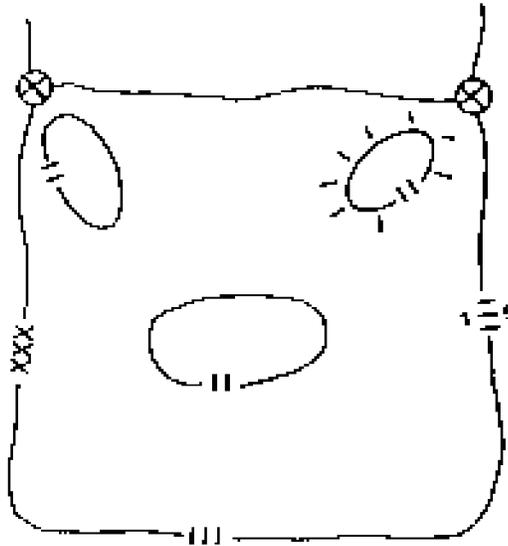
What offensive mission may be assigned LAVs that have been bypassed forward of the HOL? (See Chapter 4, par. 4108.)

Neither 1st Marines or 5th Marines has tanks or LAVs. Both regiments are relying primarily on organic TOW, Javelin, Dragon, and LAW assets in the antiarmor role. As the GCE operations officer, you decide that each regiment needs a mobile reserve of some size. Which antiarmor weapon systems could fulfill the role of a mobile reserve? (See chapter 3.)

#### **5006. Special Situation #5**

1st and 5th Marine Regiments have each been reinforced with a tank platoon, a TOW platoon, and an AAV platoon. An engineer company is in direct support. See figure 5-3 for depiction of 1st Marine Regiment defensive positions.

Judging by the array of unit positions in figure 5-3, is the FA located within or forward of the FEBA?



**Figure 5-3. 1st Marine Regiment Defensive Position.**

At what distance away from the FEBA would an attacking Soviet type battalion desire to deploy into its assault formation? (See chapter 2.)

Which position would you expect to get the priority of engineer support? (See chapter 4, sec. V.)

The reserve for the regiment would most likely be an infantry company, a mech-heavy team, or a TOW section? (See chapter 4, par. 4203.)

The reserve is located in the regimental security area, main battle area, or rear area? (See chapter 4, sec. I.)

At the regimental level, an avenue of approach is defined as an area that can accommodate what size unit? (See chapter 4, sec. I.)

Assuming the enemy tanks are T-72s with reactive armor, we would expect this regiment to engage the tanks with its Dragons and LAWs from the flanks or the front? (See chapter 4.)

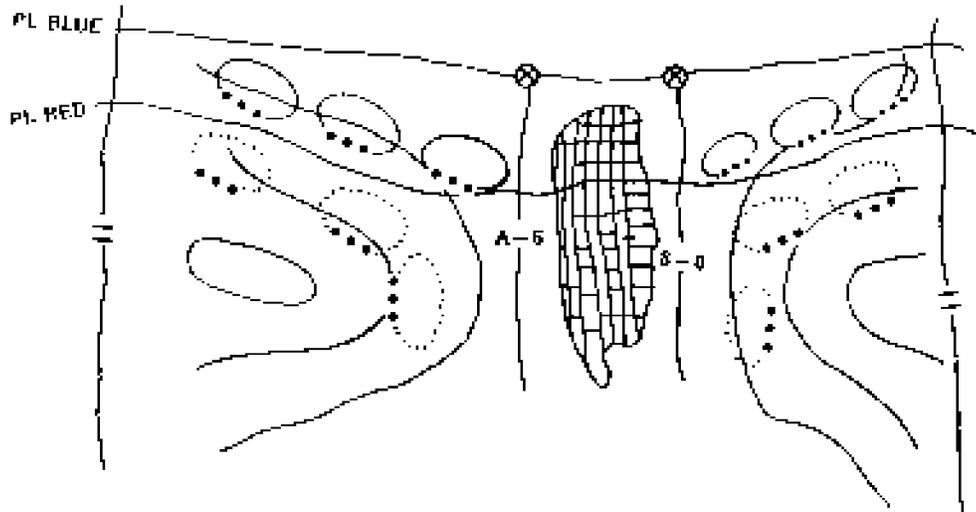
Given the same armored threat, would we expect this regiment to engage the tanks with its Javelins and Predators from the flanks or the front? (see chapter 4)

Considering the wide frontages and the open desert terrain, we would expect the TOWs to utilize which method of engagement--HAW-MAW-LAW or massed fire technique? (See chapter 4.)

Which technique--HAW-MAW-LAW or massed-fire--offers the likelihood of most first round kills? Gives away the friendly position the earliest? Minimizes enemy artillery? Provides most kills forward of the FEBA? (See chapter 4.)

### 5007. Special Situation #6

1st Bn 5th Marines is defending in sector with company sectors and platoon battle positions. This battalion has integrated a small village into its defense. (See fig. 5-4.)



