Chapter 10

AIR DEFENSE ARTILLERY PLATOON IN LIGHT INFANTRY DIVISION OPERATIONS

The LID is unique in many respects. It must operate with severely limited air defense resources. The air defense battalion organic to the LID consists of two firing batteries. These limited dedicated air defense resources make it extremely difficult to provide adequate protection to all the division's vital assets. It is therefore crucial that we take maximum advantage of two principles of war: mass, concentrating our firepower at the decisive place and time; and economy of force, allocating minimum essential combat power to secondary effort. To use concepts such as habitual association of air defense fire units to maneuver brigades and battalions contradicts these principles and reduces the air defense planning to an unchanging mechanical process that is doctrinally unsound. We must stress the effective use of air defense principles and guidelines based on the factors of METT-T. In this chapter we will discuss some of the offensive techniques which the organic ADA battalion is likely to use in light division operations.

AIR DEFENSE ARTILLERY SUPPORT OF THE LIGHT DIVISION

The ADA battalion in the LID uses the same techniques to defend division assets as the ADA battalion in any other division would.

Note: LID defensive operations are the same as in the heavy division.

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MISSION AND CONCEPT OF OPERATION

Before an ADA platoon leader determines how he will support a light infantry maneuver force he must first understand the mission and the maneuver force commander's concept of the operation. Once he does this, the platoon leader can then decide exactly how he will deploy his fire units to support the operation, keeping in mind he must adhere to air defense principles and employment guidelines.

Two types of assets for which the ADA platoon leader must be able to plan protection are the static and mobile critical asset. For a static critical asset, a LID ADA platoon leader uses the same defense design techniques as a heavy division ADA platoon leader would use. Since the LID has some unique missions, the ADA platoon leader must have some special considerations when planning defense of a mobile critical asset (maneuver unit) or convoy.

DISMOUNTED OPERATIONS

When the ADA platoon leader makes his air defense plan using Stinger, one thing he must decide is if those Stinger crews will operate mounted or dismounted.

Stinger crews should operate with the prime movers whenever possible. This allows them to move with their basic load. It also enables them to move rapidly and operate with their full complement of communications and fire control equipment.

The platoon leader should plan for dismounted operations only when the prime mover cannot negotiate the terrain in which the maneuver force will be operating, when Stinger crews are supporting an air assault that will not be able to airlift the prime movers, or when the situation will not permit the use of the prime mover. The ADA platoon leader and the maneuver commander must understand that dismounted operations significantly reduce the Stinger crew's capability.

INTEGRATION AND OVERWATCH

Next, the platoon leader must decide whether to integrate his fire units into the maneuver force or have them overwatch the maneuver unit.

Overwatch

The preferred method for supporting the light infantry maneuver force is the overwatch method. To use this method, the ADA platoon leader must be thoroughly familiar with the concept of the operation and how the maneuver unit intends to move. He must plan primary and supplementary positions for his fire units to occupy so they can continually protect the maneuver units. He will control his fire units by the use of phase lines. For example, as the maneuver unit reaches a certain phase line, the platoon leader will order a fire unit to move to supplementary position A01. The fire unit would move to that location and become operational. If the maneuver unit does not have enough phase lines in their tactical plan, the platoon leader makes his own.

With Stinger, the ADA platoon leader positions his crews 500 to 1,000 meters behind the lead maneuver force. This allows two-thirds of the Stinger's range forward of the protected force, thus permitting the Stinger crews to stay out of a direct fire fight while continuing to provide ADA protection.

The towed Vulcan does not normally maneuver with the maneuver units, but there may be times when it will be required to do so. The Vulcans will take up positions not more than 400 meters behind the maneuver force, and individual Vulcans will move on an alternating basis. This will ensure that while one Vulcan moves, two provide air defense protection. This technique gives the Vulcans the capability to make accurate engagements, but is physically demanding on the Vulcan crews.

An alternate method to provide coverage is called action-on-wheels. The Vulcan remains connected to the prime mover, with the gunner in the tub. The Vulcan crew must ensure that the firing interrupters are set to block out the prime mover. This gives the Vulcan mobility, but provides a less accurate engagement capability than emplacing the system.

Integration

The second method for supporting the light infantry maneuver force is integrating the Stinger crews into the maneuver units.

Integration may place the Stinger section in DS of a maneuver unit, which allows the Stinger crews to remain in the air defense chain of command and allows each crew to key their movement on a maneuver company commander.

The Stinger crew must ensure that they stay far enough away from the company commander or platoon leader so as not to interfere. They must also ensure that

they utilize the best terrain to support the air defense mission while retaining visual contact with the maneuver commander.

The section sergeant will position himself where he can best communicate and control the section.

AIR DEFENSE ARTILLERY TECHNIQUES

ADA techniques can protect the LID's maneuver elements in each of its standard operations, such as movement to contact, hasty and deliberate attack, et cetera. Examples of these are shown in the following paragraphs.

MOVEMENT TO CONTACT

The 1st Battalion's mission is to conduct a movement to contact along Axis White (see the Battalion Movement to Contact illustration on page 10-4). The commander will locate the enemy, attack, and destroy him. The enemy is composed of company-size elements that are fighting a delay while the remainder of an enemy regiment withdraws.

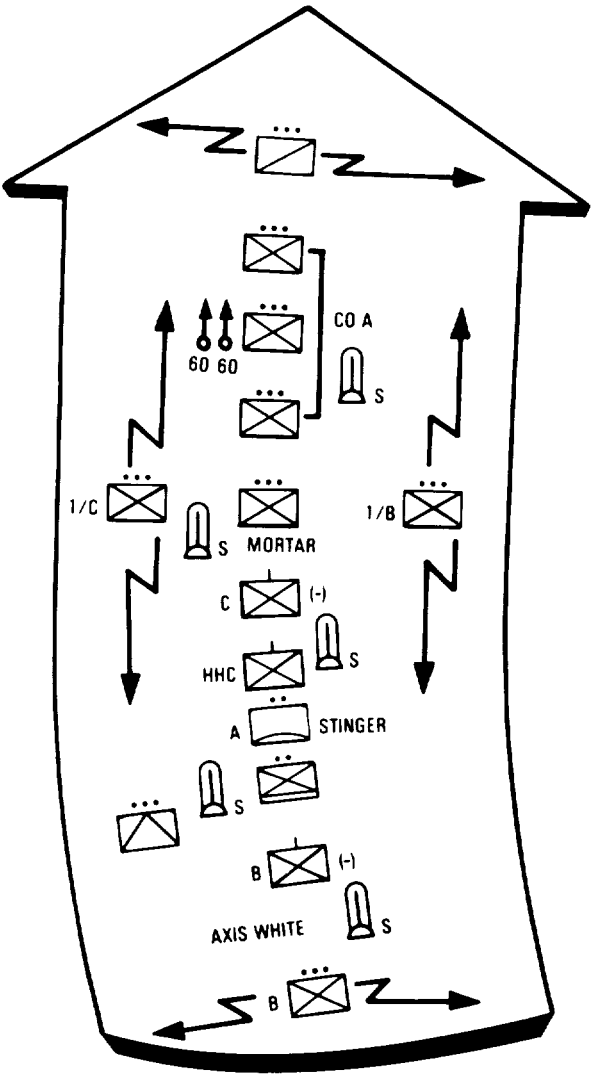
The battalion deploys its scouts forward of the main body to locate enemy positions. The 1st Platoon of Company A is the lead element of the advance guard. Companies B and C provide one platoon each for flank security. Company B also provides one platoon for rear security.

The antiarmor platoon is overmatching from the left (western) side of the column because likely armor and mechanized avenues of approach are from the west. The mortar platoon is moving behind Company A so that it can support the lead elements.

The battalion has a Stinger section with a DS support relationship and because of the type of terrain and the scheme of maneuver, the Stinger crews are integrated into the formation.

Three of the Stinger crews are individually positioned with, and key their movements on, each of the rifle company headquarters. One crew moves with the mortar platoon, and the last Stinger crew moves with the battalion combat trains. The Stinger crews located with the rifle companies are dismounted and the Stingers with the mortar platoon and the combat trains will dismount only if the mortar platoon and the combat trains dismount. The section sergeant positions himself in the battalion TOC where he will be able to observe the overall tactical situation and communicate with his section.

BATTALION MOVEMENT TO CONTACT



DELIBERATE ATTACK

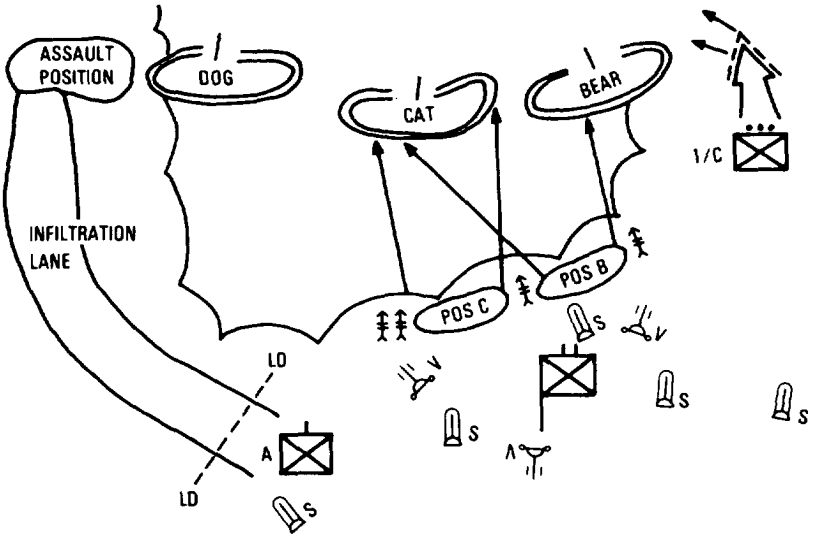
The 1st Battalion's mission is to open a gap in the enemy's first echelon defenses and allow the remainder of the brigade to attack deeper objectives (see the Battalion Deliberate Attack illustration on page 10-6). The brigade commander's intent is to destroy enemy units to create a gap and have the 1st Battalion hold the shoulders of the penetration. The battalion commander intends to create the gap by locating a weakness and attacking from the flank. The battalion commander initially deploys his scouts to locate any weaknesses or gaps in the enemy's defense. They locate a weak spot on the flank in rugged terrain on the left. The commander decides to conduct an infiltration and directs the scouts to locate and clear an infiltration lane.

The battalion commander integrates all available combat support assets into the scheme of attack. He has priority of fires from the artillery battalion and will have attack helicopters on station at H-5. At H-3, the artillery begins to suppress the enemy and Companies B and C provide direct fires on the objective. The 1st Platoon, Company C, begins a feint on the right flank. The indirect fire plan augments the deceptive effect of the feint. Once the enemy begins to fight the forward battle, the battalion commander directs Company A to assault and seize Objective Dog and secure the left shoulder. Company B attacks to seize Objective Bear and the right shoulder and Company C, supported by attack helicopters, attacks to seize Objective Cat. Once all three objectives have been secured, the gap has been created and the brigade commander may commit exploitation forces.

Company A is designated as the assault force. They move through the rugged terrain to an assault position. Companies B and C provide direct fire support from positions B and C. Mortars and TOWs are positioned to provide support. The 1 at Platoon, Company C, continues a feint on the right flank to deceive the enemy. The main attack will come from the right.

Supporting this operation is a Vulcan platoon with a Stinger section attached. The platoon (+) is in DS of the battalion. The Vulcan platoon will protect the battalion TOC and the Stinger section will use the overwatch technique and protect the maneuver units. Since this is a deliberate attack, there is a detailed maneuver plan which the ADA platoon leader will use to plot the Stinger supplementary positions. As the operation develops, the platoon leader will maneuver his fire unite to ensure complete ADA coverage of the maneuver units. Located in the battalion TOC, the section sergeant will keep track of the maneuver unit so the ADA coverage can be adjusted accordingly.

BATTALION DELIBERATE ATTACK



SPECIAL TACTICS AND TECHNIQUES IN OFFENSIVE OPERATIONS

Along with the standard offensive tactics and techniques, the LID uses six special tactics and techniques. These techniques are explained in the following paragraphs.

MASKED ATTACK

In a masked attack the attacker deliberately conceals his location, movement, and plan of attack. The LID depends on masked conditions to enhance and augment their particular brand of combat power. This type of attack takes advantage of terrain, darkness, foul weather, reduced visibility, deception techniques, and surprise.

SEARCH AND ATTACK

This technique is used as a form of hasty or deliberate attack to deny the enemy movement in an area. Search and attack is used when the enemy is dispersed throughout an area or when enemy weaknesses cannot be found.

URBAN STORM ATTACK

Urban storm attack is used to destroy the enemy in urban terrain. Stinger crews can be most effective when positioned on rooftops to cover the maneuver units as they move through built-up areas. Vulcan can provide suppressive fires for maneuver units or be airlifted to the rooftops to provide ADA protection.

INFILTRATION ATTACK

An infiltration is used to destroy or disrupt enemy forces, C^3 elements, combat support, or combat service support elements. It is accomplished by an intensive initial reconnaissance to identify infiltration routes, locate assault positions, identify weaknesses, and observe enemy activity.

When the initial reconnaissance has been completed, the force will be grouped into the smallest elements necessary to move through and around enemy positions. The forces will regroup at the assault positions while other elements of the force verify and complete the initial reconnaissance of the enemy's position. Once completed, final coordination is made and the maneuver forces will then conduct the attack.

BAITED ATTACK

A baited attack is an attack against a secondary target. A secondary target could be a unit, bridge, C^3 installation, et cetera. A baited attack includes a planned ambush or counterattack element positioned to destroy the enemy when he starts a counterattack or he reinforces the element being attacked.

EXPANDING TORRENT

This technique involves the LID conducting a breach and exploiting the enemy at his weakest point. Follow-on reserves will back up the exploitation of the enemy. The intention is to quickly capitalize on the success and continue the attack through the path of least resistance.

AIR DEFENSE ARTILLERY SUPPORT OF THE LIGHT INFANTRY DIVISION IN OFFENSIVE OPERATIONS

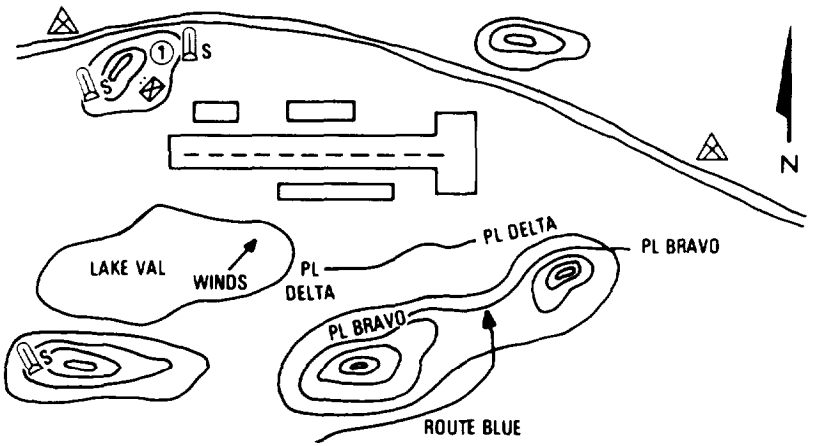
The following scenarios give examples of how ADA could support offensive operations. The scenarios include the applications and use of certain tactics and weapons.

MASKED ATTACK (SCENARIO)

The mission of a light infantry battalion is to attack and seize an airfield held by the enemy.

During the planning process, the battalion commander has detided to conduct a masked attack (see the Light Infantry Division Battalion Conducts a Masked Attack illustration) utilizing the limited visibility during darkness and the masking effect caused by the ground fog on the lake. A thorough reconnaissance confirmed the following plan.

LIGHT INFANTRY DIVISION BATTALION CONDUCTS A MASKED ATTACK

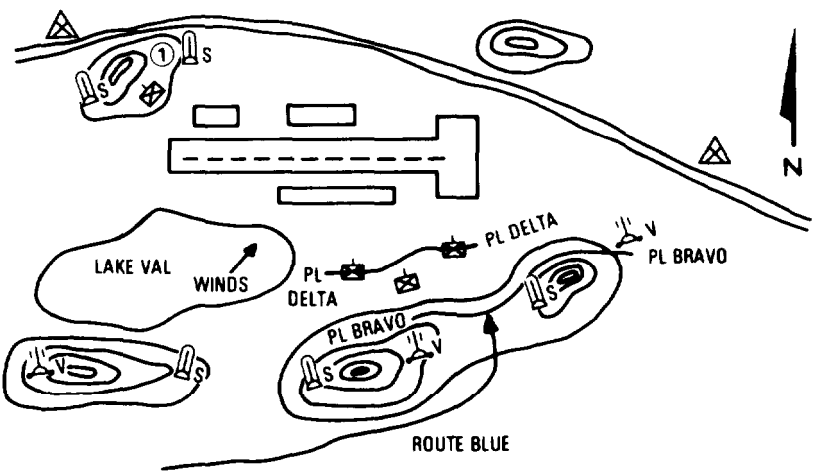


The ADA battery commander has attached a Stinger section to a Vulcan platoon and placed the Vulcan platoon in DS of the infantry battalion. Three Stinger crews will maneuver with the support element. One crew will be positioned on the hill south of the lake as the support element moves across the lake and occupies a firing position north of the airfield at Checkpoint 1.

The battalion attacks with two rifle companies. One company will be held in reserve to exploit the success of the masked attack (see the Rifle Companies in the Masked Attack illustration). The Vulcan platoon will trail the formation until they can move into position along Phase Line Bravo to overwatch the infantry battalion. The companies will move using the masking of the hills and the dense vegetation along Route Blue.

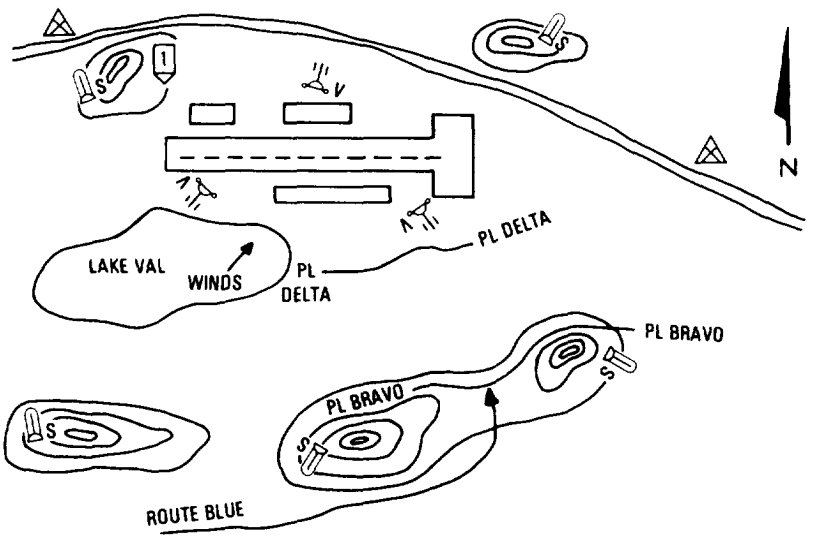
The assault position, Phase Line Delta, will be in the wooded area to the south of the battalion mortars. Fires will shift when the assault elements reach Phase Line Delta. The assault companies will assault and clear the

RIFLE COMPANIES IN THE MASKED ATTACK



airfield of all enemy. Security elements east and west of the airfield will prevent the escape of fleeing enemy forces and prevent the reinforcement of the airfield. After consolidation on the airfield, all of the ADA forces (see the Air Defense Artillery in Final Defensive Positions Masked Attack illustration) will move into their final defensive positions to provide ADA protection around the airfield, and the reserve company will be available to exploit success as the battalion commander sees fit. Rifle platoons provide security for Stinger fire

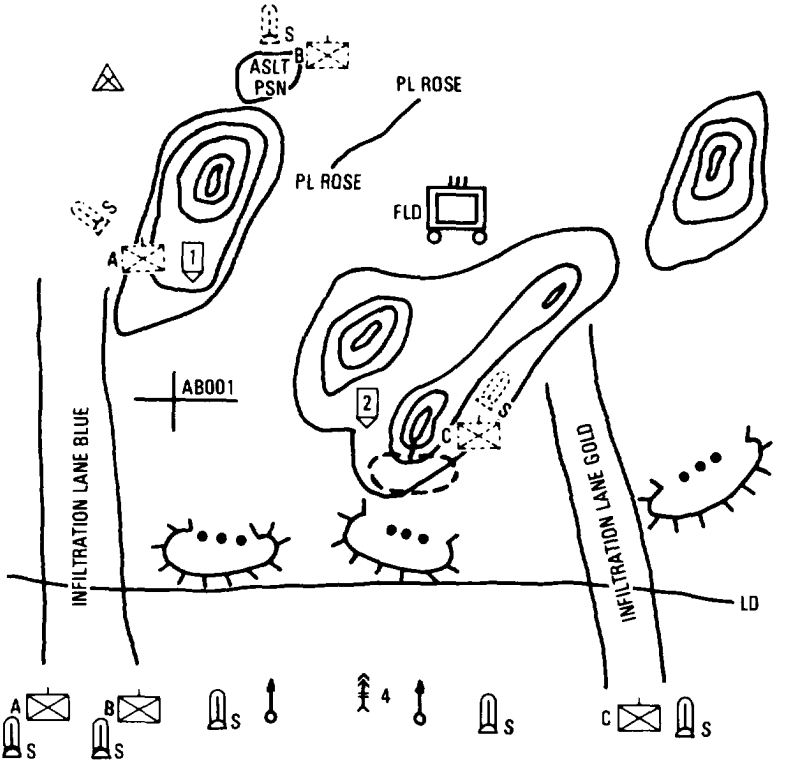
AIR DEFENSE ARTILLERY IN FINAL DEFENSIVE POSITIONS MASKED ATTACK



INFILTRATION ATTACK (SCENARIO)

The 1st Battalion's mission is to destroy enemy field trains located by friendly air reconnaissance (see the Infiltration Attack illustration). The battalion commander decides to conduct an infiltration attack and sends his scouts forward to locate possible infiltration lanes. The scouts identify two infiltration lanes and move forward to mark them. The battalion commander decides to infiltrate Companies A and B along Lane Blue and Company C along Lane Gold. A Stinger section is attached to the battalion. The section chief positions one crew with Company A, one with Company B, and one with Company C. He positions the two remaining crews with the sup-

INFILTRATION ATTACK



After reconnaissance is completed, the battalion begins to infiltrate behind enemy lines. The scouts, after marking the infiltration lanes, move to Checkpoint 1 to observe the objective area. Once Company A arrives near Checkpoint 1, the scout platoon leader provides an intelligence update to the commander, and moves the scout platoon to occupy security positions east and west of the objective. Company A occupies a support position near Checkpoint 1 with the mission to provide suppressive fires on the objective. Company C infiltrates along Lane Gold and occupies a blocking position in the vicinity of Checkpoint 2 to prevent enemy front-line forces from reacting to the attack. Battalion mortars and TOWs engage enemy units along the FEBA as part of the deception plan. Company A, in the support position, initiates the attack with suppressive fire on the objective and Company B begins the assault. When the assaulting element reaches Phase Line Rose, supporting fires are shifted to AB0001 to assist Company C's supporting attack to block enemy forces attempting to reinforce the field trains. The assaulting element destroys the field trains and exfiltrates to the east. Company A breaks contact and exfiltrates to the west. Since this operation will take place across the LD and or the LC, the Stinger crews will maneuver with the companies for ground security.

The ADA platoon in the LID must be flexible and prepared to operate as austerely as possible. Our soldiers must be in top ph ysical condition and their leaders proficient in not only the tactical employment of ADA, but also in knowing light infantry tactics.

Chapter 1

INTRODUCTION

Chaparral, Vulcan, and Stinger ADA units provide low-altitude air defense for our field forces. These units can deny or limit enemy air attack on our maneuver, combat support, and combat service support forces. They can deny enemy aircraft local air superiority over portions of the battlefield. These capabilities are necessary if we are to minimize losses and maneuver effectively to win the air-land battle. This chapter discusses the ADA units' organization, system capabilities and limitations, and responsibilities.

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Section I. Organization

The missions the ADA commander will assign his subordinate units will be guided by the principle that he must allow his subordinate commanders as much flexibility as possible to develop their own ADA plans.

The ADA platoon leader must exploit the strengths of his unit and minimize its weaknesses. This section describes how soldiers and equipment are organized into platoons, sections, squads, and crews. This description highlights those key features of organization which are fundamental to understanding the tactical employment of Chaparral, Vulcan, Stinger, and FAAR.

The force structure of ADA units is currently being changed. The changes may affect platoon organization, personnel, and material; however, principles and techniques of employment should remain valid for the foreseeable future. Future changes to personnel strength and material will be incorporated in changes to this FM as appropriate.

AIR DEFENSE ARTILLERY PLATOON

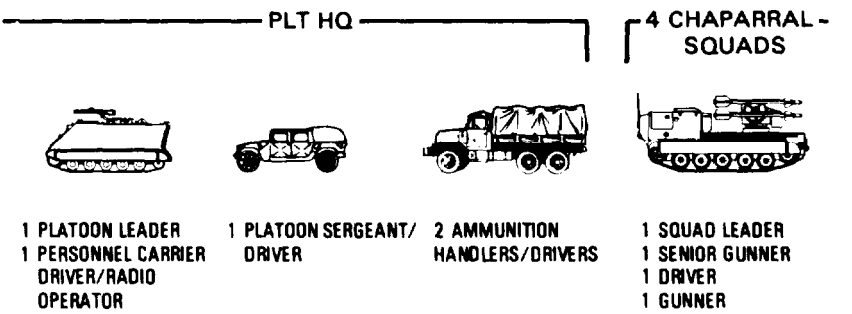
This paragraph describes the organization of Chaparral, Vulcan, Stinger, and FAAR platoons found in an air defense battalion. The unit TOE and MTOE provide detailed information on unit personnel and equipment authorizations.

CHAPARRAL PLATOON ORGANIZATION

The Chaparral platoon (see Chaparral Platoon illustration) consists of a platoon headquarters and four Chaparral squads. An APC is provided for use as the platoon CP. The APC gives the platoon leader the same mobility as the Chaparral fire units. The platoon headquarters has communications equipment to command and control the platoon and other equipment to program the IFF interrogators and charge their batteries. The platoon has a HMMWV truck to provide mobility for RSOP. The truck is also used to make supervisory visits to the Chaparral squads. Ammunition resupply is provided by two ammunition handlers in the platoon headquarters. The ammunition handlers use a cargo truck to

move Chaparral ammunition from the battery ASP to the Chaparral fire units. This permits resupply of fire units that are in firing positions.

CHAPARRAL PLATOON



VULCAN PLATOON

The heavy division Vulcan platoon consists of a latoon headquarters and four ulcan squads (ace Vulcan Platoon (Heavy Division) illustration, page 1-4). An APC is provided for use as the platoon CP. The APC gives the platoon leader the same mobility as the Vulcan fire units and the supported unit. The platoon headquarter has communication equipment to command and control the platoon. The platoon has an HMMWV to provide mobility for RSOP. It is also used to make supervisory visits to the squads without displacing the CP. During normal operations, the platoon will be used intact. Ammunition resupply is provided by a two-man ammunition team in the platoon headquarters. The team uses a tracked ammunition earner M548 to move Vulcan ammunition from the battery ASP to the Vulcan guns. This permits resupply of fire units in their firing positions.

The light division Vulcan platoon consists of a platoon headquarter and three gun squads (ace Vulcan Platoon (Light Division) illustration, page 1-4). The platoon headquarters hair an HMMWV to provide mobility. Ammunition resupply is provided by a two-man ammunition team in the platoon headquarter. The three-man gun squad consists of a squad leader, senior gunner, and prime mover driver.

VULCAN PLATOON (HEAVY DIVISION)

PLT HQ — M548 — 4 VULCAN SQUADS






PLT HQ		M548	4 VULCAN SQUADS
1 PLATOON LEADER 1 PERSONNEL CARRIER DRIVER/RADIO OPERATOR	1 PLATOON SERGEANT/ DRIVER	2 AMMUNITION HANDLERS/ VEHICLE DRIVERS	1 SQUAD LEADER 1 SENIOR GUNNER 1 PRIME MOVER DRIVER 1 MANPAD CREW MEMBER

VULCAN PLATOON (LIGHT DIVISION)

PLT HQ — 3 VULCAN SQUADS





PLT HQ		3 VULCAN SQUADS
1 PLATOON LEADER 1 PLATOON SERGEANT	1 AMMUNITION HANDLER 1 AMMUNITION VEHICLE DRIVER	1 SQUAD LEADER 1 SENIOR GUNNER 1 PRIME MOVER DRIVER

STINGER PLATOON ORGANIZATION

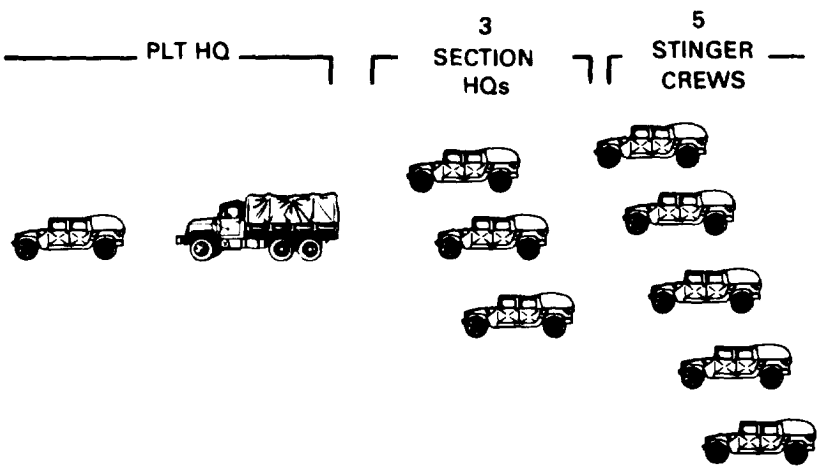
Stinger platoons vary in size. The Stinger platoon (see Stinger Platoon illustration) consists of a platoon headquarters and three sections of five crews each.

The platoon headquarters consists of the platoon leader, the platoon sergeant, and a radiotelephone operator/driver. The platoon headquarters has an HMMWV for mobility and also has communications equipment to command and control the platoon.

A section headquarters consists of two men; one section chief and a radiotelephone operator/driver. The section has an HMMWV, radio equipment, and IFF support equipment to program the IFF interrogators and charge their batteries.

Each Stinger crew is equipped with an HMMWV, communications equipment, and a basic load of Stinger weapons.

STINGER PLATOON



1 PLATOON LEADER 1 PLATOON SERGEANT 1 RADIO OPERATOR/ DRIVER	2 AMMUNITION HANDLERS/ VEHICLE DRIVERS	1 SECTION CHIEF 1 RADIO OPERATOR/ DRIVER	1 CREW CHIEF 1 GUNNER

FAAR PLATOON ORGANIZATION

The FAAR platoon (see FAAR Platoon illustration) consists of a platoon headquarters, a maintenance section, and six or eight radar sections depending on whether it is assigned to the AIM division C/V battalion or to the Army of excellence heavy division. In either case, the platoon headquarters remains the same. It consists of a platoon leader, platoon sergeant, and a light vehicle driver.

The light division has four FAARs. Two are assigned to each firing battery in the ADA battalion.

FAAR PLATOON

FAAR MAINT SECTION
SECTION HQ
1 SFC (CHIEF FAAR MECH)

PLT HQ	2 FAAR MAINT TMs	6 RADAR SECTIONS
		
1 LT (PLT LDR) 1 SFC (PLT SGT) 1 PFC (DVR)	1 SSG (ASST C FAAR MECH) 1 SP5 (FAAR MECH) 1 SP4 (POWER GEN/W VEH MECH) (DVR)	1 SSG (SECTION C) 1 SP5 (FAAR OPERATOR) 1 SP4 (FAAR OPERATOR) (DVR)

AIR DEFENSE ARTILLERY SQUADS AND CREWS

Air defense artillery squads and crews are organized to ensure the optimum employment of their weapon systems. Crews must use their equipment to gain maximum effect.

CHAPARRAL SQUAD

The Chaparral squad consists of four personnel. These personnel include the squad leader, senior gunner, gunner, and prime mover driver. The squad leader commands the squad and exercises decentralized engagement control for his fire unit. The senior gunner operates the Chaparral system during engagement. The squad leader maintains control from a CP via a radio in the

platoon net. He also has telephone communications with the senior gunner and the squad OP. The gunner and the driver perform observer duties as required.

VULCAN SQUAD

The Vulcan squad consists of either three or four crew members. The four-man squad consists of a squad leader, senior gunner, prime mover driver, and a MANPAD crew member. This unique squad composition is found only in heavy division Vulcan platoons. Employment considerations for the integrated MANPAD crew member are found in FC 44-16 R/16S. In either configuration, the Vulcan squad leader, like the Chaparral squad leader, commands the squad and exercises decentralized engagement control over his fire unit. The senior gunner operates the Vulcan armament and fire control systems during engagement and is responsible for effective fire. The prime mover driver op crates the auxiliary power unit and drives the prime mover. All crew members perform observer duties as required.

STINGER CREW

The Stinger crew consists of two personnel. These personnel are the crew chief and a gunner. Both crew members are trained to perform all crew functions. The crew normally acts as a unit, with the crew chief establishing the identity of the aircraft and authorizing the engagement. When under heavy attack, both crew members may act as gunners to increase firepower.

Section II. System Capabilities and Limitations

The SHORAD commander, whether commanding the battalion or a weapons squad or crew within the battalion, must know the capabilities and limitations of the unit's weapons to effectively employ them. This section provides basic information on the SHORAD weapon systems.

CHAPARRAL

The Chaparral weapon system M48A2 is a highly mobile, surface-to-air missile system. It is designed to counter the high-speed, low-altitude air threat to organizations and critical assets in the forward areas.

CAPABILITIES

The Chaparral weapon system consists of a launching station mounted on a tracked chassis. The launching station is a complete self-contained weapon system and may be separated from the carrier and operated in the ground emplaced mode. The system is transportable by cargo aircraft and the launching station may be sling-lifted by helicopter when separated from the carrier. The M48A2 system is composed of three major elements: a launching station, carrier, and Chaparral missiles. The Chaparral Missile System Characteristics illustration is a condensed version of the system characteristics. A more complete listing can be found in the tabulated data section of TM 9-1425-2586-10.

CHAPARRAL MISSILE SYSTEM CHARACTERISTICS

WEIGHT (combat loaded)	M48A1:	28,220 lbs	(12,800 kg)
	M48A2:	28,664 lbs	(12,888 kg)
LAUNCHING STATION WEIGHTS FOR:			
M48A1, w/12 missiles/combat loaded		16,404 lbs	(5,359.65 kg)
M48A1, wo/12 missiles/noncombat loaded		14,241 lbs	(3,958 kg)
M48A2, w/12 missiles/combat loaded		17,104 lbs	(7,775 kg)
M48A2, wo/12 missiles/noncombat loaded		14,941 lbs	(6,768 kg)
LENGTH		240.38 in	(6.10 m)
WIDTH		105.75 in	(2.69 m)
HEIGHT		114 in	(2.9 m)
MAXIMUM GRADE CAPABILITY		60 percent	(ascending or descending)
		30 percent	(maximum forward slope)
MAXIMUM VEHICLE SPEED		38 mph	(61.16 kph)
CRUISING RANGE		300 miles	(482.8 km)
TURNING RADIUS		14 ft	(4.27 m) pivot steering
FORDING DEPTH		40 in	w/flotation curtain

LIMITATIONS

The Chaparral weapon system is lightly armored which makes it vulnerable to ground attack. Effective employment of the system depends on visual target detection, tracking, and identification. For this reason, Chaparral generally is considered a fair-weather system, however, with the fielding of FLIR devices, Chaparral has the ability to engage targets under limited visibility conditions. A detailed explanation of how Chaparral FLIR operates can be found in FM 44-4. The Chaparral system cannot be fired while on the move. In the emergency emplacement crew drill the Chaparral squad can emplace the fire unit in approximately one minute. Missile backblast requires 15 meters of clearance behind the weapon (crew safety distance is 60 meters). The smoke signature generated by missile launch may reveal the weapon's location, pinpoint the location of a critical asset, and obscure the gunner's vision for short periods of time. If Chaparral supports an armored or mechanized infantry task force, the mobility differential must be considered.

VULCAN (SELF-PROPELLED)

The self-propelled M163A1 Vulcan is a fully tracked, lightweight, lightly armored, 6-barrel, 20-millimeter cannon system designed for deployment in the forward combat area. It provides air defense coverage against the low-altitude threat.

CAPABILITIES

The system is capable of delivering a selected rate of fire (3,000 or 1,000 rounds per minute) against air and ground targets. Vulcan can be used against stationary or moving ground targets such as personnel, trucks, and lightly armored vehicles. The Vulcan weapon system is highly mobile. It is capable of high-speed operation on improved roads, cross country travel over rough terrain, and amphibious operation on streams and small lakes. The system is also transportable by fixed-wing cargo aircraft. The Vulcan Gun System Characteristics illustration is a condensed version of the Vulcan system characteristics. A more complete listing can be found in the tabulated data section of TM 9-2350-300-10.

VULCAN GUN SYSTEM CHARACTERISTICS

WEIGHT (combat loaded)	27,542 lbs	(12,493 kg)
LENGTH	14 ft 4 in	(436.9 cm)
WIDTH	9 ft 5 in	(287.0 cm)
HEIGHT	9 ft 7 in	(292.1 cm)
MAXIMUM GRADE CAPABILITY	60 percent	
MAXIMUM VEHICLE SPEED	40 mph	(64.4 kph)
CRUISING RANGE	275 miles	(442.6 km)
TURNING RADIUS (pivot steering)	13 ft	(3.9 m)

LIMITATIONS

The relatively short range of the Vulcan weapon system requires the weapon to be located on, or close to, the ordnance release line. The Vulcan crew must visually acquire and identify aerial targets prior to engagement. Although Vulcan has a fire-on-the-move capability, system accuracy while tiring on the move is considerably lower than when stationary. Little armor protection is provided for crew members and materiel. The high firing rates and limited on-board storage capability make ammunition resupply a constant problem. The hit probability against high-speed aircraft on crossing courses is limited.

VULCAN (TOWED)

The towed Vulcan air defense system consists of a 6-barrel, 20-millimeter cannon and a fire control system mounted on a trailer carriage having dual wheels on each side. Towed Vulcan is used in nonvisional C/V battalions and the Vulcan battalion organic to the light, airborne, and air assault divisions. The Towed System Characteristics illustration is a condensed version of the system characteristics. A more complete listing can be found in the tabulated data section of TM 9-1005-286-10.

TOWED SYSTEM CHARACTERISTICS

WEIGHT (combat loaded)	3,490 lbs	(1,583 kg)
LENGTH	186 in	(472.4 cm)
WIDTH	97.11 in	(246.7 cm)
HEIGHT	81.00 in	(205.7 cm)
MAXIMUM VEHICLE SPEED	45 mph	(72.42 kph)
MAXIMUM FORDING DEPTH	37 in	(93.98 cm)

CAPABILITIES

The weapon capabilities of the towed Vulcan are similar to the SP Vulcan. Reload time is less than three minutes. Emplacement time is about two minutes. The system is air transportable by cargo aircraft and helicopters, and can be air dropped.

LIMITATIONS

The limitations of the towed Vulcan are identical to those of the SP Vulcan. However, no armor protection is provided for crew members and materiel.

STINGER

Stinger is a man-portable, shoulder-fired, infrared homing (heat-seeking) air defense weapon. It is designed to counter high-speed, low-level, ground-attack aircraft. It is also a lethal weapon used against observation and transport aircraft and helicopters.

CAPABILITIES

Stinger has an IFF subsystem which aids the gunner and crew chief in identifying friendly aircraft. Stinger is a certified round, which requires no maintenance. The weapon has a range in excess of four kilometers. Stinger has a fire and forget capability. This allows the gunner, once a missile is launched, to acquire and engage another target with another missile. The Stinger Missile Systern Characteristic illustration is a condensed list of Stinger systern characteristics.

STINGER MISSILE SYSTEM CHARACTERISTICS

LAUNCHER

WEIGHT	34.9 lbs	(15.9 kg)
LENGTH	60 in	(1.52 m)

MISSILE

TYPE	Supersonic surface to air	
DIAMETER	2.75 in	(19.0 cm)
LENGTH	58 in	(1.47 m)

LIMITATIONS

Aerial targets must be visually acquired and positively identified before firing. The missile backblast requires 50 meters of clearance behind the weapon for personnel safety reasons. Backblast requires at least five meters (16 feet) safety distance for equipment safety.

FAAR

The AN/MPQ-49 FAAR system is the primary means of provialing EW information to Chaparral, Vulcan, and MANPAD crews. In addition, the FAAR provides SHORAD weapons with the tentative identification and approximate distance (range) and direction (azimuth) of approaching aircraft. The FAAR System Characteristics illustration is a condensed version of the system characteristics. A more complete listing can be found in the tabulated data section of TM 9-1430-588-10.

FAAR SYSTEM CHARACTERISTICS

WEIGHT (with trailer)	13,350 lbs	(6,055.3 kg)
WEIGHT (without trailer)	10,600 lbs	(4,807.9 kg)
LENGTH (with trailer)	30.7 ft	(9.35 m)
LENGTH (without trailer)	23.5 ft	(7.16 m)
WIDTH	7.0 ft	(2.13 m)
HEIGHT	10.2 ft	(3.11 m)
MAXIMUM SPEED	30 mph	(48.3 kph)
FORDING DEPTH	24 in	(.62 m)

CAPABILITIES

The FAAR system is a complete, self-contained, search-type radar system. The system is relatively lightweight and mobile. The FAAR is deployable under the same climatic conditions as the Chaparral and Vulcan systerns with which it operates. However, it has terrain restrictions the Chaparral and Vulcan systems do not have. The system is air transportable and can be lifted by helicopter. FAAR can detect targets at a range out to 20 kilometers.

LIMITATIONS

The large amount of RF energy emitted by the FAAR system makes it particularly susceptible to enemy direction finding. The RF energy emitted makes the FAAR susceptible to antiradiation missiles. The system must move often. It must use sector blanking and system blinking and must operate with the control indicator remoted for crew survival. The system offers no armor protection for personnel and materiel. The FAAR requires line of sight to the fire unit for the system to operate effectively.

Section III. Responsibilities

Short-range air defense provides low-altitude air defense for our field forces. To achieve this, leaders and soldiers at all levels must be highly trained in the accomplishment of all their respective duties. They must have a clear understanding of the capabilities and limitations of their personnel and equipment to fully exploit the capabilities of their weapon systems.

PLATOON LEADER

The platoon leader is responsible to the battery commander for the discipline and training of his platoon. He is responsible for developing his soldiers into an effective fighting force capable of performing its combat mission. Additionally, he is responsible for the maintenance of all assigned equipment. If assigned in DS of a maneuver element, he has the additional responsibility of serving as the maneuver commander's special staff officer for air defense known as the ADO. This means he must coordinate with the supported battalion's staff and subordinate commanders so as to ensure that his unit provides the best possible air defense with the available resources. The platoon leader is responsible for reconnoitering, selecting, and directing the occupation of positions for his subordinate squads.

PLATOON SERGEANT

The platoon sergeant is second in command of the platoon. He must be proficient in all of the tasks normally accomplished by the platoon leader. He must be prepared to assume the responsibilities of the platoon leader at a moment's notice. He must ensure that subordinate leaders are trained to perform the duties of a leader two levels above their positions, in addition to their normal duties. Moreover, the platoon sergeant is responsible to the platoon leader for all aspects of maintenance, logistics, and discipline within the platoon. He is responsible for the coordination of all logistical and maintenance support the platoon requires. The platoon sergeant must work in close coordination with the platoon leader to ensure unity of effort.

STINGER SECTION LEADER

The Stinger section leader is responsible to the platoon leader and platoon sergeant for the training, discipline, and tactical employment of his Stinger crews. When the section is in DS of a force and there is no air defense platoon leader, the section leader must be prepared to serve as the ADO to the supported unit commander. He is responsible for the coordination of all logistical or maintenance support the section requires. He is responsible for the maintenance of all the section's assigned equipment and the sub mission of all tactical and logistical reports.

SQUAD LEADER OR CREW CHIEF

The squad leader or crew chief is responsible to the platoon leader for the discipline and training of his squad or crew. He is responsible for the maintenance of all assigned equipment. He submits all required tactical and logistical reports. He briefs his squad or crew and directs the emplacement of the fire unit. He supervises the initial first aid and evacuation of squad or crew members. The squad leader or crew chief is also responsible for the command and control of the squad or crew, identification of aircraft, and issuance of the engagement command.

SENIOR GUNNER

The senior gunner is responsible for the operation and maintenance of the weapon system and the fire control system. He is also responsible for firing the weapon system. He must be ready to assume all the duties and responsibilities of the squad leader.

DRIVER

He is responsible for operating and maintaining the prime mover. He performs maintenance on the radio equipment and provides site security. He is also responsible for performing observer duties and such other duties as the squad leader or crew chief may require.

GUNNER (MANPAD)

The gunner is responsible for assisting the crew chief in the operation and maintenance of the Stinger weapon system. He is also responsible for firing the weapon system. He must be prepared to assume all the duties and responsibilities of the crew chief.

In heavy division Vulcan platoons, the Vulcan squad leader is responsible for deployment and the actions of the MANPAD gunner. For further details see FC 44-16R/16S

Chapter 2

COMMAND AND CONTROL

The platoon leader commands and controls the platoon, aided by the platoon sergeant. He uses a variety of techniques to plan operations, issue orders, employ the platoon, and communicate. At platoon level, effective command and control is mainly dependent on leadership, training, sound SOPS, and drills, and the effective use of control measures and communications techniques. This chapter will discuss methods of command, control, and communications at this level.

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Section I. Command and Combat Leadership

George S. Patton, Jr. once wrote in his diary, "The thing as I see it is to get a definite, simple plan quickly, and win by execution and careful detailed study of the tactical operation of the lesser units. Execution is the thing — that and LEADERSHIP." His emphasis on the small unit leader as the critical link between the planning and implementation of military operations is apparent throughout his writings. Trained leaders are invaluable to all armies.