**Figure 5-4. 1st Bn 5th Marines in Built-Up Area.**

The alternate platoon positions are normally a minimum of how many meters from the primary positions? Why? (See chapter 4, par. 4206.)

The small town functions as a battle position, sector, or strongpoint? Is it a cultural or reinforcing obstacle? (See chapter 4, secs. II and V.)

What offensive mission may be assigned LAVs that have been bypassed forward of the HOL? (See chapter 4, par. 4108.)

Neither 1st Marines or 5th Marines has tanks or LAVs. Both regiments are relying primarily on organic TOW, Javelin, Dragon, and LAW assets in the antiarmor role. As the GCE operations officer, you decide that each regiment needs a mobile reserve of some size. Which antiarmor weapon systems could fulfill the role of a mobile reserve? (See chapter 3.)

### 5008. Special Situation #7

What is the MEF organization that is likely to be responsible for directing and interpreting the intelligence data? (See chapter 4, sec. VI.)

What antiarmor resources does the GCE possess that may be used as an economy of force measure in protecting the rear area against an armor attack? What internal measures could the rear area establish to defend against an armor attack? (See chapter 4, sec I.)

The MRD is primarily an armored unit. The MAGTF is a more balanced unit. What inherent advantages does a MAGTF possess over a unit normally dedicated to one type or style of fighting? Night fighting probably favors which side? (See chapter 1.)

The enemy is constantly repositioning his tank reserves. What capability of the MAGTF is he probably trying to negate? (See chapter 4, sec. IV.)

Is it feasible to think of disrupting the enemy's forward forces by action in the enemy's rear? (See chapter 1.)

A turning movement would most likely involve what type MAGTF forces? (See chapter 4, par. 4108.)

## Appendix A

### Antiarmor Close Combat Course

This appendix contains a sample design from an antiarmor close combat course. It was taken from FM 23-3, *Tactics, Techniques, and Concepts of Antiarmor Warfare*. The size of the required area is dependent upon the number of stations included. As a minimum, an area 200 meters by 200 meters is required. An area this size will permit the training of an entire company at the same time. (See fig. A-1.)

#### **Figure A-1. Training Area Antiarmor Close Combat Course.**

A brief description of each station--

##### **Station I--Introduction to Course**

Station 1 provides a brief introduction of the entire course. Characteristics and limitations of armored vehicles are discussed and demonstrated, to include vision deadspace, weapons deadspace, and vulnerable areas of tanks and armored personnel carriers (APCs). The differences in fields of view between U.S. and enemy tanks should be pointed out at this time. Tracing tape on two tanks illustrates vision and weapons deadspace. Students are allowed to enter the tanks to observe firsthand the feeling of protection experienced by tank crew members when buttoned up. After this station, students are broken down into 11 groups and are rotated in a county fair manner throughout the remainder of the course.

##### **Station 2--Post Obstacles**

Station 2 provides an explanation and demonstration of the construction of post obstacles to stop, impede, or canalize the movement of armored vehicles.

##### **Station 3--Log Hurdles and Armor Ditch**

Station 3 furnishes an explanation and demonstration of the construction of log hurdles and an armor ditch to stop, impede, or canalize the movement of armored vehicles.

##### **Station 4--Antiarmor Minefield**

Station 4 presents an explanation of how a small antiarmor minefield is emplaced. Practical work follows the explanation.

##### **Station 5--Log Crib**

Station 5 provides an explanation and demonstration of the construction of log crib obstacles.

##### **Station 6--Abatis**

Station 6 provides an explanation and demonstration of the construction of log abatis to stop or canalize the movement of armored vehicles.

**Station 7--Demolitions**

Station 7 supplies an explanation and demonstration of the use of demolitions to destroy or damage tanks. Students are required to employ dummy sled charges, Daisy Chain mines, saddle charges, and projectile charges against moving tanks.

**Station 8--Flame Weapons**

Station 8 furnishes an explanation and demonstration of the use of flame weapons against armored vehicles. Weapons demonstrated include the Molotov cocktail and fire bomb. Students are shown how to improvise flame weapons using material found on the battlefield. Students are permitted to throw live or dummy Molotov cocktails depending on safety regulations and the students' status of training.

**Station 9--Antiarmor Weapons**

Station 9 presents an explanation and demonstration of those antiarmor weapons assigned or attached to infantry units. Students are shown those areas of armored vehicles each weapon is most effective against.

**Station 10--Confidence Station**

Station 10 presents an explanation and demonstration of the construction of individual fighting positions for protection against tanks. Students are required to occupy prepared individual positions while tanks are driven over them.

**Station 11--Characteristics of Enemy Armor**

Station 11 furnishes an explanation and demonstration of the characteristics of enemy armored vehicles displayed. The use of mockups or large size armor flash cards will assist in the identification of vehicle vulnerabilities and visual deadspace.

**Station 12--Combat in Cities**

Station 12 provides an explanation and demonstration of combat against armored vehicles in cities. This station should include permanently constructed block houses for student practical work, but instruction can be presented using sand tables and mockups.