COMMAND

The platoon leader, by virtue of rank and experience, faces a demanding tack. The platoon leader must lead a platoon and serve as a special staff officer for the TF commander. The platoon leader is the expert on all ADA-related matters in the TF sector. To operate successfully in this environment, the platoon leader — often the junior member of the commander's staff — must be knowledgeable, confident, and well versed in both ADA and maneuver force procedures. ADA battalion and battery commanders must emphasize training for their ADA leaders. Higher ADA commanders must monitor, counsel, and support their lieutenant ADA leaders. Similarly, maneuver commanders must identify any difficulties relating to the employment of their ADA leaders and work to integrate them into TF training and operations.

The platoon leader and other leaders must know the details of the operation and understand the overall plan so they can accomplish their tasks as part of the unit's overall mission. This means that leaders at all levels must understand the concept and intent of two command levels above them and know the actions to be taken two command levels below them. In this way, the leader will know how his element fits into the overall plan and the necessary actions his element must perform to accomplish objectives even in the absence of orders.

Orders, directives, and information pass through successive leaders. This forms the chain of command. In combat, the loss of communications may preclude issuing orders to subordinates. If this happens, the subordinate must anticipate the actions and orders of his leader. The platoon

leader must make sure all key personnel understand his con cept of operations and his intent. Without this knowledge, squad and section leaders will not exercise initiative and will not act without orders. For subordinate leaders to display initiative, the platoon leader must keep them informed of the situation and make known the succession of command.

The platoon leader commands the platoon. He is responsible to the battery commander for the training, maintenance, discipline, and welfare of the platoon and everything the platoon does or fails to do. Within the battery, the platoon leader is the communications link, up to the battery commander and down to the members of the platoon. He acts as a buffer or shield, and as a translator of messages which are essential to the mission. He must be "people oriented." He must keep in close touch with the battery commander and the battery executive officer. He must understand their wants and their priorities. The commander should keep his platoon leaders informed.

The platoon sergeant is the platoon's point of contact with the NCO support channel and the battery 1SG. He delegates authority and lets the NCOs lead. Trusting subordinates helps them to grow professionally and contributes to developing teamwork and cohesion. The platoon sergeant keeps informed on everything dealing with the platoon. At platoon level both the officer and NCO must be of one mind to accomplish the mission.

The essential qualities of the air defense platoon leader and his subordinate leaders are as follows:

• **A sense of awareness.** The leader must know what is happening around him and anticipate what will happen next. He must look at the overall tactical picture. The platoon leader who spends all his time concentrating on the actions of his platoon may fail, because he is not aware of the actions of the other units around him and his relationship to them.

• **Speed of reaction.** With a sense of urgency and a flexible attitude, the platoon leader can react quickly and seize any opportunity.

Ž **Initiative.** Initiative is the ability to take action, given an opportunity, without waiting to be told. It combines the ability to see what is wrong and to fix it. Without initiative, tactics become predictable and opportunities for surprise and fast action are lost.

• **Common sense.** Common sense is sound practical judgment that prevents mistakes.

Ž Aggressiveness. Aggressiveness is the ability to be energetic, assertive, and mentally tough to make a decision and have the courage to carry it out. For example, tell the maneuver commander how your assets can best be employed to support his plan of action, and voice your concerns over misuse of ADA assets.

DECISION-MAKING PROCESS

Decision making is a conscious process for selecting a course of action from two or more alternatives. At platoon level most recurring decisions are made in advance in the form of SOPS and drills such as how the wounded are evacuated, who must provide local security, and what happens when the platoon leader goes to receive the OPORD. SOPS allow the platoon to operate quickly and efficiently without constant guidance from the platoon leader. During continuous operation, good SOPS are critical because of the drop in efficiency caused by fatigue.

Most tactical decisions are made by the supported force commander or the platoon leader's battery commander. The platoon leader uses troop leading procedures to put the OPORD into words that platoon members can understand. He then leads his platoon in the execution of the mission. Troop - leading procedures (ADA planning steps) are fully discussed in Appendix B. Also in Appendix B is an example of the planning sequence undertaken by an ADA platoon leader in support of a maneuver force. It contains the Army's standard operations order format tailored for an ADA platoon. It is followed by a specific example of an OPORD issued verbally to the platoon.

When time is not available to conduct all eight troop-leading steps, the platoon leader must at least consider each step. Most troop-leading procedures can be done mentally. Once he receives the order, the platoon leader conducts a quick analysis and sends for the squad leaders. He makes sure the squad leaders post control measures on their maps. He then gives an abbreviated order consisting of a quick enemy and friendly situation, the mission of the platoon, and the concept of the operation.

In some cases there may not even be enough time for this shortened procedure. The platoon may have to move out and receive the order by radio or at the next scheduled halt. Effective drills, SOPS, and training enable platoons to move, shoot, communicate, and sustain, thus accomplishing their mission with a minimum of formal orders.

FACTORS OF METT-T

The commander's estimate of the situation includes an analysis of the factors of METT-T. The commander's concept of the operation will dictate much of the platoon's operation. The platoon leader must be aware of the factors of METT-T and how they apply at his level. The following questions will aid -in developing an appreciation for the factors of METT-T.

MISSION

What is the mission and what are the air defense' priorities the supported force commander gave me? What is the commander's in. tent? What tasks must I do to accomplish this mission?

ENEMY

Where is the enemy, and how strong is he? What weapons does he have that can affect me? What can he do in response to my actions? What are his weaknesses and how can I exploit them? (For more information on threat sysierns and tactics, see FM 100-2-1 and FM 100-2-3.)

TERRAIN (AND WEATHER)

When considering terrain, the following items must be addressed:

- Where can I effectively ***observe and engage the enemy?***
- Where are the ***covered and concealed routes?***
- What are the ***obstacles*** and where are they? How can they be overcome or bypassed?

Ž Where is the ***key terrain?*** How can I use it to support my mission? How fast can I move, and how much space does the terrain and other unit formations give me?

Ž Where are the ***air avenues of approach*** for aircraft? Does the terrain afford helicopter masking areas where our maneuver force armored vehicles can be ambushed?

- Will the weather be a factor?

TROOPS (AND OTHER ASSETS)

What are the conditions of personnel and vehicles? What is the status of ammunition, fuel, and supplies? Who is best able to do a specific task? How much sleep can we get? What other assets are available to support my mission? What are the other ADA platoons in the supported maneuver force doing?

TIME

How much time do I have for planning? How long will it take to reach my objective? How long will it take to prepare my battle position?

Section II. Missions and Support Relationships

The support relationship or the command relationship between the platoon leader and the battalion TF is determined by the parent unit battery commander. It is the platoon leader's responsibility to make sure that all ADA elements operating in his area are operating within the battalion TF commander's intent. He must also make sure that those elements receive the necessary combat service support.

SUPPORT RELATIONSHIPS

The authority to assign specific support relationships is inherent to command and follows the command chain. The ADA battery commander selects the appropriate support relationship for his platoons based on the mission and on the tactical situation. Assignment of a support relationship does not negate ADA battery responsibility for administrative and logistical support of the platoon. In some cases, certain logistical support may come from the supported unit to assist the ADA unit in accomplishing the mission. Such support depends upon the tactical situation and must be prearranged between the staffs of the parent and the supported units. The term ***support reiationship*** replaces the term ***"standard tactical mission."***

The ADA platoon leader, operating with a support relationship, may task organize at this level to support the given priorities or concept of operations. The four ADA support relationships are GS, R, GSR, and DS.

GENERAL SUPPORT

An ADA unit with a support relationship of GS provides air defense for the force as a whole. It is not committed to any specific element of the supported force. For example, an ADA platoon,

1/A/1-340, received this mission statement:1/A/1-340 ADA GS to brigade with priority of protection to bridge site 10.

Since the first platoon of Alpha battery is GS, the battery commander is completely responsible for the platoon. The battery commander has the flexibility to locate and relocate his elements as the tactical situation dictates. In GS, the platoon leader designs his defense based on the factors of METT-T with the approval of the battery commander.

REINFORCING

An ADA unit with a support relationship of R augments the coverage of another ADA unit. For example, a Stinger section, B/4/A/1-340, received this mission statement: B/4/A/1-340 ADA(S) R 1/A/1-340 ADA(V).

The Stinger section chief is the reinforcing ADA unit commander. He receives air defense priorities from the first platoon leader of Alpha battery, the reinforced ADA unit commander. After receiving the air defense priorities, the section chief is responsible for employing his unit. The section chief designs his defense based on the factors of METT-T and coordinates his air defense plan with the reinforced ADA unit commander.

GENERAL SUPPORT REINFORCING

An ADA unit with a support relationship of GSR provides air defense for the force as a whole and augments the coverage of another ADA unit. GSR units are not committed to any specific element of the force. For example, a MANPAD platoon, 4/A/1-340 ADA, received this mission statement: 4/A/1-340 ADA GSR to 1st Brigade with priority of protection to brigade trains reinforcing 1/A/1-340 ADA.

The fourth platoon of Alpha battery has two of its sections under platoon control in GS to 1st Brigade with priority of protection to the brigade trains. Also, one section of 4th Platoon has the additional relationship of reinforcing the 1st Platoon.

SUPPORT RESPONSIBILITIES

The Support Relationships and Responsibilities illustration summarizes the responsibilities of each ADA support relationship in matrix form. This illustration shows the relationship between GS, GS-R, R, and DS.

SUPPORT RELATIONSHIPS AND RESPONSIBILITIES

ACTION	GENERAL SUPPORT (GS)	GENERAL SUPPORT REINFORCING (GSR)	REINFORCING (R)	DIRECT SUPPORT (DS)
Who recommends ADA priorities?	Commander assigning the support relationship (approved by the supported force commander).	Same as GS and R.	NA (The reinforced ADA commander assigns ADA priorities to reinforcing ADA commander.)	The ADA commander (approved by the supported force commander).
Who coordinates for terrain for ADA units; fire units?	Commander assigning the support relationship (approved by the supported force commander)	Same as GS and R.	The reinforced ADA commander (approved by the supported force commander).	The ADA commander (approved by the supported force commander).
Who establishes liaison?	Commander assigning the support relationship.	Same as GS and R.	The reinforcing ADA commander.	The ADA commander.
With whom to establish liaison?	As required by commander assigning support relationship.	Same as GS and R.	The reinforced ADA commander.	Supported unit.
Who establishes communications?	The ADA commander.	Same as GS and R.	The reinforcing ADA commander.	The ADA commander.
With whom to establish communications?	As required by commander assigning support relationship.	Same as GS and R.	The reinforced ADA unit.	Supported unit

Notes:

1. ADA leader at fire unit level positions fire unit on specific terrain. This leader for SHORAD weapons is the squad leader or crew chief, for Hawk is the platoon leader, and for Patriot is the battery commander.

2. This positioning is accomplished within the assigned area of operations as assigned by the next higher leader in the chain of command. This next higher leader is also responsible for coordinating for terrain with the supported force commander.

DIRECT SUPPORT

An ADA unit with a support relationship of DS provides dedicated air defense for a specific element of the force that has no organic or attached ADA. For example, 1st Platoon, Alpha Battery, received this mission statement: 1/A/1-340 ADA DS to TF 1-7.

First platoon is DS to TF 1-7. This ADA platoon is committed to the TF. The air defense platoon leader serves as ADO to TF 1-7. The platoon leader must make face-to-face coordination with the TF 1-7 commander and staff. The ADA platoon leader then designs a defense based on the factors of METT-T and the concept of the operation he receives from the TF commander. The platoon leader recommends his priorities and air defense plan to the TF commander. The TF commander approves the overall air defense plan and ensures the air defense OPLAN becomes a part of the TF's OPLAN.

Section III. Maps and Control Measures

ADA platoon personnel must have and know how to use a map. Each squad leader must also have a plastic map case and a marker, which will enable him to post operational symbols. Because the loss of key personnel may result in a squad leader assuming control of the platoon, each squad leader must know his location at all times, and have the operational graphics properly posted on his map.

Performing land navigation while mounted at high speeds on tracked ADA vehicles requires the platoon leader to terrain associate. He makes a thorough map study and identifies major terrain features, contour changes, and man-made structures that exist along his axis of advance. As the platoon advances, he looks for existing features, changes, or structures on the ground and uses them to orient or locate the platoon.

This section presents some military symbols and control measures which are of operational interest to the ADA platoon. For a complete list of operational terms and graphics, see FM 101-5-1.

COLOR REPRESENTATION

Ideally, different colors are used for enemy and friendly symbols. Different colors may not always be available; therefore, other procedures are needed for one-color symbols as well as for multicolor representation.

ONE-COLOR REPRESENTATION

Friendly symbols are outlined by a single line, and enemy symbols are outlined by double lines. For enemy equipment, ground environment, and activities symbols, use the abbreviation EN ( or  EN).

MULTICOLOR REPRESENTATION

When different colors are available, the symbols are as follows:

Ž BLUE or BLACK indicates friendly units, posts and installations, equipment, activities, and ground environment symbols not covered by other colors.

• RED indicates enemy units, posts and installations, equipment and activities, and friendly fire support ground environment symbols not covered by other colors.

Ž YELLOW indicates friendly and or enemy chemical or radiological areas and enemy biological areas.

• GREEN indicates friendly and or enemy man-made obstacles.

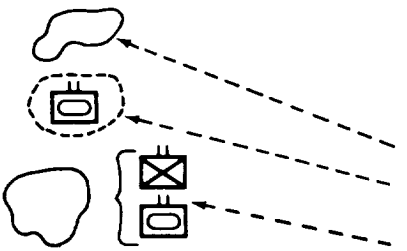
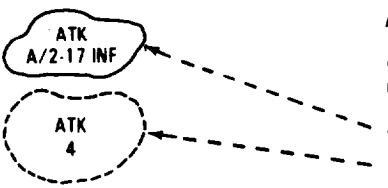
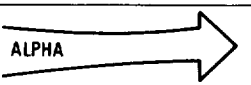
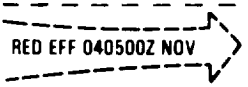
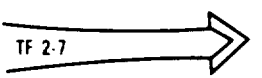
• Other colors used must be explained in a legend.

• Overlays are transmitted by facsimile; only black on white is possible. To differentiate between enemy and friendly contaminated areas or obstacles, use the abbreviation EN in the line that defines the area.

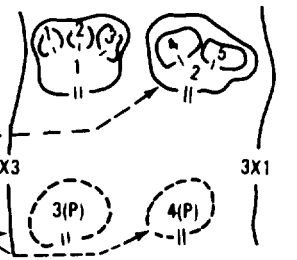
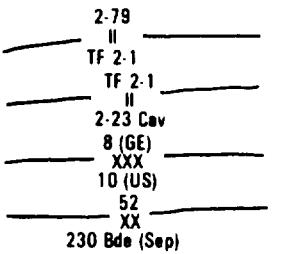
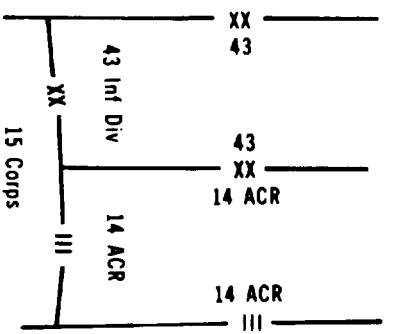
CONTROL MEASURES

Most of the control measures commonly used by the battery or company commander are also used at platoon level. Control measure graphics, which may facilitate use of this field manual, are described on pages, 2-10, 2-11, 2-12, 2-13, 2-14, 2-15, and page 2-16. ADA symbols are shown and explained on page 2-17.

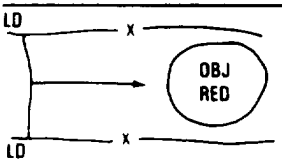
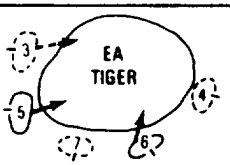
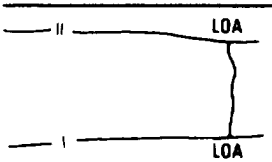
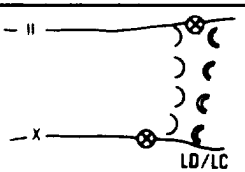
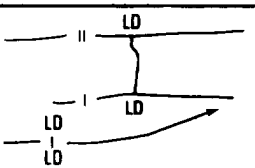
CONTROL MEASURE GRAPHICS

Symbol	Description
	ASSAULT OBJECTIVE. General assault objective symbol. Objectives and intermediate objectives are enclosed and contain the abbreviation OBJ, with a letter, number, code name, or unit designation.
	ASSAULT POSITION. A position between the line of departure and the objective in an attack. It is usually the last covered and concealed position from which the assault force will launch its attack against the objective. It is identified by a name, number, or code.
	ASSEMBLY AREA. An area in which a force prepares or regroups for further action. (May be designated by numbers, letters, code names, or unit designations.) Occupied assembly area Planned assembly area for a battalion Unit symbols displaced to indicate an assembly area for a group of units
	ATTACK POSITION. (May be designated with a number, letter, code name, or unit designation.) Actual attack position, A Co, 2d Bn, 17th Inf Proposed attack position
	AXIS OF ADVANCE. Actual.
	Proposed with date and time effective.
	Axis of advance for unit designated to conduct main attack.

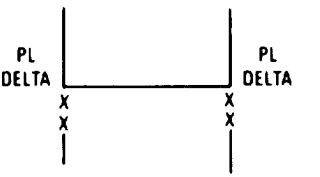
CONTROL MEASURE GRAPHICS (continued)

Description	Symbol
BATTLE POSITION. Occupied co BP identified at bn level as BP5. At bde level, this BP is referred to in conjunction with the bn BP as BP2-5. (P) following a position number indicates a prepared position. Prepared bn BP for future occupation. Within the 3d Bde it would be identified as BP4.	
BOUNDARY. Lateral boundaries. Lateral boundaries are lines with a symbol placed on the boundary to show size and designation of the highest echelons that have the boundary in common. If the units are of unequal size, the symbols of the highest units are shown and the designation of the lowest units are given completely.	
REAR BOUNDARIES. When used, a rear boundary shows the size symbol for the smaller or subordinate unit rather than that of the target unit of which it is a part.	
CHECKPOINT. A predetermined point on the ground used as a means of coordinating friendly movement.	

CONTROL MEASURE GRAPHICS (continued)

Symbol	Description
	CONTACT POINT. A designated easily identifiable point on the terrain where two or more units are required to physically meet.
	COORDINATION POINT. A specific point where fires and maneuvers between adjacent units are coordinated. It is usually found where a phase line crosses a unit boundary or where the boundary lines extend beyond the FEBA.
	DIRECTION OF ATTACK. Direction of attack is shown graphically as an arrow extending from the line of departure. The arrow is not normally labeled.
	ENGAGEMENT AREA. An area in which the commander intends to trap and destroy the enemy with massed fires. It is routinely identified by a target reference point in the center of the trap area.
	LIMIT OF ADVANCE. General LOA symbol. The symbol is depicted by drawing a line along an easily identifiable terrain feature.
	LINE OF CONTACT. General LC symbol. Enemy symbols depicted with double lines when not portrayed in color.
	LINE OF DEPARTURE. General LD symbol. The symbol is a solid line generally perpendicular to the direction of attack with the letters LD at either end.

CONTROL MEASURE GRAPHICS (continued)

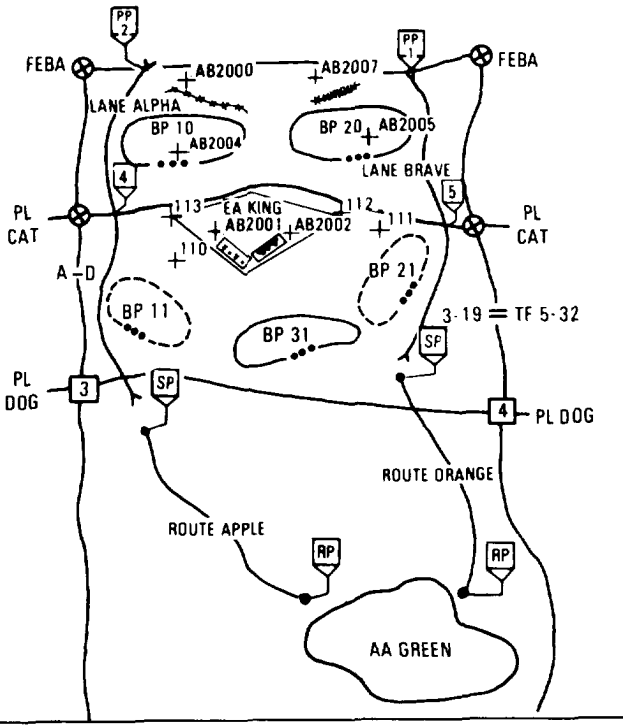
Description	Symbol
PASSAGE POINT. A place where units will pass through one another in an advance or withdrawal.	
PHASE LINE. Phase lines are labeled PL and assigned letters, numbers, or code name designations. PLs are drawn across a unit's sector from boundary to boundary.	
POINT OF DEPARTURE. In night attacks, the PD is a specific point on the LD where a unit will cross.	
RELEASE POINT. A clearly defined control point on a route at which specific elements of a column revert to the control of their respective commanders. (See also start point.)	
START POINT. A clearly defined initial control point on a route at which specified elements of a column of ground vehicles come under the control of the commander having responsibility for the movement.	
TARGET. A known or suspected enemy position on which artillery fires are planned. A target is identified with an alphanumeric designation.	

Graphic control measures should be clear, consistent, and easy to understand, so that squad leaders can copy the overlay prior to receiving the oral order.

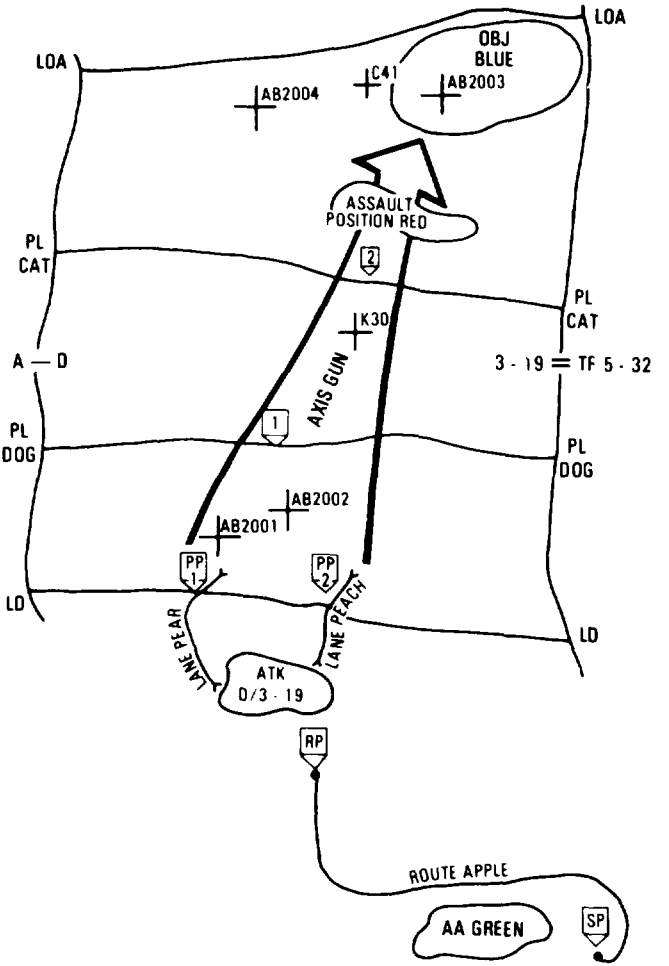
The company team commander may use a modified execution matrix to record platoon missions and assist him in organizing his notes. Construction and use of the matrix is explained in FM 71-1. An example of the matrix is found in Chapter 6 of this manual.

The following figures present control measures used in different operations. The controls shown are those used in defense (see the Control Measures (Defense) illustration), offense (see the Control Measures (Offense) illustration), and retrograde or withdrawal under enemy pressure (see the Control Measures for Withdrawal Under Enemy Pressure illustration).

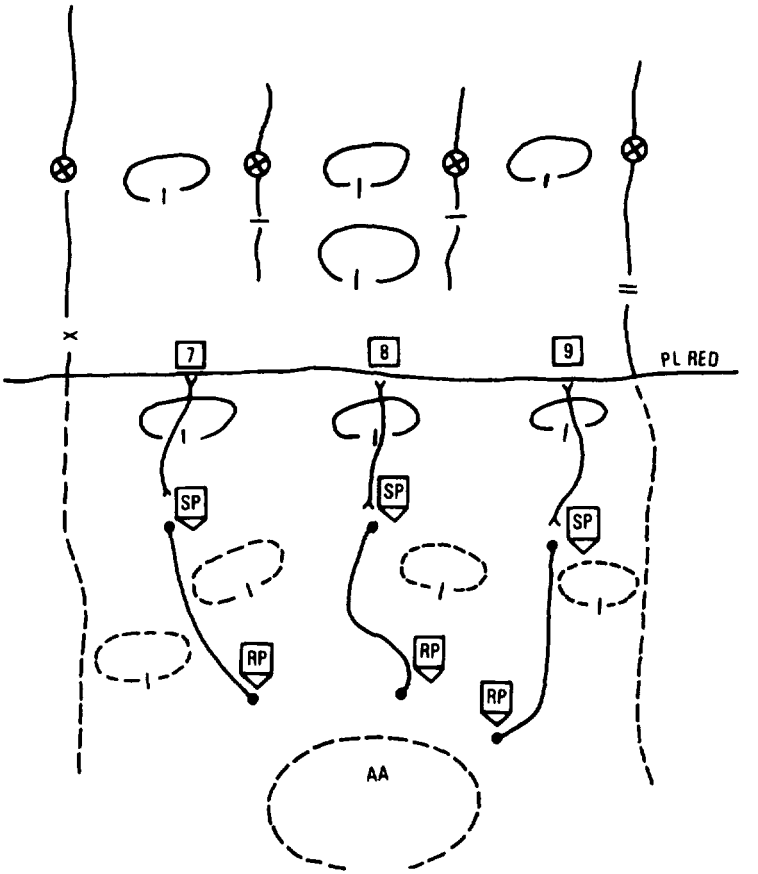
CONTROL MEASURES (DEFENSE)



CONTROL MEASURES (OFFENSE)



CONTROL MEASURES FOR WITHDRAWAL UNDER ENEMY PRESSURE

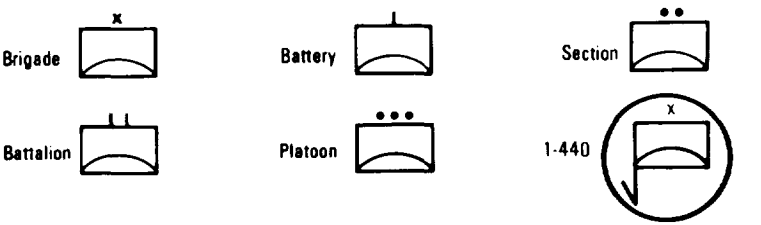


ADA SYMBOLS AND GRAPHICS

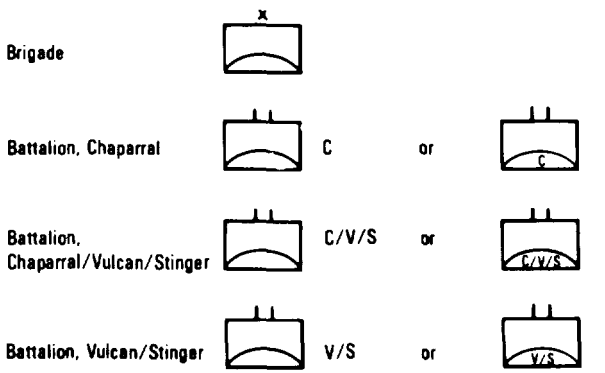
Chaparral, Vulcan, and Stinger personnel should be familiar with unit designation and the weapon symbols of the forces for which they provide air defense coverage. Operational terms and graphics are found in FM 101-5-1. In addition, they must know the symbology of ADA units and the weapon symbols described below.

If a symbol has a staff attached, it represents the command section or headquarters for that unit. To show precise location, a line is drawn from the exact map location to the bottom left corner of the unit symbol or to the bottom of the staff. An example is circled in the ADA unit symbols illustration.

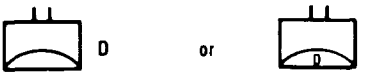
ADA UNIT SYMBOLS

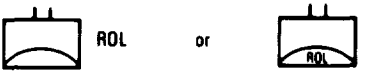


ADA UNIT SYMBOLS WITH ROLE INDICATOR



ADA UNIT SYMBOLS WITH ROLE INDICATOR (continued)

Battalion, Duster 

Battalion, Roland 

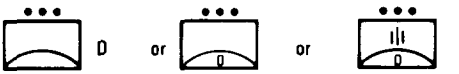
Note: Battery. Same as battalion with unit size indication changed to reflect a battery.

Platoon, Stinger 

Platoon, Chaparral 

Platoon, Vulcan 

Platoon, Roland 

Platoon, Duster 

Section, Stinger 

Section, Redeye 

ADA SUPPORT ELEMENT

ADA battalion (trains) 

ADA battery (trains) 

AMMUNITION TRANSFER POINT

All types of ammunition 

Air defense artillery ammunition
Small arms ammunition 

Tank main gun ammunition 

Field artillery ammunition 

Note: There is no designator in the ATP symbol to distinguish which type of ADA ammunition is present in the ATP.

SPECIAL UNITS

ADA battalion (airborne division) 

ADA battalion (air assault division) 

ADA battalion (light division) 

ADA EQUIPMENT

ADA radar 

Roland missile system 

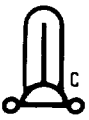
or 

or 

Chaparral system (self-propelled) 

or 

or 

Chaparral system (towed) 

or 

Vulcan system (self-propelled) 

or 

or 

Vulcan system (towed) 

or 

Duster 

or 

or 

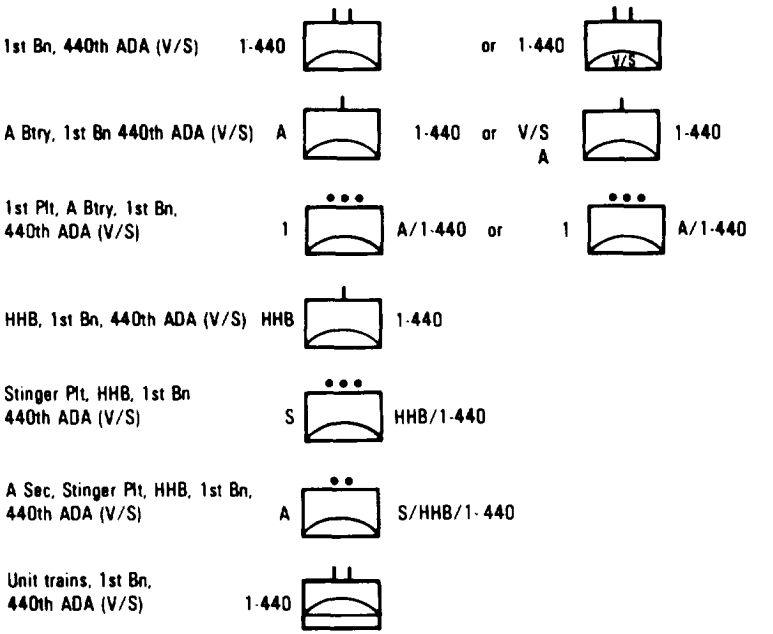
Redeye 

or 

Stinger 

or 

ADA OPERATIONS OVERLAY GRAPHICS



Section IV. Communications

The ADA platoon, by nature of its mission, relies on FM radio as its primary method of communications. Authorized operations or brevity codes and proper radiotelephone procedures must be used at all times to reduce the length of radio transmission.

RESPONSIBILITIES

The ADA platoon leader is responsible for the planning, maintenance, training, and use of communications systems within the platoon. He must operate within the battery communications

system. The following rules of communications responsibility apply at all levels:

- Senior-to-subordinate.
- Supporting-to-supported.
- Lateral communications.
- Restoration.

The ***senior-to-subordinate*** rule states that a senior unit is responsible for establishing communications with subordinate units.

The rule of ***supporting-to-supported*** states that a supporting unit is responsible for establishing communications with the supported unit.

The ***lateral communication*** rule states that if no orders from the next higher command are given to establish responsibility, the unit on the left is responsible for maintaining communications with the unit on the right.

The ***restoration*** rule states that, although one unit may be charged with establishing communications with another, both units should take prompt action to restore any disrupted communications.

TACTICAL COMMUNICATIONS MEANS

The ADA platoon leader can choose from several different communications means: messenger, wire, visual, sound, or radio. These means should complement each other so the platoon does not depend on one means only. Dependence on one endangers command and control, while reliance on several strengthens that control.

One means of communication is often more effective than another. To select the most effective means, consider how —

- Open it is to enemy action.
- Reliable it is.
- Long it takes to install.
- Long it takes to transmit.
- Much it costs in resources.

MESSENGER

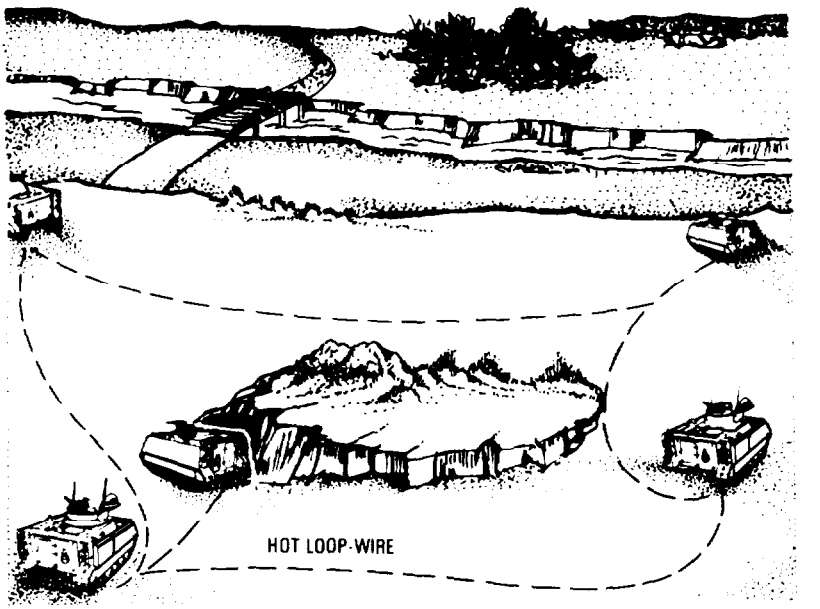
This is the most secure means available and is the best means for transmitting lengthy messages. Messenger communications are flexible and reliable; their efficiency depends on theselection and training of messengers. Speed depends on the mode of travel, the tactical situation, terrain, and trafficability of routes. Messenger communications are vulnerable to enemy action in forward areas and lack person-to-person contact. Platoons should use messengers when halted, thus cutting down their reliance on other means.

WIRE

The platoon hot loop allows each squad to communicate within the platoon by wire. OPs and CPs may also be connected to the hot loop as shown in the Platoon Hot Loop illustration. The hot loop can be used in initial defensive positions, night assembly areas, or other static situations. Each ADA platoon has a sound-powered telephone and several reels of WD-1 wire. The hot loop is formed by connecting wire between the line terminals on the AM-1780 of each vehicle. The main power switch on the AM-1780 is at the INTERCOM ONLY position, and all combat vehicle crew helmet control switches are placed in the center position. The control box switch at each crew member's position should be placed in the ALL position. Field telephone may then be connected at any point in the line to communicate within the hot loop.

Field telephones may also be connected directly to the AM-1780 by using a length of WD-1 wire. This allows the platoon leader to communicate with an OP or CP without establishing a hot loop.

PLATOON HOT LOOP



VISUAL

Visual communications are used to transmit messages and to identify friendly forces. This method is particularly useful during radio silence. However, visual signals are of little use when visibility is poor or when line of sight is not available. The enemy may use similar signals to confuse and deceive friendly elements. Visual signals should not be used when armored vehicles are buttoned up.

When working with infantry and during recovery operations, leaders use hand and arm signals to control individual tank and platoon movements. (See FM 21-60 for more information on hand and arm signals.)

All forward area ADA personnel should know the hand and arm signals used by the supported unit. Several common maneuver force formations and accompanying hand and arm signals are also described in Chapter 3.

The following Hand and Arm Signals illustration shows some of the most common hand and arm signals used by maneuver forces.

HAND AND ARM SIGNALS



WEDGE



VEE



LINE



COIL

HAND AND ARM SIGNALS (continued)



ECHELON LEFT



ECHELON RIGHT



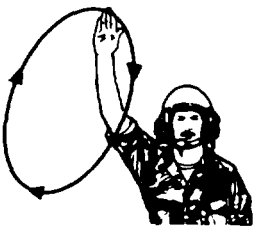
STAGGERED COLUMN



COLUMN



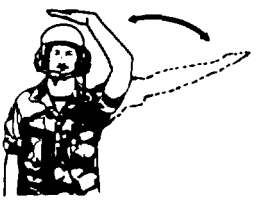
HERRINGBONE



TRAVELING



TRAVELING OVERWATCH



BOUNDING OVERWATCH

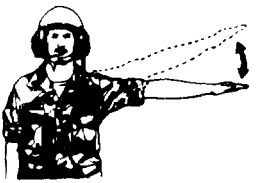
HAND AND ARM SIGNALS (continued)



ACTION LEFT



ACTION RIGHT



MOVE TO LEFT



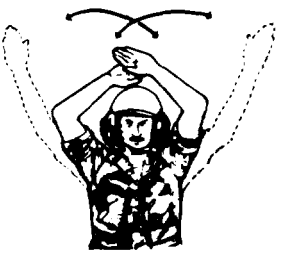
MOVE TO RIGHT



CONTACT LEFT



CONTACT RIGHT



AIR ATTACK

Messages may be sent with flags by using prearranged signals. In armor units, each tank has three flags: red, green, and yellow. They may be used to —

• Control movement. Flags serve as an extension of hand and arm signals when distance between vehicles becomes too great.

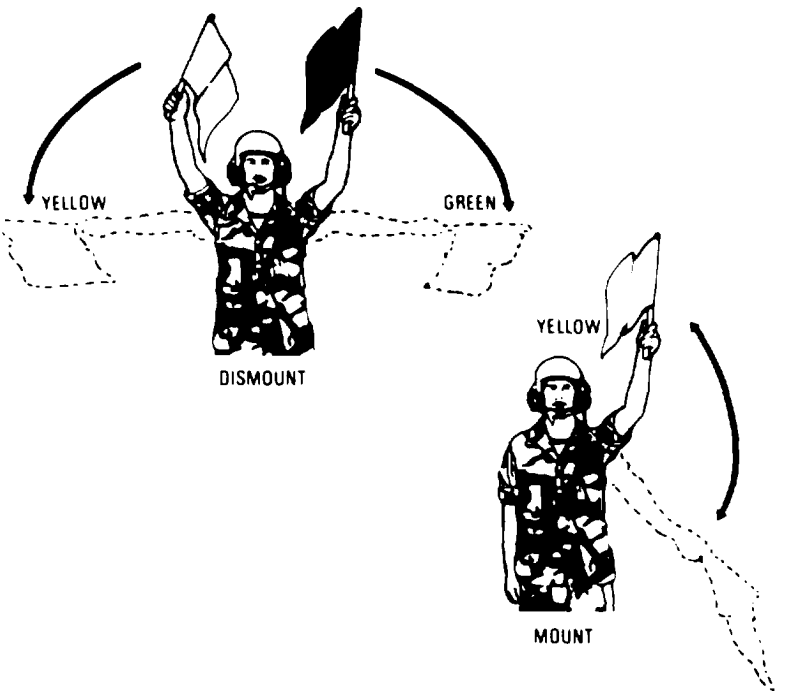
• Mark vehicle positions. For example, a quartering party member may use flags in an assembly area to mark tank positions.

• Identify disabled vehicles.

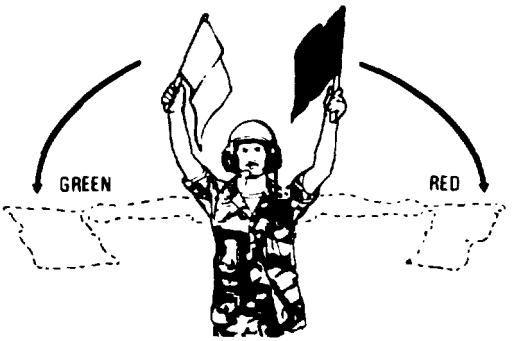
• Warn friendly elements of an advancing enemy. For example, an OP uses a flag to signal a platoon to move to its fighting position.

The following Flag Signals illustration shows some of the most common flag signals.

FLAG SIGNALS



FLAG SIGNALS (continued)



DISMOUNT AND ASSAULT



ASSEMBLE OR CLOSE



MOVE OUT

series. Pyrotechnic messages should be confirmed quickly by another communications means, because the originator may not know if the pyrotechnic signals were seen and understood. Pyrotechnic signals cannot be fully trusted unless the signaler can be identified. The enemy can easily imitate pyrotechnic signals. Since these signals can also be seen by the enemy, units must consider security and avoid exposing friendly unit locations or intentions.

Signal panels communicate with aircraft to mark landing areas, drop zones, and positions, and to identify units as friendly. The CEOI, SOP, or OPORD prescribe identification displays.

SOUND

Whistles, horns, sirens, bells, voice amplifiers, and explosive devices can be used for audible (sound) communications. This form of communications mainly attracts attention, transmits prearranged messages, and spreads alarms. Sound signals carry only short distances. Range and clarity are lost in battle noise. Since they are open to enemy interception, the use of sound signals may be restricted for security reasons. They must be simple to avoid misunderstandings. (See FM 44-3, Appendix E, for emergency warning signals.)

RADIO

The radio is the platoon's most flexible, but least secure, means of communications. It can quickly transmit information over long distances with great accuracy. However, without secure equipment, the radio is vulnerable to enemy interception. The platoon uses radio only when other means of communications are unavailable. Each vehicle is equipped with a voice radio, and all vehicles of the platoon monitor the platoon net. The platoon leader and platoon sergeant also monitor the supported unit net.

The platoon leader must maintain command and control. At all times the platoon leader must be in contact with his platoon and the supported unit. When the platoon is in DS of a maneuver battalion, the ADA platoon leader is the air defense liaison officer to the supported battalion,

When supporting a maneuver force, the ADA platoon leader communicates with his squads through the platoon command net. See the Vulcan (Self-Propelled) Platoon Nets, Vulcan (Towed) Platoon Nets, Chaparral Platoon Nets, and Stinger Platoon Nets illustrations. These illustrations show how radio nets tie in platoon elements and also show how EW is received and or

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RADIO

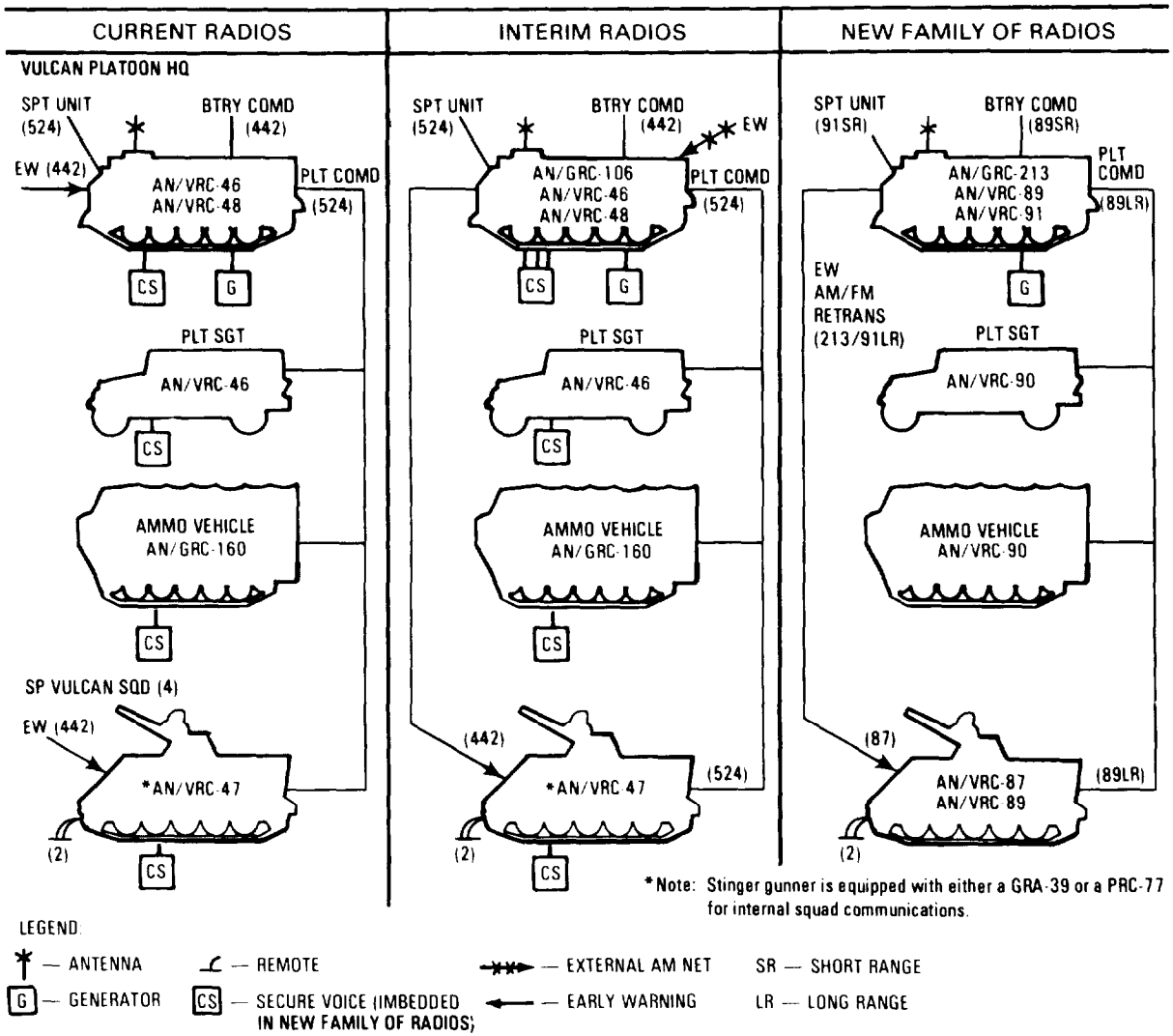
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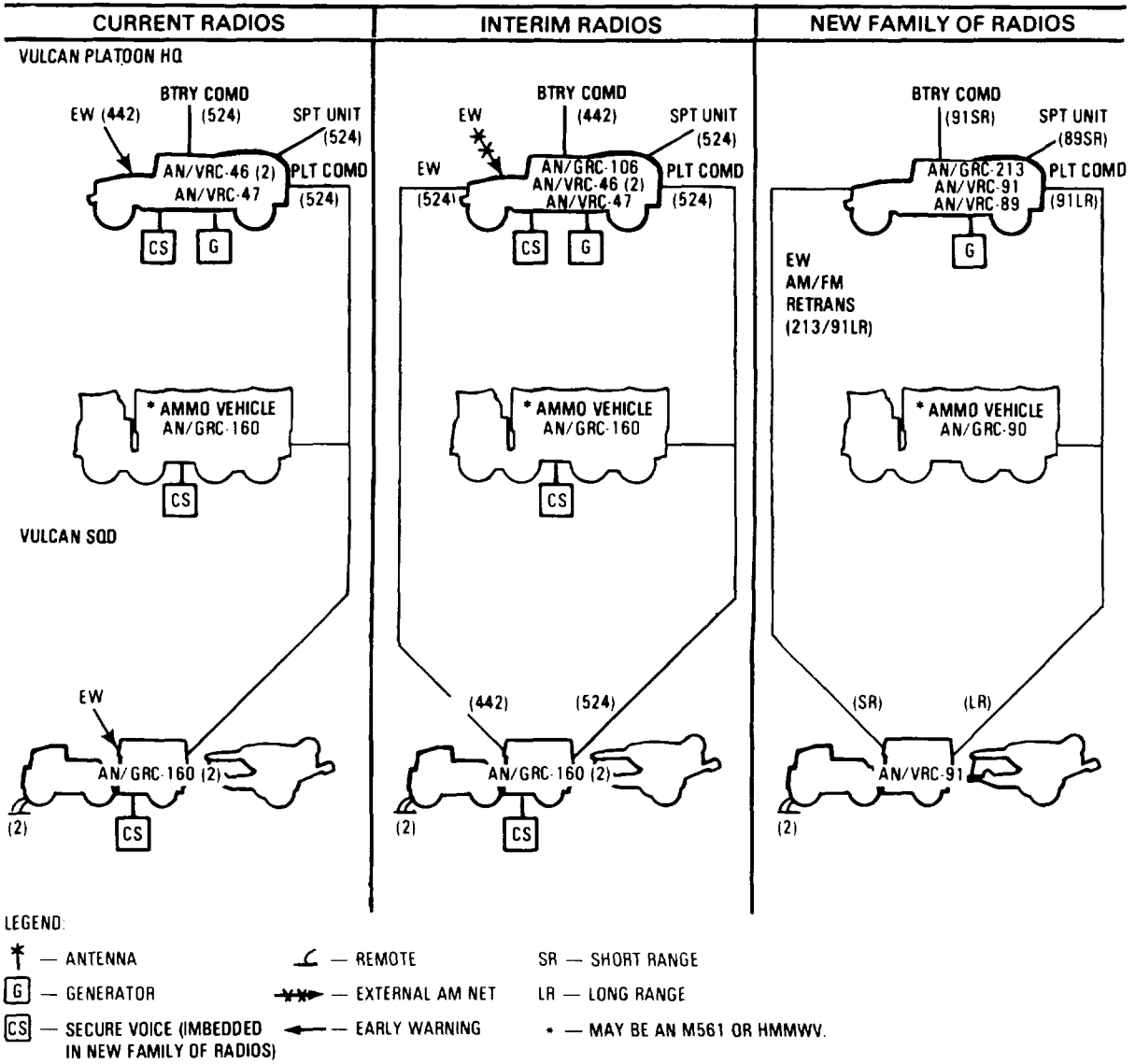
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retransmitted. Pictured radio nets are shown with current, interim, and future communications equipment.

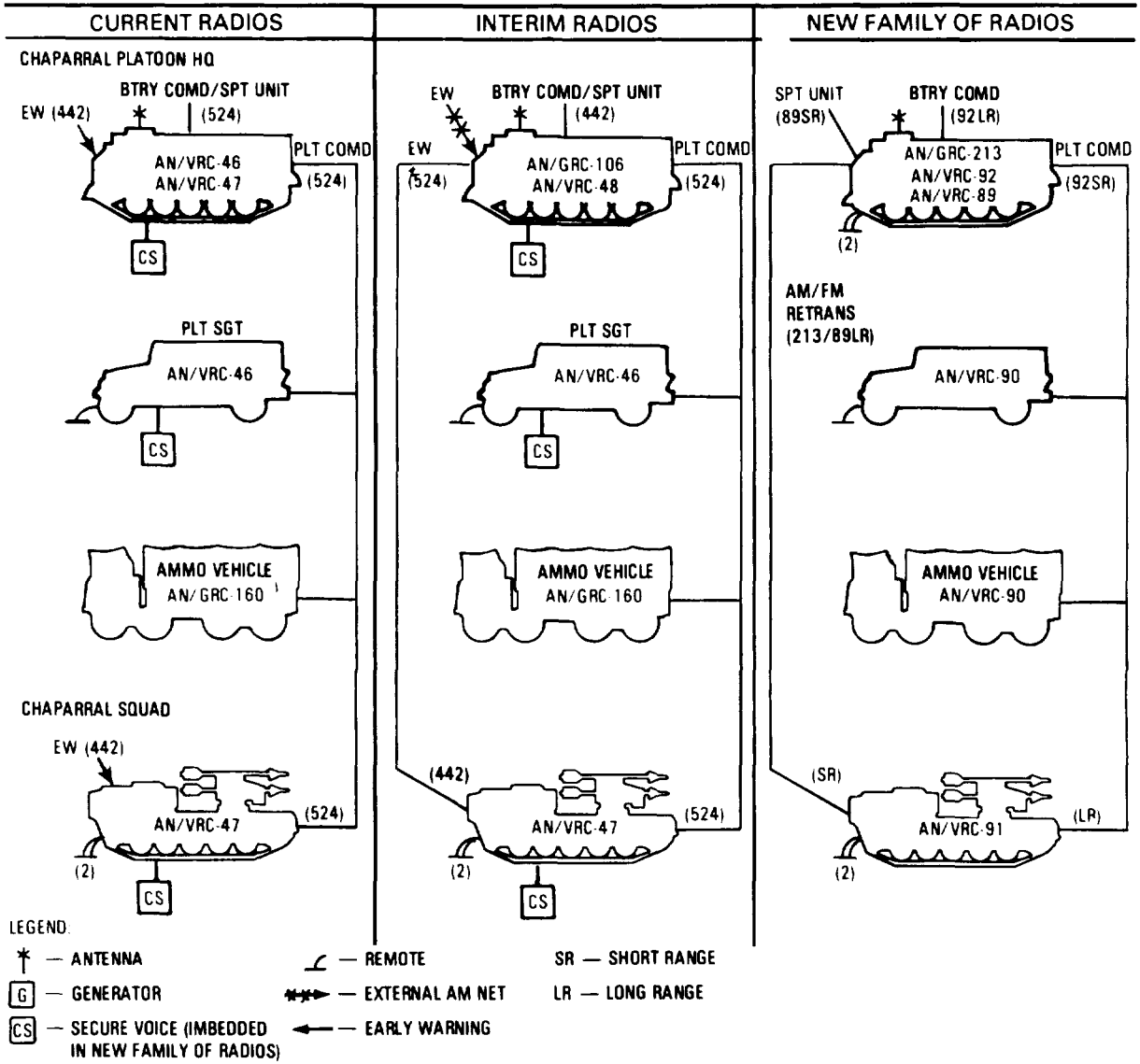
VULCAN (SELF-PROPELLED) PLATOON NETS



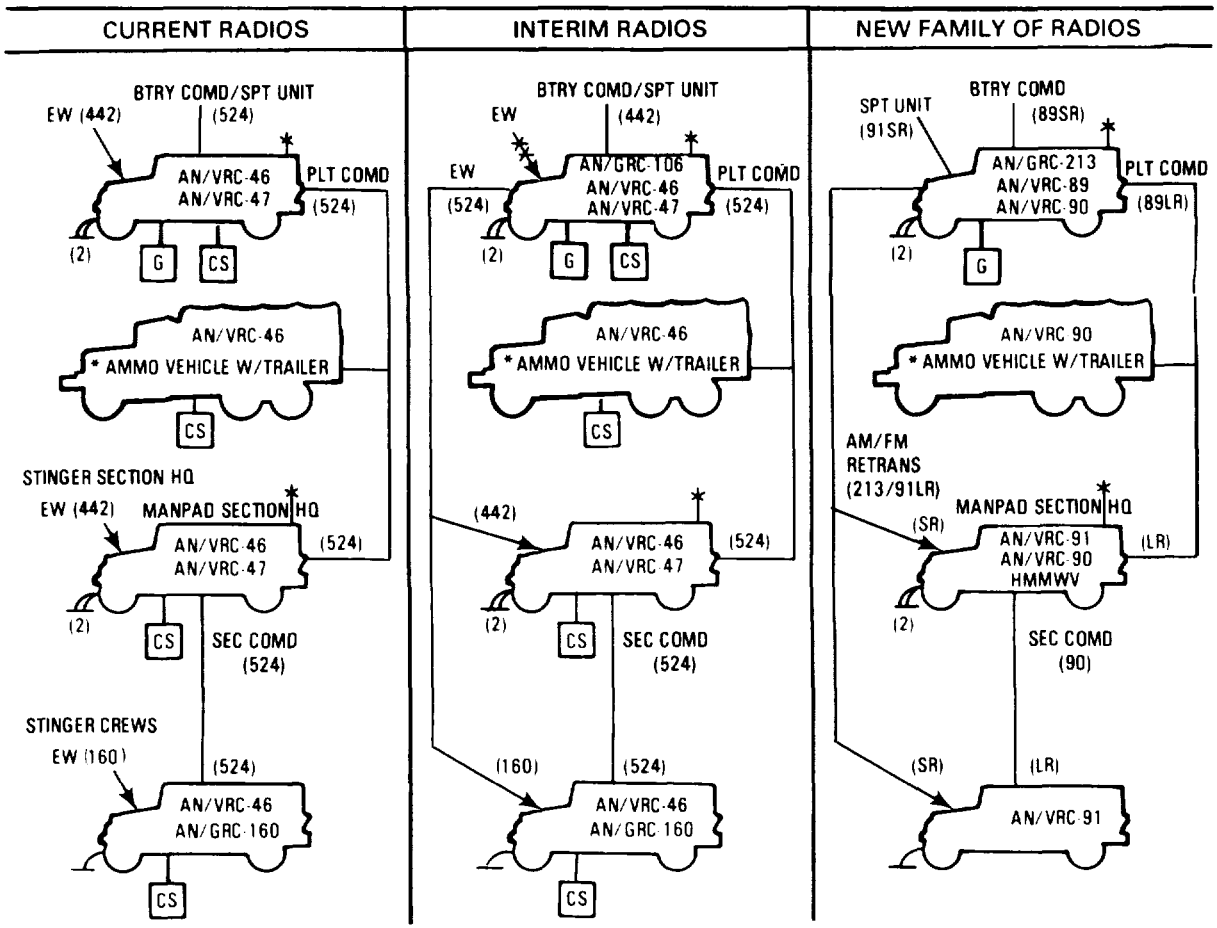
VULCAN (TOWED) PLATOON NETS



CHAPARRAL PLATOON NETS



STINGER PLATTOON NETS



LEGEND:

* — ANTENNA	⌒ — REMOTE	SR — SHORT RANGE
G — GENERATOR	✱✱✱ — EXTERNAL AM NET	LR — LONG RANGE
CS — SECURE VOICE (IMBEDDED SINCGARS RADIOS)	⟵ — EARLY WARNING	* — IF AUTHORIZED

Notes: 1. Heavy division only.
2. ABN, AASLT, light divisions may substitute vehicles and radios.

The platoon leader is the air defense expert. If serious problems arise between the platoon and the supported unit, the platoon leader should contact the air defense battery commander or team commander to solve them. In most cases, the ADA platoon leader should collocate, his platoon CP with the supported company team or TF commander.

The platoon leader's AN/VRC-48 (see the ADA Platoon Radio Set Up illustration) should be set up as follows:

Ž RT-524/VRC. Set on platoon's command net.

Ž R-442 /VRC. Set on supported unit's command net.

Ž R-442 /VRC. Set on EW net.

Note: The battery will contact the platoon on the platoon net.

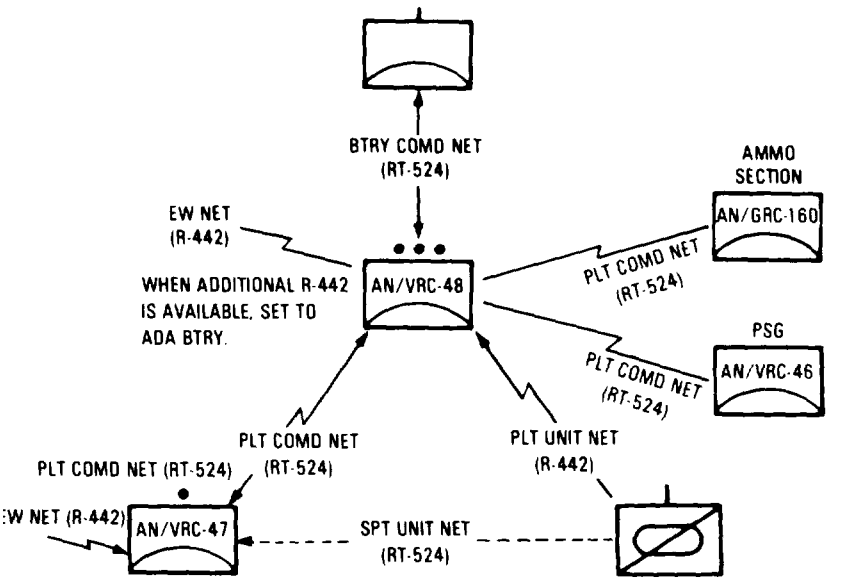
The squad leader's AN/VRC-47 should be set up as follows:

Ž RT-524/VRC. Set on platoon's command net.

Ž R-442/VRC. Set on EW net.

Note: The tactical situation may require the squad to operate in the supported unit's command net instead of the platoon command's net using the RT-524/VRC.

ADA PLATOON RADIO SET UP



The enemy can jam any radio net. Therefore, units and operatore must take all possible precautions to minimize the effects of enemy jamming. When jamming is known or suspected, do the following

Ž Keep calm. Disconnect the antenna to determine if your radio is generating the interference. Do not key radio with the antenna disconnected or damage will occur. Reconnect antenna. Continue to operate and try to transmit through the jamming signal. This will help deceive the enemy as to the effectiveness of his jamming.

Ž Inform higher headquarters of jamming. Use the MIJI report format transmitted by wire or messenger, or encode the message for radio transmission. Never transmit a message about the presence or effectiveness of jamming in the clear.

Ž Reduce use of radio to a minimum.

Ž Keep messages as concise as possible.

Chapter 3

FORMATIONS AND MOVEMENT

Success on the air-land battlefield requires the synchronized employment of ADA systems within the combined arms team. The modern Army can win in battle only if maneuver forces operate under the protection of a cohesive, extensive, and mobile air defense force. Formations determine how ADA weapons may be positioned to support the maneuver forces of a company team in the air-land battle. ADA platoons, when properly employed, can limit or deny enemy aerial reconnaissance of our forces as movements to contact, attacks, exploitations, pursuits, or defensive operations are conducted. ADA units can destroy, drive away, or nullify the effectiveness of enemy helicopter and high-performance aircraft attacking our maneuver, combat support, and combat service support elements. This chapter discusses formation and movement techniques.

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Section II. Road Marches and Assembly Areas

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Assembly Area Guidelines 3-46

Section I. Formations and Movement Techniques

Placement of a Vulcan (self-propelled) platoon in support of a battalion TF requires an ongoing analysis of the TF assets to include —

Ž Prioritization of asset criticality, vulnerability, recuperability, and threat.

Ž METT-T.

Ž Scheme of maneuver.

This section shows the main formations used by tank units; however, it does not cover all formation changes. Formation changes (changing from one formation to another) are covered thoroughly in FM 71-15. This section also covers movement techniques and the placing of ADA units to support the company team.

FORMATIONS

Formations are designed to be flexible. They place the tank and IFV where they are most effective. ADA weapons cannot always be in the same location within the formation. Terrain and enemy air threat should de termine, to a great extent, gun and missile positioning.

Movement into and out of the various formations must be second nature to each platoon. The formations reduce confusion by providing a position for each platoon within the formations. The formations are intended to be flexible. They can be modified to fit the situation and terrain as opposed to having exact geometric dimension and designs.

The hand and arm signals used to start formation changes are shown to familiarize personnel with the formations.

For purpose of illustration, the following formation examples demonstrate how Vulcan elements may be positioned within a high priority company team. Company team-type formations are as follows:

Ž Vee.

Ž Wedge.

Ž Line.

Ž Column.

Ž Coil.

Ž Herringbone.

COMPANY VEE

The company team commander may lead with two platoons abreast and one to the rear in the vee formation. It provides increased firepower forward while maintaining the freedom to maneuver at least one platoon. The vee is used when contact is imminent and the enemy's situation and location are known (as in assaulting an objective). The trail platoon may follow either of the lead platoons or move centered on both. This formation allows both fire and movement. The trail platoon can take short halts to provide overwatch without disrupting the movement of the lead platoons.

ADA gun platoons should be positioned to protect the most critical company team. Emphasis must be placed on coverage extending forward and to the flanks of the maneuver force. These positions help to negate the ability of enemy helicopters and CAS aircraft to use standoff firing positions to attack our forces. Guns positioned in this formation (see the Vulcan Platoon in the Company Team Vee Formation illustration, page 3-4) are afforded the ability to either overwatch the maneuver from a covered and concealed position or accompany the maneuver elements on a hasty attack.

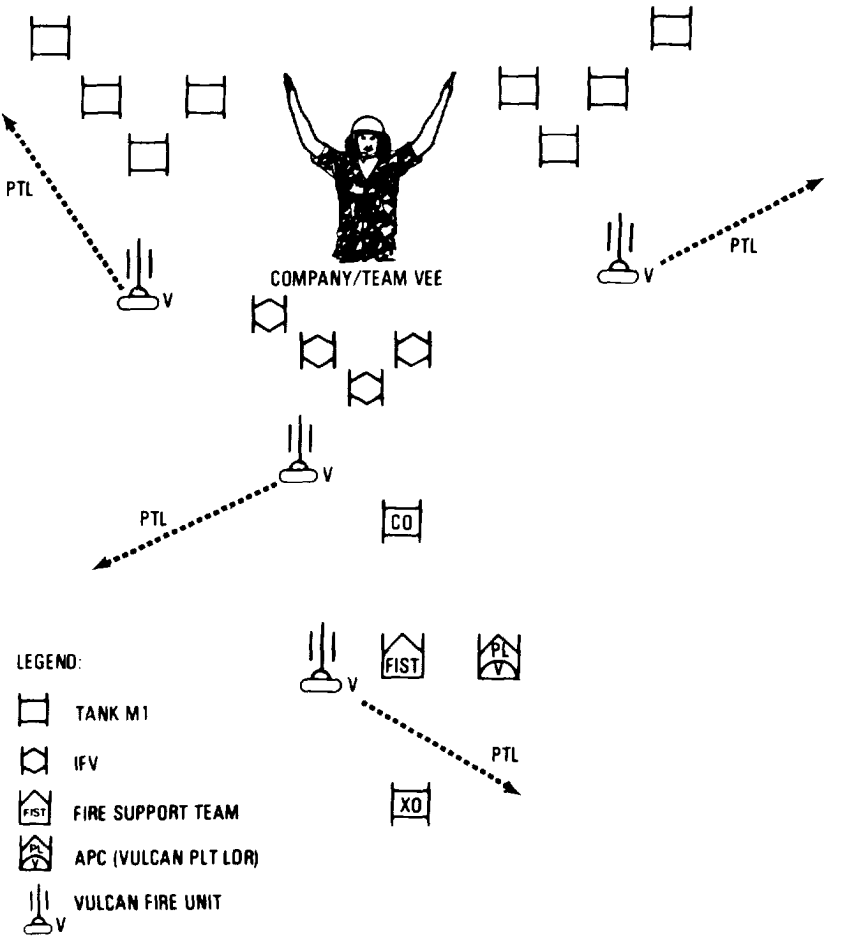
Vulcans in this formation provide air defense in depth from any direction. They may key their movement on certain vehicles of the supported force. Also, they do not have to maintain a fixed distance behind a force but should maintain the 2/3 rule (2/3 ADA coverage forward of lead element). ADA guidelines of mutual support and balance are also achieved in this formation. To achieve fire direction, PSF and PTL should be assigned (refer to Chapter 4 for further details).

COMPANY WEDGE

If the commander desires to maintain freedom of maneuver and reduce reaction time, he may lead with one platoon followed by two (base-of-fire) platoons where the trail platoons become potential maneuver elements. This formation is known as the company wedge. It follows the principle of leading with the smallest element forward. The wedge permits excellent fire to the front and good fire to the flanks. It facilitates control and lends itself to readily deploying into bounding overwatch or fire and movement. It is often used when the enemy situation is vague and contact is expected (that is, movement to contact). The

company team wedge shows all three platoons in platoon wedge formation. The left and right platoons could also be in echelons left and right, respectively. As determined by METT-T the commander may further decide to place any of the platoons in a staggered column.

VULCAN PLATOON IN THE COMPANY TEAM VEE FORMATION

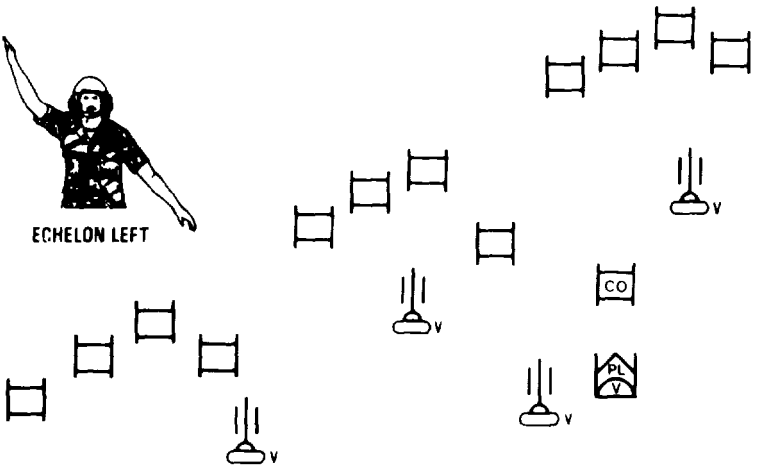


Air defense gun platoon leaders must determine if firepower to the front or to the flanks is most critical in this formation. In the Vulcan Platoon in the Company Team Wedge Formation illustration, a Vulcan platoon is shown with balanced firepower to each flank. This affords the Vulcan platoon an option of overmatching the lead platoon when it makes contact from its present location. This is also the case when maneuvering with the flank platoons as they continue the attack or attempt to outflank the enemy. This type of gun positioning would normally be used if no likely avenues of approach for helicopters exist. The Vulcan Platoon in the Company Team Echelon Left Formation and the Vulcan Platoon in the Company Team Echelon Right Formation illustrations (see page 3-6) show the coverage by ADA systems when the trail platoons are echeloned. The echelon permits excellent Vulcan firepower to the front and to one flank.

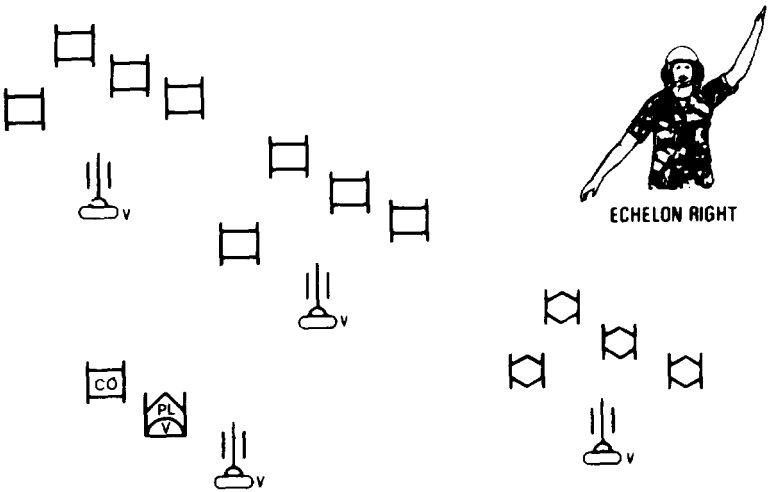
VULCAN PLATOON
IN THE COMPANY TEAM WEDGE FORMATION



VULCAN PLATOON
IN THE COMPANY TEAM ECHELON LEFT FORMATION



VULCAN PLATOON
IN THE COMPANY TEAM ECHELON RIGHT FORMATION

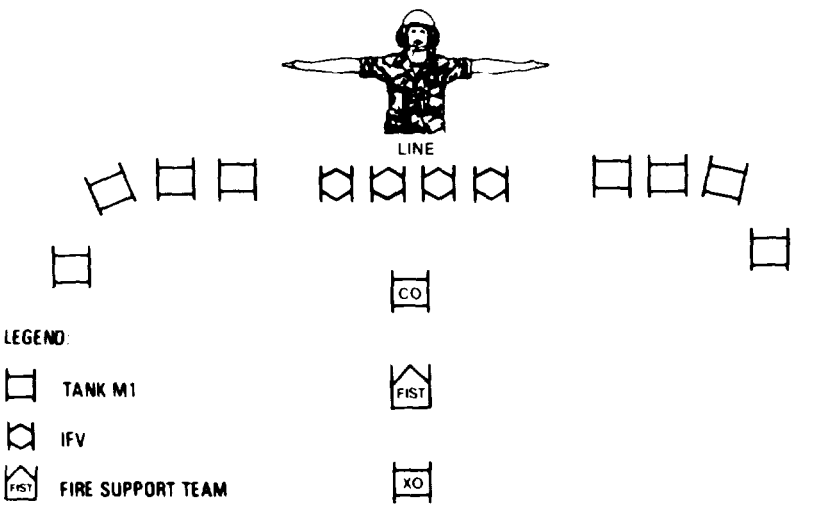


COMPANY LINE

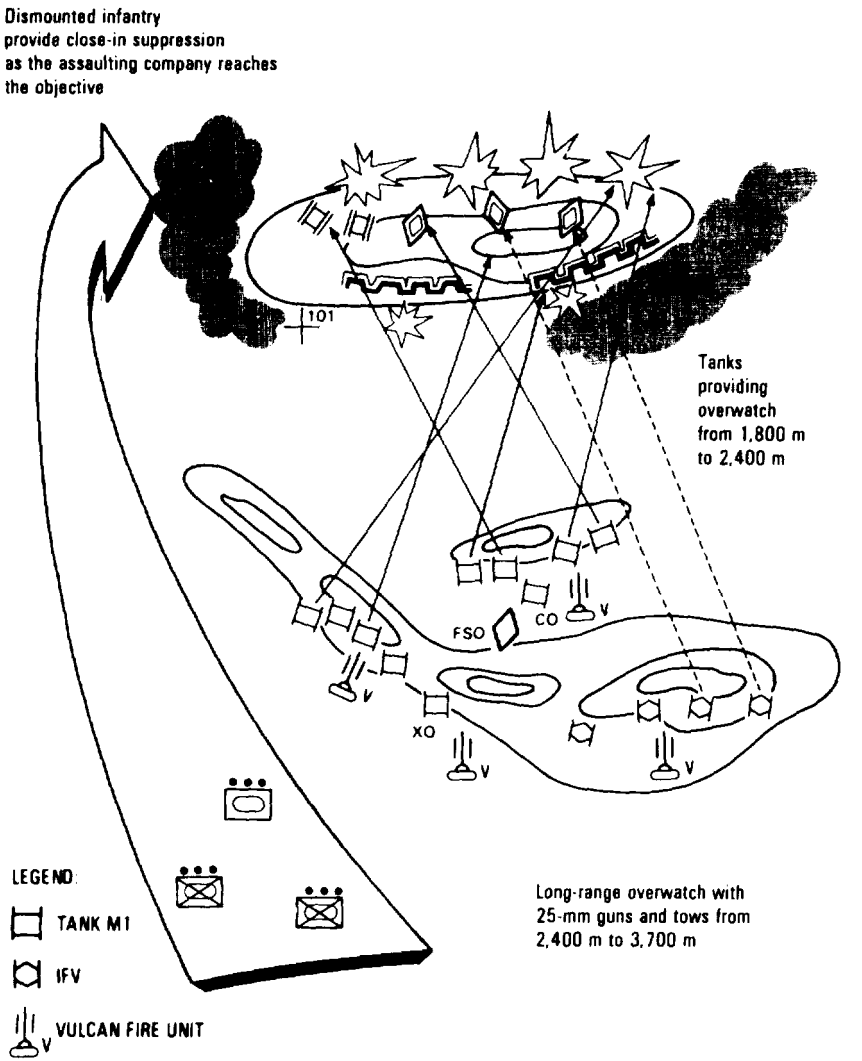
The line (see the Vulcan Platoon in the Company Team Line Formation illustration) is used when the company team is assaulting an enemy position. Mutual support between platoons should be maintained. The line affords the team maximum fire to the front and rear and minimum fire to the flanks.

ADA platoon leaders must determine whether to support the company team from an overwatch position or to accompany the team in the assault. Normally, the platoons will provide air defense protection from overwatch positions because of the risk associated with the assault and the weapon system's vulnerability. The Vulcans support the company team from overwatch positions to the extent possible while maintaining the 2/3 ADA coverage rule (see the ADA Coverage of a Company Team in the Assault illustration, page 3-8). Chaparral and Stinger crews must support from overwatch positions. In either instance (accompany or overwatch the force), plans must be coordinated for consolidation on the objective once it is secured. The platoon leader must ensure that he understands the TF commander's intent and is monitoring the correct radio net.

VULCAN PLATOON IN THE COMPANY TEAM LINE FORMATION



ADA COVERAGE OF A COMPANY TEAM IN THE ASSAULT



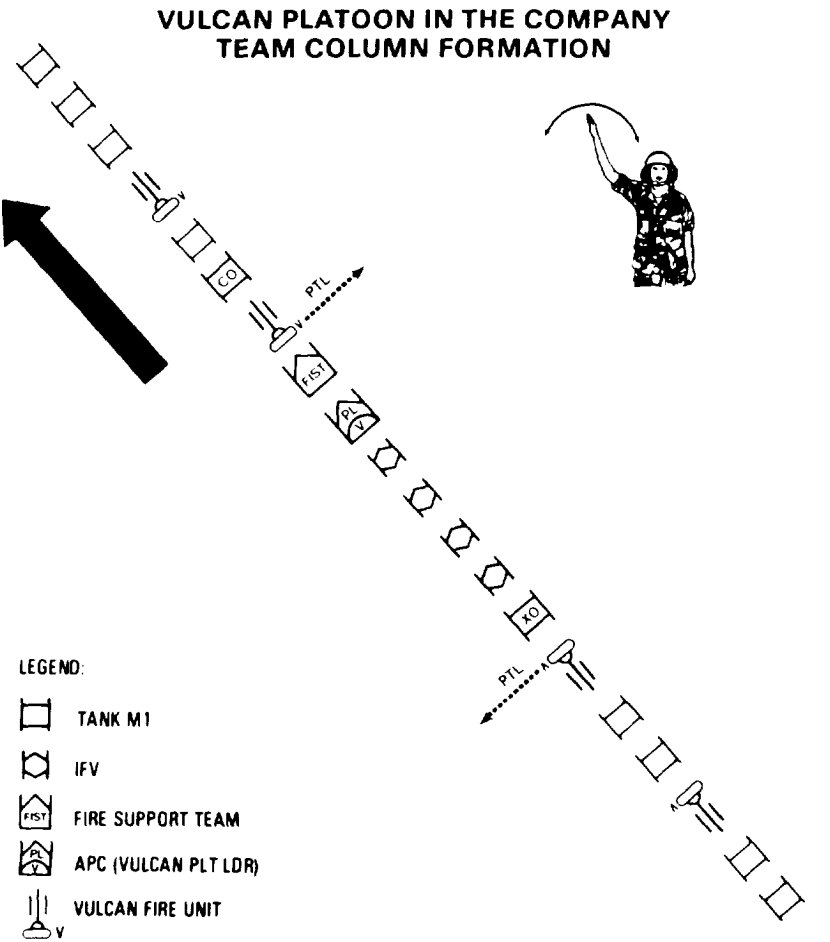
Additionally, air defense platoon leaders must thoroughly understand the assault phase of an operation. In many instances, an element of the company team may be responsible for providing suppressive fires. For example, an infantry platoon could be used as the element from which overwatch cues could be obtained if the air defense systems must accompany the force forward during a consolidation on the objective.

COMPANY COLUMN

The company column offers protection to the flanks, but little to the front and rear. The company team commander positions himself where he can best control the company. This is usually behind the lead platoon. If he does not lead the column, he must make sure the lead platoon is thoroughly familiar with the route of march. The column is used for movement on roadways at night, through defiles and or dense forests, and in other situations requiring speed and ease of command and control as dictated by METT-T. This will allow the commander to make contact with the smallest element possible. As shown in the Vulcan Platoon in the Company Team Column Formation illustration on page 3-10, the team is deployed with platoons in column. Based on METT-T the commander could have placed his first platoon in a wedge and those following in staggered columns or also in wedges. This will provide for additional security and the ability to react and return fire rapidly. If the terrain along the route allows, the commander staggers his platoons but keeps them moving with one following the other. This decreases the company team vulnerability to enemy tactical air or helicopter attack. When this is done, it is referred to as a company combat column.

ADA platoon leaders should apply the principles of convoy protection to a company column. The front and rear of the column should be weighted and Vulcans or Stingers interspersed throughout the column within mutual support distance.

A key element in positioning air defense systems in a line formation is to ensure that their position eases movement to the next formation. This is particularly important if a formation change is preplanned. An example of this is a company team moving from a wedge to a column to a wedge. The air defense assets must maintain a position to smoothly move form one formation to another without losing good air defense coverage. This can only be mastered through practice.

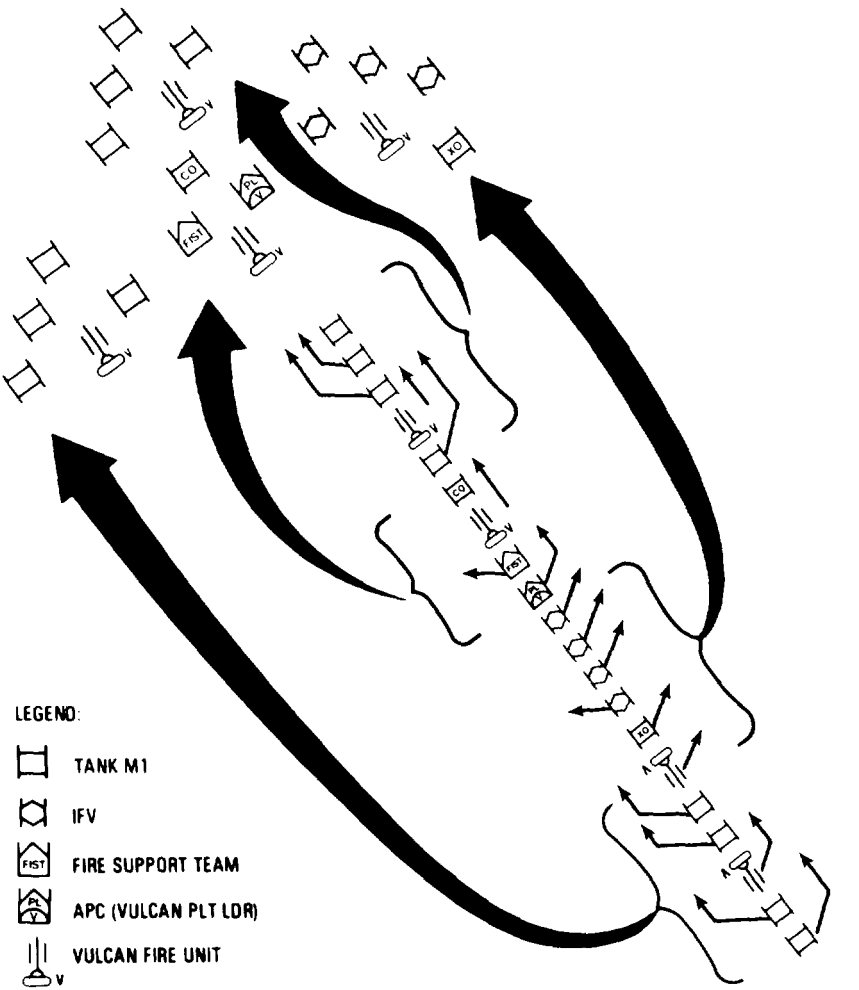


COLUMN TO WEDGE

When changing from column to wedge (see the Vulcan Platoon Anticipating Movement to a Wedge Formation illustration on page 3-11), the lead platoon slows, executes a platoon formation change (if required), and continues to move along the company team axis of movement. The middle platoon maintains its rate of march, veers to the left, and takes its place as the left-wing platoon. The trail platoon increases its rate of march, veers to the right, and takes its place as the right-wing platoon. As before,

platoons execute any required platoon formation changes. As soon as all platoons are aligned, the original rate of march is resumed.

VULCAN PLATOON ANTICIPATING MOVEMENT TO A WEDGE FORMATION

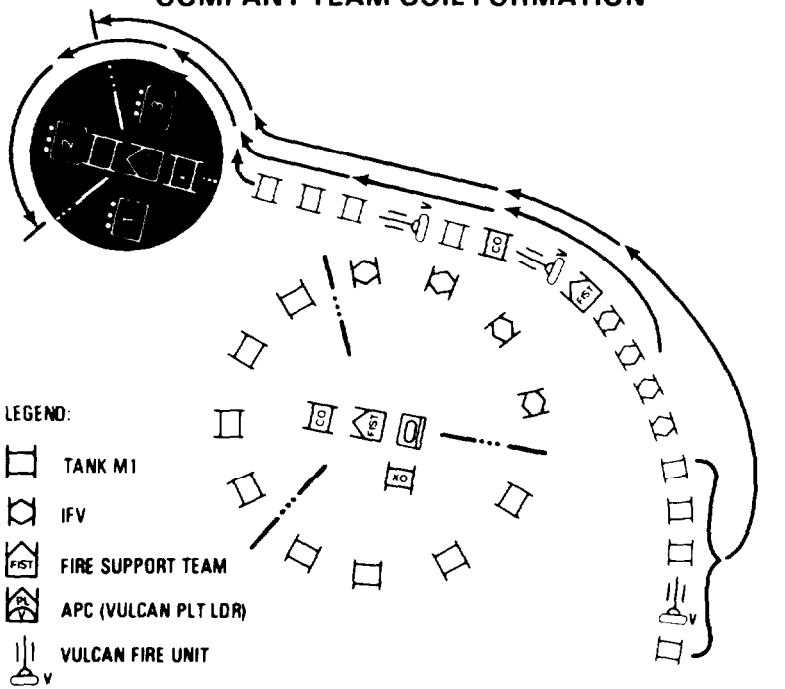


COMPANY COIL

The company team coil is used to provide all-round security during extended halts. Individual vehicles are positioned based on the terrain and fields of observation. It may be used in very close, restrictive terrain and in assembly areas.

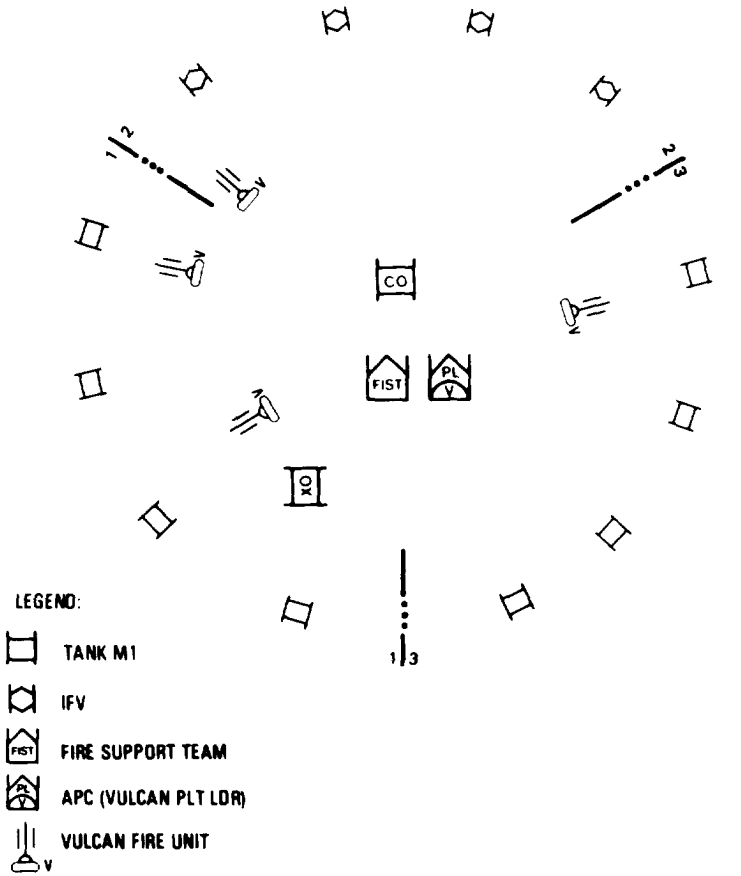
When the company team moves into a coil formation, the platoon initially provides a balanced defense (see the Vulcan Platoon in the Company Team Coil Formation illustration). If the company team is going to occupy the position for an extended period (more than one hour), the platoon leader must consider weighting the defense to the most likely avenues of approach. If the coil formation is preplanned for use at a specified assembly area, the platoon leader should immediate ly begin weighting the defense (see the Weighted Coverage of the Company Team Coil Formation illustration) after a thorough terrain analysis has been done to establish likely air avenues of approach.

VULCAN PLATOON IN THE COMPANY TEAM COIL FORMATION



The tactical situation will dictate how the ADA platoon is deployed. In areas secure from ground attack, ADA is deployed out of the coil formation to higher ground for good overwatch positions and early engagement. In areas unsecure from ground attack, the Vulcan platoon may be in overwatch positions, but inside the perimeter.

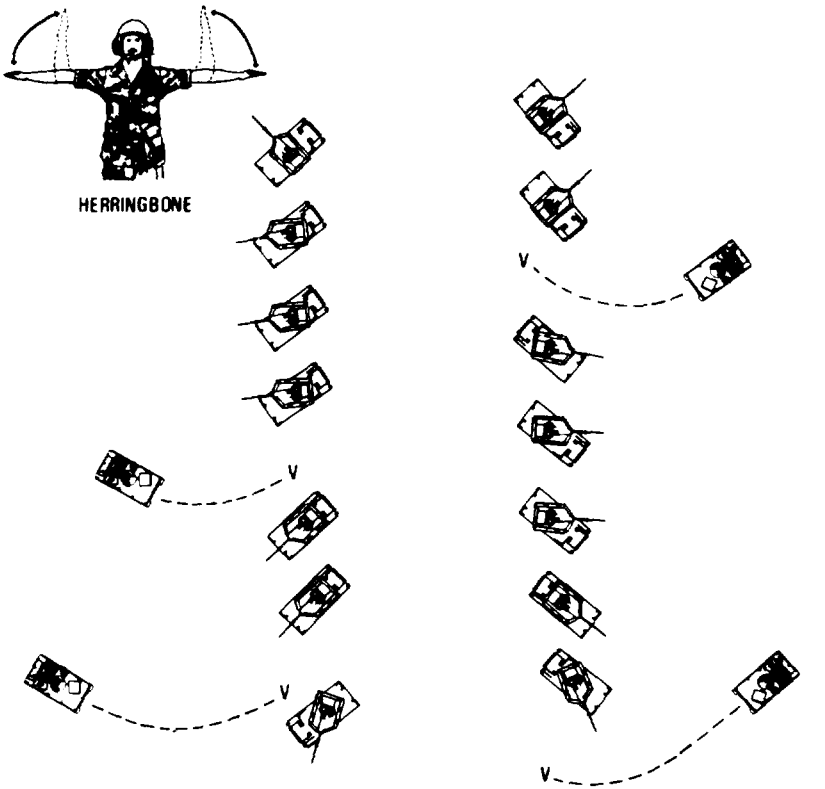
WEIGHTED COVERAGE OF THE COMPANY TEAM COIL FORMATION



COMPANY HERRINGBONE

The herringbone formation is used to assume a hasty defensive posture from a march column. The formation may be widened to permit passage of vehicles down the center of the column. All vehicles should move completely off the road if the terrain allows. Vehicles should attempt to stop in a position that permits the vehicles to fight and pull back onto the route with minimal movement, as shown in the illustration below.

VULCAN PLATOON POSITIONED IN THE COMPANY TEAM HERRINGBONE FORMATION



Air defense platoon leaders position their guns and missile crews so as to best protect the force. Movement from the herringbone formation is automatic to assume the best air defense firing positions. When attacked, Vulcans stop and return fire immediately. Command and control by the platoon leader is essential for ensuring that all air defense assets have designated PTLs and sectors of fire that will not result in gaps in the defense. Air defense systems are located to ease transition to a new formation.

HOW TO MOVE

The company team uses movement techniques in conjunction with formations. The movement techniques used by the company team are traveling, traveling overwatch, and bounding overwatch. Like the formations, the movement techniques are used based upon the possibility of enemy contact. Whatever the formation or technique for movement, the commander must continually monitor team direction and location. He may be assisted in this critical task by his XO.

Air defense platoon leaders must be experts in controlling their platoons as the maneuver force changes formations and movement techniques. Close and continuous coordination with the maneuver force commander must be conducted if platoons are to successfully accomplish their missions in support of a maneuver force.

GUNS

ADA gun platoons are normally allocated to support the TF on its moves. A platoon leader must be familiar with movement techniques and how best to defend a TF against air attacks. In supporting any movement techniques, platoon leaders adhere to the following guidelines:

Ž Deploy guns at least in pairs to provide mutual support and to increase the volume of fire on a target.

Ž Integrate the positioning of Stinger crews and Chaparral (when available) into the overall plan.

Ž Provide air defense coverage forward of the lead element. Two-thirds of a system's effective range should be forward of the lead elements.

Ž Position APCs near the supported commander's vehicle for command and control purposes

and to facilitate timely response to the changing battle.

Ž Use the movement tactics of the supported unit.

Ž Use terrain, but do not use skyline.

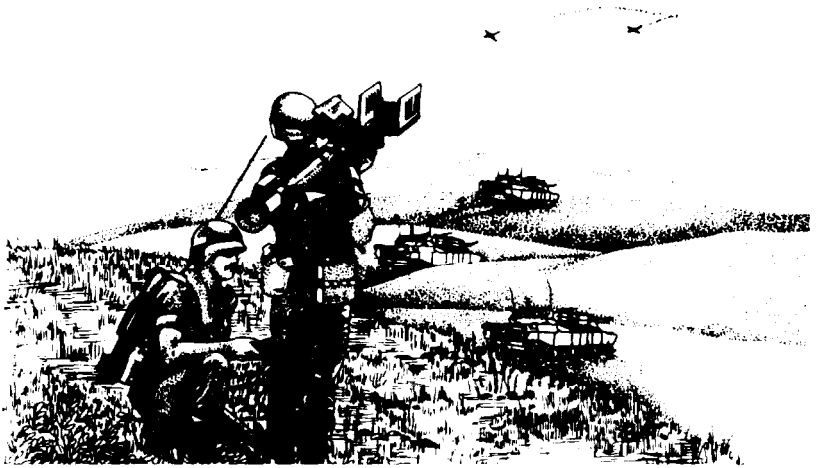
STINGER

Two factors, mobility and vulnerability, are critical considerations when planning Stinger support for an offensive operation. The crew's organic wheeled vehicles may be unable to accompany armor or mechanized infantry forces in some cross-country movements, but may be superior to tracked ADA for road movements. Because of the organic vehicle and the fact that Stinger must be fired from an exposed position, Stinger crews will be more vulnerable to enemy direct and indirect fire than the unit they are supporting.

Stinger crews are deployed forward enough to provide overwatch coverage for bounding elements. This is shown in the Stinger Crews Support Maneuvering Company Teams illustration.

The section chief will retain positioning authority. The Vulcan platoon leader obtains positioning authority when the Stingers are attached to him.

STINGER CREWS SUPPORT MANEUVERING COMPANY TEAMS



MOVEMENT TECHNIQUES

There are three movement techniques that are used by maneuver units. The three techniques are traveling, traveling overwatch, and bounding overwatch.

TRAVELING

The traveling type is used when enemy contact is not likely and speed is important. In this technique of movement the following takes place:

Ž Company teams move continuously as a unit usually in column (see the Traveling Formation [Company Team] illustration).

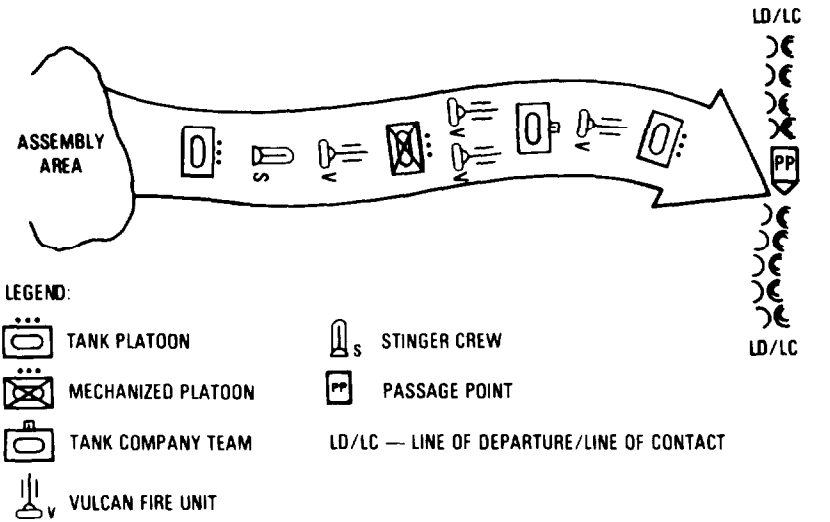
Ž TFs may move in column or on two axes.

Ž Vehicles positioned within the formation will be in accordance with the SOP or as directed by the company team commander.

Ž Terrain or other restrictions may force pinching together, but when conditions permit lateral dispersion is automatically resumed.

Ž Air defense platoons weight the front and rear of the column and integrate available Stinger crews into the formation.

TRAVELING FORMATION (COMPANY TEAM)



TRAVELING OVERWATCH

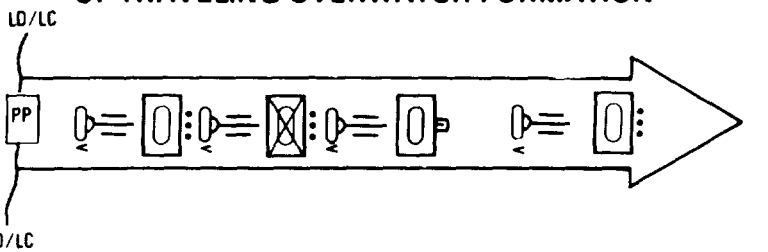
Traveling overwatch (see the Air Defense Protection of Traveling Overwatch Formation illustration) is used when enemy contact is possible, but speed is desirable. After the passage of lines, the unit may use the traveling overwatch technique or bounding overwatch technique. Platoons are in combat wedge formation. The unit switches to company wedge formation if the situation dictates. Traveling overwatch is normally used by platoons within the company team. However, they may be used, when METT-T requires, between sections within platoons as well.

The lead element moves continuously and as fast as possible. However, the use of rapid bounds within the platoons may be required if terrain dictates. When moving, the lead element moves using covered and concealed routes to hide its movement from possible enemy observation and direct fire.

The trail element moves at variable speeds and may halt for short periods to overwatch the movement of the lead element. The trail element keys its movement to terrain and is always guided by the principles of overwatch. It overmatches at a distance such that enemy engagement of the lead element will not prevent the trailing element from firing or maneuvering to support the lead elements.

The air defense platoon supporting a maneuver force using a traveling overwatch formation supports the main body of the force and provides come protection for the lead element. Use PTLs and PSFs in this formation and adjust them when the formation changes and or contact is made. Close coordination must be maintained with the force commander to respond instantly to contact made with the enemy.

AIR DEFENSE PROTECTION OF TRAVELING OVERWATCH FORMATION



BOUNDING OVERWATCH

Bounding overwatch is used when enemy contact is likely. It is the slowest, but most secure, movement technique. Bounding overwatch is normally used between platoons, but may be used between sections of M2s or M3s within a platoon.

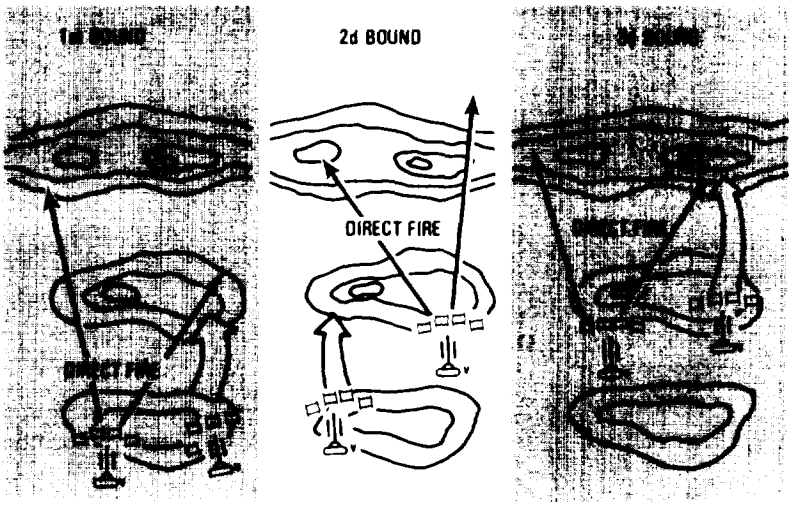
The overwatch element covers the progress of the lead element from a covered and concealed overwatch position. This position should offer good observation and fields of fire. The overwatch element must be prepared to immediately support the lead element by tire if the lead element is engaged by an enemy force.

When bounding, the lead and trail platoons may employ either successive or alternate bounds.

Successive Bounds

The leading platoon (see the Vulcan in Successive Bounds illustration), covered by the rear platoon, advances and takes up positions to cover the advance of the rear platoon. The rear platoon, upon arriving at a position abreast of the leading platoon, halts and again covers the advance of the leading platoon. Only one platoon moves at any time, and that platoon does not move until the other platoon is set in position to provide overwatch.

VULCAN IN SUCCESSIVE BOUNDS

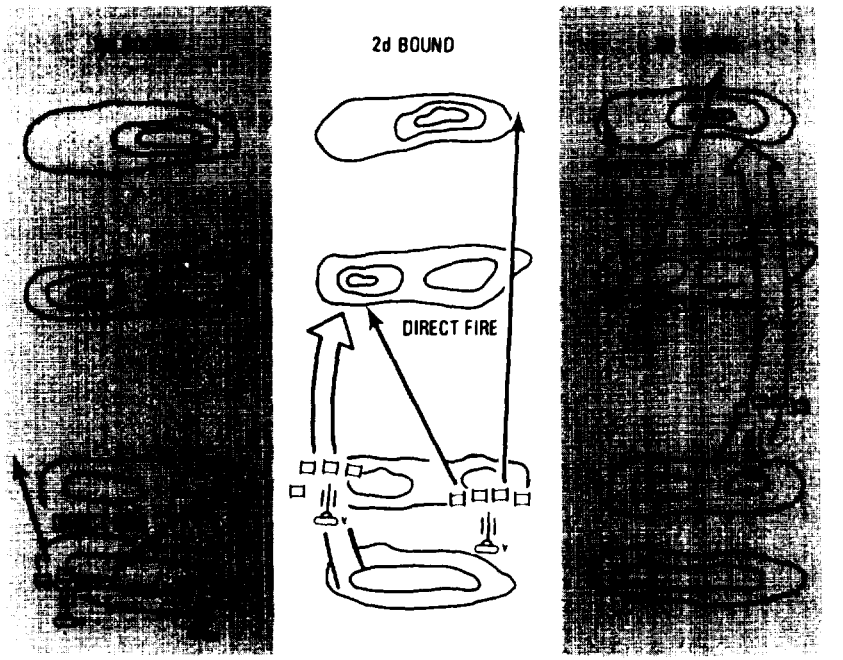


Alternate Bounds

The leading platoon (see the Vulcan in Alternate Bounds illustration) halts and takes up positions to cover the advance of the rear platoon, which then advances past the leading platoon and takes up its next position. The initial leading platoon then "leapfrogs" the initial rear platoon and advances to a new position. Only one platoon moves at a time. This method of movement is usually more rapid than successive bounds. No element moves unless the other is set in position to provide overwatch.

The ADA platoon leader using bounding overwatch must be extremely familiar with the scheme of maneuver of the supported force. Considerable prior planning must be done to preselect overwatch positions for the platoon.

VULCAN IN ALTERNATE BOUNDS



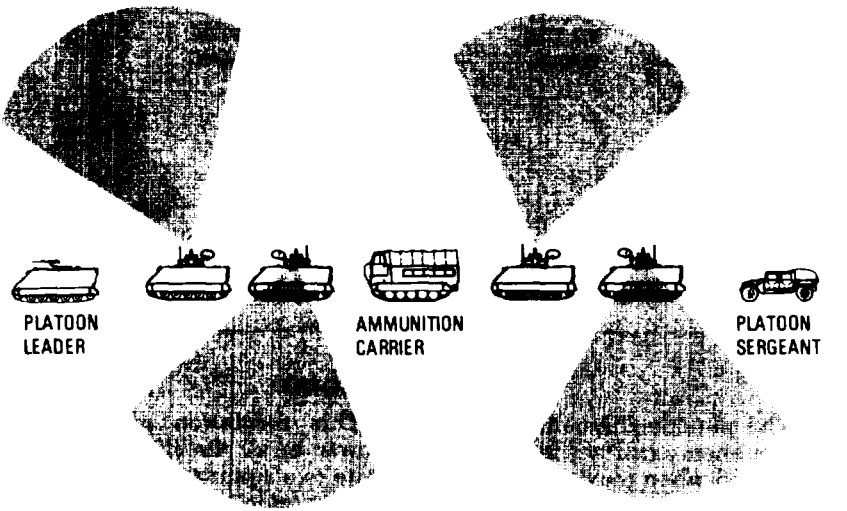
SELF-DEFENSE FORMATIONS

ADA platoon leaders must expect the modern battlefield to change rapidly. Because of the fluid nature of battle, air defense priorities or the threat will often shift quickly forward, to the side, or toward the rear. Platoons will likewise be required to move forward, laterally, or rearward. Independent movement around the battlefield by platoons may be risky and difficult therefore, platoons should use formations that will enhance their survivability. Two formations platoons use for independent movement are the column and diamond.

PLATOON COLUMN

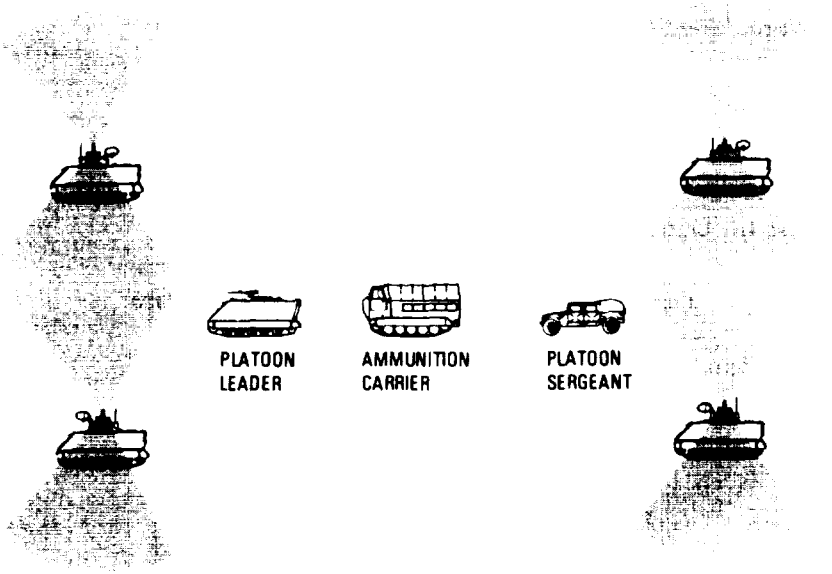
The platoon column is used when speed is essential, control is difficult, or contact with the enemy is unlikely. In this formation (see the Gun Platoon in Column Formation illustration), the platoon leader may lead the column or assign one of his squads to move to the head of the column.

GUN PLATOON IN COLUMN FORMATION



The Gun Platoon Column (Two Squads Leading) illustration shows a Vulcan platoon column with a gun section leading. This formation is most commonly used when conducting a road march or when en route to take over a new mission. In this case, the platoon is traveling alone and is not deployed to furnish air protection to a force.

GUN PLATOON COLUMN (TWO SQUADS LEADING)

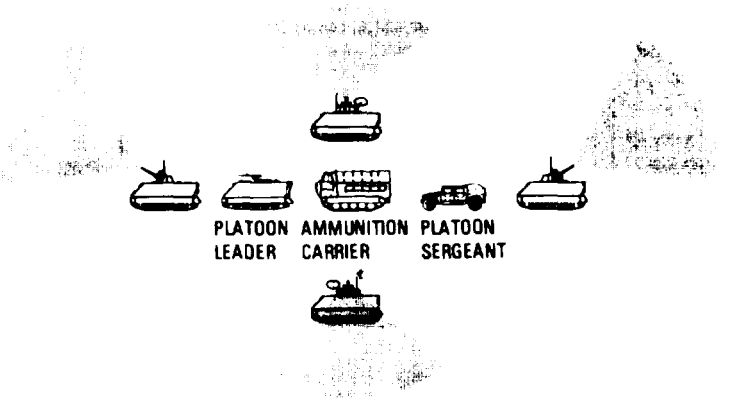


PLATOON DIAMOND

The platoon diamond is used when enemy contact is likely or expected when moving alone. In this formation, the platoon leader is centrally located, as shown in the Vulcan Platoon Diamond Formation illustration, to control the movement of his squads.

This formation affords firepower in all directions and permits two squads to suppress the enemy upon contact as the other squads seek cover and concealment. The diamond can be compressed from the flanks, depending upon the terrain.

VULCAN PLATOON DIAMOND FORMATION



ACTIONS UPON ENEMY CONTACT

In either the column or diamond formation, if contact is made with the enemy, all squads suppress the enemy position with fires and immediately seek covered and concealed positions. The platoon leader must decide whether to fight through, attempt to destroy the enemy, or take evasive action. In determining the appropriate course of action, the platoon leader must consider the risk associated with coming into direct fire with the enemy and the accomplishment of the air defense mission. Platoon leaders cannot take too much time in deciding the next action, as the attacking force has the initiative at this point. An extensive delay by the platoon leader could also give the enemy time to call for indirect fire on his location.

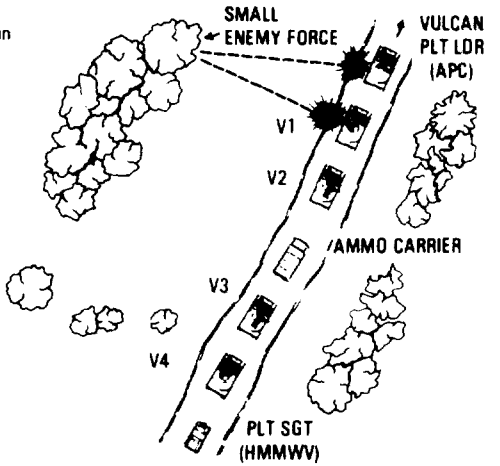
Generally a platoon under attack will encounter two types of resistance — a deliberate ambush or a chance attack. If the platoon is in a "deliberate ambush," the platoon should fight its way out of the situation using all possible firepower. If the attack is a "chance attack," the platoon leader should report the contact and use both methods (firepower-maneuver) to avoid being decisively engaged. The platoon leader should attempt to bypass the resistance and move onto his next mission.

The Vulcan Platoon Ambush illustration presents examples of various techniques which the ADA platoon may employ to engage an enemy ambush force. The platoon should develop anti-ambush plans and develop drills to cope with such emergencies. Time is vitally important and all platoon personnel should know the signal for rapid execution of the drill.

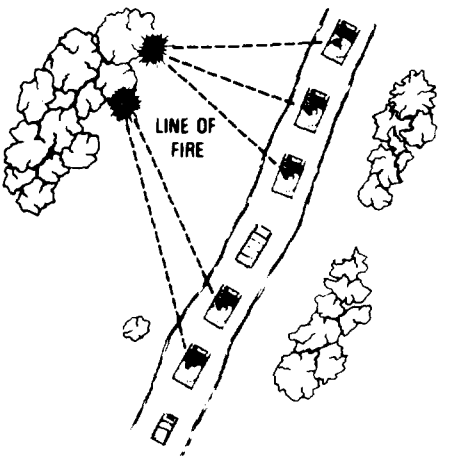
VULCAN PLATOON AMBUSH (CHANCE ATTACK)

Vulcan platoon used previously rehearsed fire and maneuver drill to return fires, while using movement to escape to better positions or continue movement forward if mission dictates.

(1) Enemy force opens fire on Vulcan platoon.

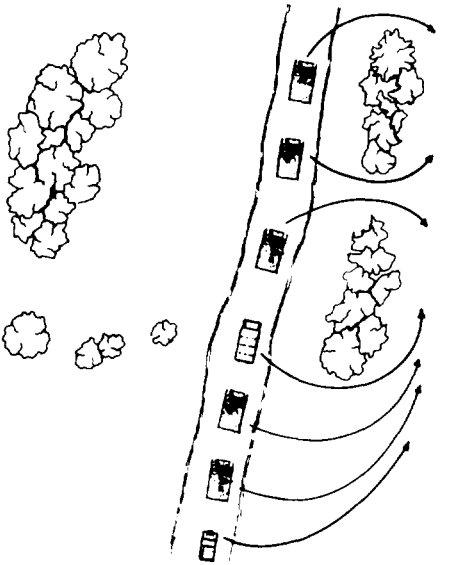


(2) All Vulcans and APC use suppressive fires on enemy. Continue movement forward at high speed if road is not blocked.

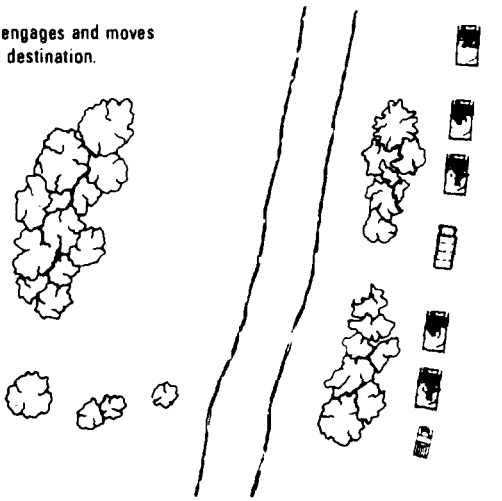


VULCAN PLATOON AMBUSH (CHANCE ATTACK) (continued)

(3) Another method. If the road is blocked, Vulcan platoon uses a preplanned ambush drill. Fire and maneuver to new rally point if terrain allows.



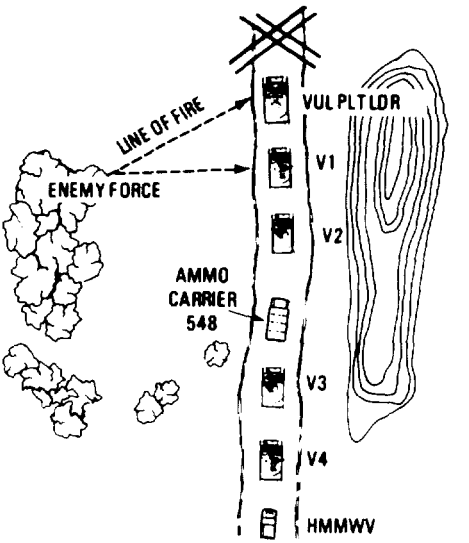
(4) Vulcan platoon disengages and moves forward to original destination.



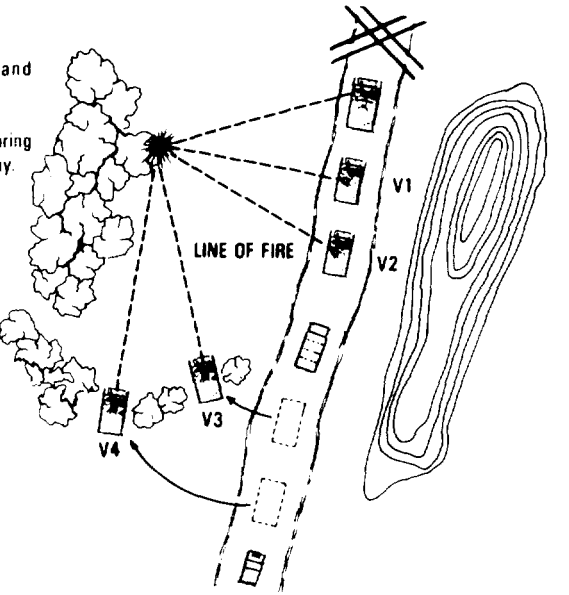
VULCAN PLATOON AMBUSH (DELIBERATE ATTACK)

COLUMN FORMATION

(1) Vulcan platoon runs into an ambush at a road block. Steep bluff on right side of road.
If Vulcan platoon cannot move forward, they must fight back.

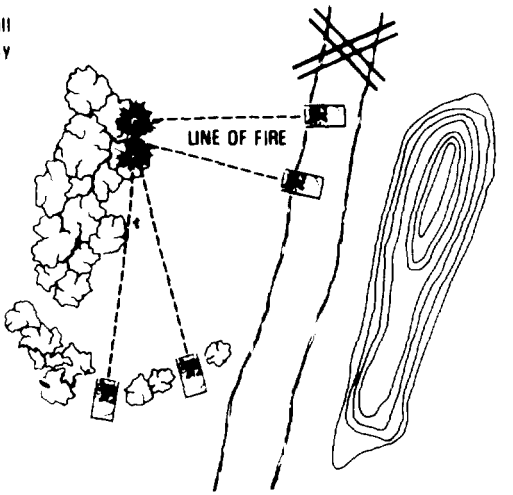


(2) Vulcans 1 and 2 use suppressive fires and smoke on enemy. Unengaged Vulcans 3 and 4 maneuver to bring blanking fires on enemy.

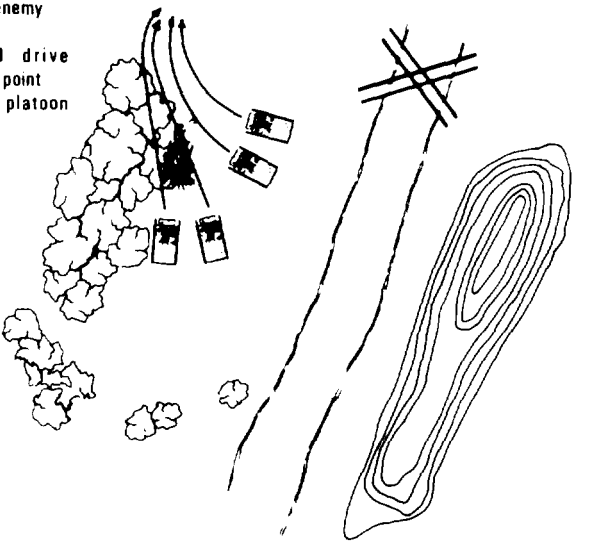


VULCAN PLATOON AMBUSH (DELIBERATE ATTACK) (continued)

(3) Vulcans caught in "kill zone" assault enemy position.



(4) Vulcans overrun enemy position, firing all weapons, and drive through to a rally point designated by platoon leader.

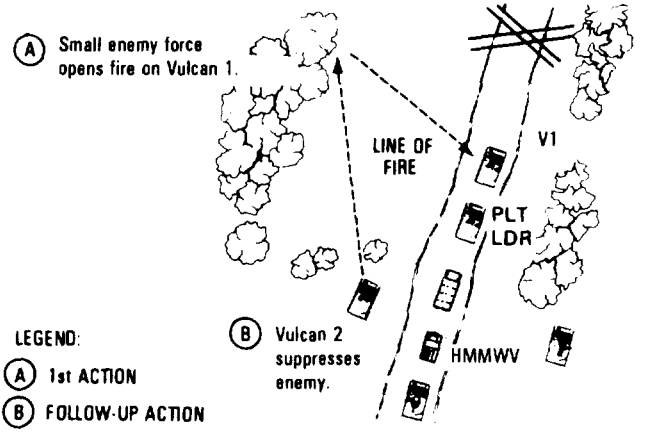


VULCAN PLATOON AMBUSH (DELIBERATE ATTACK) (continued)

DIAMOND FORMATION

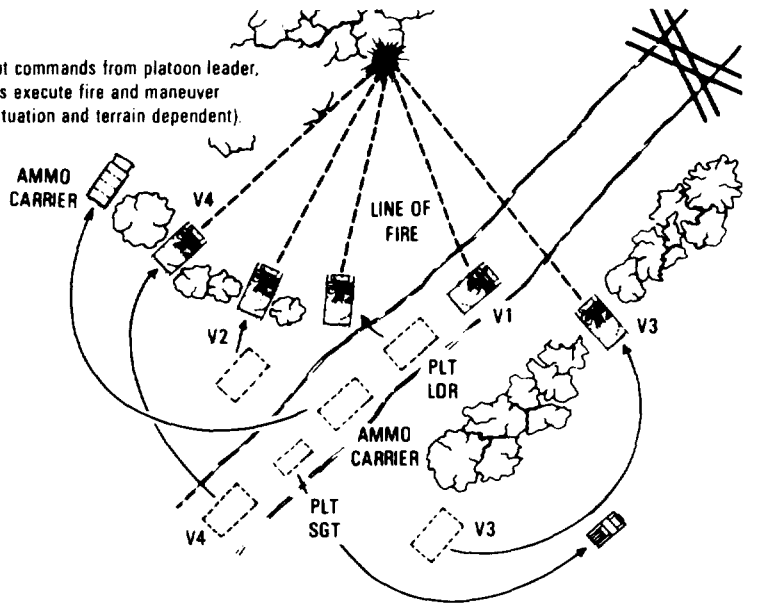
(1)

Vulcans traveling in diamond formation prevent "shooting gallery" effect of an ambush. This course of action is the preferred technique the ADA platoon may employ to engage an enemy ambush force.



(2)

Without commands from platoon leader, Vulcans execute fire and maneuver drill (situation and terrain dependent).



Section II. Road Marches and Assembly Areas

A company team moves tactically over terrain using the techniques of movement outlined in the offense chapter of this manual. A company team that is not in contact may need to move long distances as part of a larger force to position itself for further combat operations. These movements, called road marches, may require extensive planning. In planning road marches, the company team commander uses a sequence of steps to determine how best to execute a move from one point to another. The success of a road march largely depends on how thoroughly it is planned.

ADA platoon leaders and NCOs should be aware of each technique used by the company team and battalion TF to displace to new areas. Unlike ADA administrative movements, the ADA platoon must adapt itself to the tactical movements of the supported force.

ROAD MARCH TECHNIQUES

There are three primary road march techniques used by the company team. They are open column, close column, and infiltration.

OPEN COLUMN

Open column is normally used for daylight marches, but may also be used at night with blackout lights or passive night vision equipment. Vehicle density varies from 10 to 15 vehicles per kilometer, depending on vehicle distance. The distance between vehicles is increased to provide dispersion. The vehicle distance varies from 50 to 100 meters, or greater if the situation requires.

CLOSE COLUMN

Close column is normally used for marches during darkness or limited visibility. Close column marching takes maximum advantage of the traffic capacity of the routes, but provides little dispersion. Vehicles are spaced about 25 meters apart during daylight. At night, vehicles are spaced so that the driver can see the two lights in the blackout marker of the vehicle ahead.

Normally, vehicle density is about 30 vehicles per kilometer along the route of march.

The company team must be able to move rapidly across the battlefield. The company team commander must also be able to rapidly mass and disperse his combat power either to support his scheme of maneuver or that of the battalion TF. The most effective way to do this and still retain control is to use the close column technique. This technique will reduce radio transmissions if hand and arm signals are used. Conditions, such as open terrain and daylight, may require the company team to use the open column technique.

INFILTRATION

During a move by infiltration, vehicles are dispatched individually or by platoon and at irregular intervals at a rate that will keep the traffic density down and prevent undue massing of vehicles. Infiltration provides the best possible passive defense against enemy observation and attack. It is suited for tactical marches when enough time and road space are available and when maximum security, decep tion, and dispersion are desired. During movement by infiltration, FM radios are used only for emergencies.

PLANNING

When planning distance (interval) or density, the planner considers the effect on column length (see the Column Road March illustration) and time required to move. In a close column, a company team is about 1 kilometer long; in an open column with 100-meter intervals, it is about 2.5 kilometers long. The length of the column will depend on the number of vehicles in the column. His column could include just his combat power (up to 16 vehicles), or his combat power and company team trains (up to 25 vehicles). Regardless of the number of vehicles, the commander must plan for the number of vehicles as well as where he will position his trains.

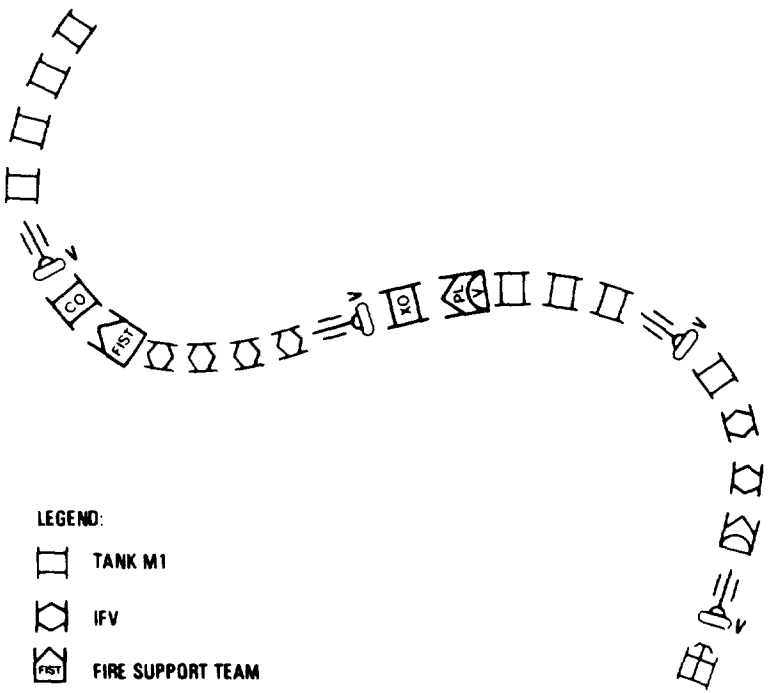
The ADA platoon leader can use the above figures to plan his air defense of the column. Also, he should remember for planning purposes that the self-propelled Vulcan consumes about .25 gallons of fuel per kilometer,

The company commander plans periodic maintenance halts in accordance with the company team and battalion TF SOPs. He must also consider the factors listed under movement order considerations.

During march planning, reconnaissance parties will be organized and dispatched by the company commander. These parties may perform route

reconnaissance to gather information such as travel time; height of underpasses weight capacities of bridges; locations of culverts, ferries, and fords; and locations of critical points and obstacles. Route reconnaissance may be conducted to confirm and supplement data obtained from map studies, higher headquarters, and air reconnaissance. The details of reconnaissance are often closely related to speed of movement.

COLUMN ROAD MARCH



MOVEMENT ORDER

After the plan is prepared, the commander issues the movement order. Companies normally participate in road marches as part of the battalion. The movement order contains instructions for movement of units. Certain items listed below should become standard and should be included in the unit SOP. The movement order should include the following information:

Ž Situation of friendly and enemy forces.

Ž Route.

Ž Destination (assembly areas and alternate assembly areas).

Ž Tentative locations for elements in the assembly area.

Ž Critical points (start point, release point, checkpoints).

Ž Rate of march.

Ž Maximum speeds.

Ž Order of march.

Ž Time gaps.

Ž Scheduled halts.

Ž Location of the commander during the march.

Ž Route or unit markers to be used.

Ž Locations of road guides.

Ž Vehicle distances.

Ž Service support.

Ž Communications.

PLATOON MOVEMENT ORDER

Upon receipt of the movement order, the ADA platoon leader issues his movement order to his platoon. The first decision he makes is who should receive it. Key personnel include the following:

Ž Platoon sergeant.

Ž Squad leaders.

Ž Stinger section and crew chiefs.

It may be necessary to advise your supported commander. With regard to specific information, you must first advise your subordinates of the nature of the operation. This information tells your subordinates what type of mission they have; for example, static critical asset, support to a maneuver unit, or pre-positioned route defense. The following information must be included:

Ž What is to be defended? This may be stated as the divisional POL point, DS to TF 1-43, or 1st Brigade MSR.

Ž Where is the new deployment area? This is normally stated as a grid coordinate; for example, vicinity CFR 31809. The nature of the operation, therefore, gives specific planning guidance to your subordinates.

Ž What are the key elements of time? These are the time of release from the present mission, the time to be at the platoon start point, and the new mission time. Time allows your subordinates to calculate how much time they have to complete their preparations.

Finally, you, as platoon leader, advise them of the time and location where you will issue your final OPORD.

Your warning order may be written or given verbally either by radio or face-to-face.

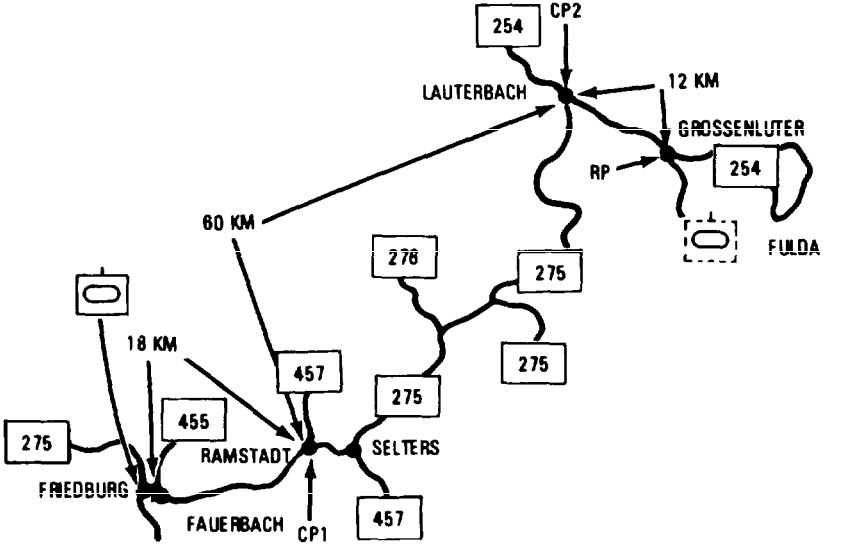
SOP ITEMS

ADA platoon personnel should be familiar with all march order details. These details are explained in the following paragraphs.

Strip Map

A strip map (see the Example of a Strip Map illustration) is a sketch of the route of march. A strip map should contain the start point, release point, restrictions, and critical points with the distance between them. A strip map is normally included as an annex to a movement order and a copy should be provided all key personnel, including vehicles commanders and route guides.

EXAMPLE OF A STRIP MAP



Critical Points

The march planner must designate critical points along the route of march. Critical points on a route are those points used for reference in providing instructions, places where interference with movement might occur, or places where timing might be a critical factor. The route reconnaissance report or a map study should provide the march planner information with which to designate critical points. Unless under radio listening silence, commanders will have platoon leaders report critical points passed. The critical points that should always be designated in the movement order are the start point, release point, and all checkpoints.

Start point. A start point provides all units of a march column a common point from which to start their movement. When units use more than one route, each route has a start point. The start point should be a place on the route of march that is easy to recognize on the ground such as a road intersection. A start point should not be in a defile, on a hill, or at a sharp curve in the road. It should be far enough from assembly areas to allow units to be organized and moving at the prescribed speed when it is crossed. No element of a march column should be required to countermarch or pass through another unit to reach the start point. Before starting the march, someone in the company (normally the commander, XO, or a platoon leader) reconnoiters the route to the start point and determines the exact travel time to reach it. The movement order directs the time that each unit will arrive and clear its start point. The commander directs the time major units of his unit will arrive at and clear the start point. A unit must depart its assembly area on time to enable it to cross the start point at the designated time without stopping and at the prescribed march speed and interval.

Release point. A release point provides elements a common point from which to revert to the control of their parent unit. Once the company team elements are released to the control of the company team, the team uses a specified route past that point so as not to slow or stop other units following the team. The release point should be on the route of march and easily recognized on both map and ground. When selecting a release point, hills, defiles, and sharp curves should be avoided. Guides from the quartering party should meet the platoons as they arrive at the release point and lead them to the new assembly areas. Multiple routes and cross-country movement from the release point to assembly areas enable platoons to disperse rapidly. Units must pass through a release point without greatly reducing speed or stopping.

Checkpoint. A checkpoint is a predetermined point on the ground used as a means of controlling

movement. A checkpoint is not used as a reference point in reporting enemy locations. March elements will report each checkpoint crossed if directed by the movement order.

If stated in the movement order, elements will cross critical points at specified times, speeds, and distances between vehicles. These specified times, speeds, and distances between vehicles are to control column whipping and increase safety. The distances to be maintained between vehicles and march elements during the march will be based on the factors of METT-T, the commander's estimate, and road space restrictions.

QUARTERING PARTY

Before the main body leaves the rear assembly area, the company commander sends a quartering party (sometimes called the advance party) to the forward assembly area. The ADA element should be planned for and represented.

COMPOSITION

A quartering party is normally composed of an NCO, a security element (if the tactical situation requires), and two representatives from each platoon. The NCO should be a platoon sergeant or the 1SG. The security element, when used, must be at least two combat vehicles and should come from the same platoon. The platoon representatives should include an NCO, and they may come from the security element if it is from the same platoon.

MISSION

The quartering party's mission is to reconnoiter the new area and guide march elements into the new area. They may also perform detailed route reconnaissance when time is not critical. The commander of the quartering party must be given the route, order of march, and estimated time of arrival of the main body. A battalion quartering party is usually led by the HHC commander and consists of the quartering parties from each subordinate company.

The reconnaissance party and the quartering party do not travel as part of the march column. They should precede the main body and move by infiltration. They must make sure the area is clear of enemy forces and NBC contamination.

DUTIES

Specific duties of the quartering party are as follows:

Ž Reconnoiter the area. The quartering party reconnoiters the area for enemy forces, condition of the terrain, and NBC contamination. If the area is unsatisfactory (poor drainage and routes, no concealment), the party leader contacts the commander and asks for permission to find another area or move to the alternate assembly area.

Ž Organize the area. Based on the commander's guidance, the leader divides the assembly area into sectors for each platoon and selects areas for the CP and mains.

Ž Improve and mark entrances, exits, and internal routes within its capabilities.

Ž Mark or remove obstacles and mines,

Ž Mark vehicle locations. Each quartering party member marks mutually supporting vehicle positions. When the company arrives, vehicle commanders select the exact positions.

Ž Perform guide duties. Each platoon representative guides his platoon from the release point into its sector of the assembly, mounted if possible, to maintain the momentum.

ACTIONS ON ENEMY CONTACT DURING A ROAD MARCH

The company team is prepared to cope with any enemy actions encountered during the movement. The ADA platoon must also be well prepared for enemy action. This preparedness is brought about by ADA platoon participation in battle drills.

Drills provide a standardized and automatic response to a combat situation. Drills outline actions which are taken by a maneuver force upon contact or in response to oral or visual signals. A drill is an action of relatively short length which is performed the same way, or almost the same way, every time. ADA platoon leaders must understand company team drills and be able to integrate their squads and sections in the overall scheme of fire and maneuver. FC 71-1J and FM 17-15 explain in detail the company team and platoon battle drills. This manual will explain some of the considerations for air defense platoons in each of the battle drills. These considerations are not all inclusive as each decision for action is based upon the factors of METT-T at the time the battle drill commences.

AIR ATTACK

During the movement order, the company commander should indicate what passive or active air defense measures will be used. If the unit is moving (see the Air Defense Measures illustration), the commander must make sure that—

Ž Vehicles maintain the interval specified in the unit order,

Ž Vehicles are staggered to avoid linear patterns.

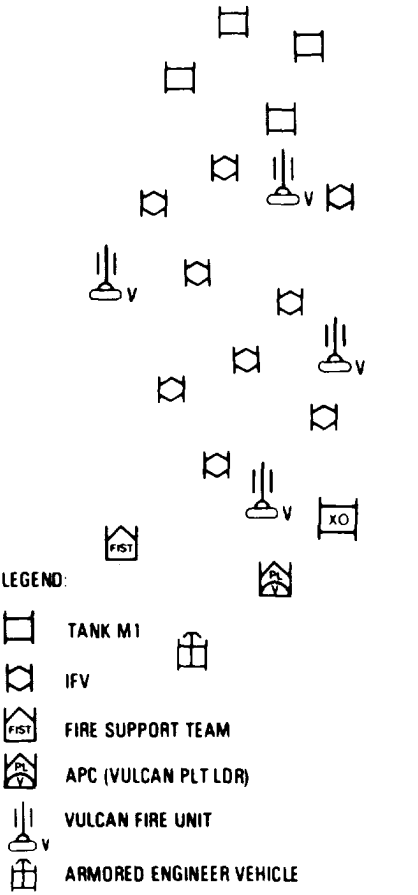
Ž Vehicles are camouflaged and shiny items are covered.

Ž Air guards are established on each vehicle and maintain a constant 360° observation.

If active measures are used and the unit is moving on order, the column will move from the aircraft axis of attack and occupy covered and concealed positions. Otherwise, the unit will continue to move maintaining an evasive course.

The column will also engage aircraft with all available weapons. Gunners should select a point and fire at it until the aircraft passes through the point. Assume, if a threat high-performance aircraft passes at low altitude, another will be following him to attack from a higher altitude, followed in turn by the original aircraft which will have circled to retrace his previous route. (This method of self-defense is to be used as a last resort against definitely attacking aircraft.)

AIR DEFENSE MEASURES

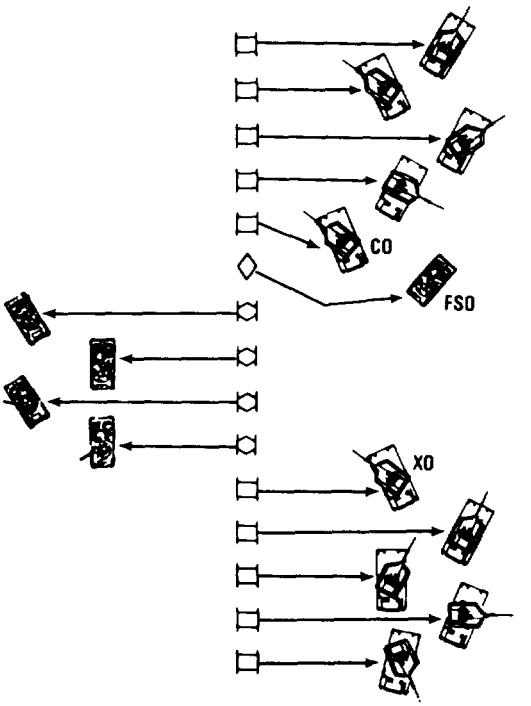


Company Team Actions

The company team deploys under attack by aircraft (high-performance and helicopter) by using the following drills.

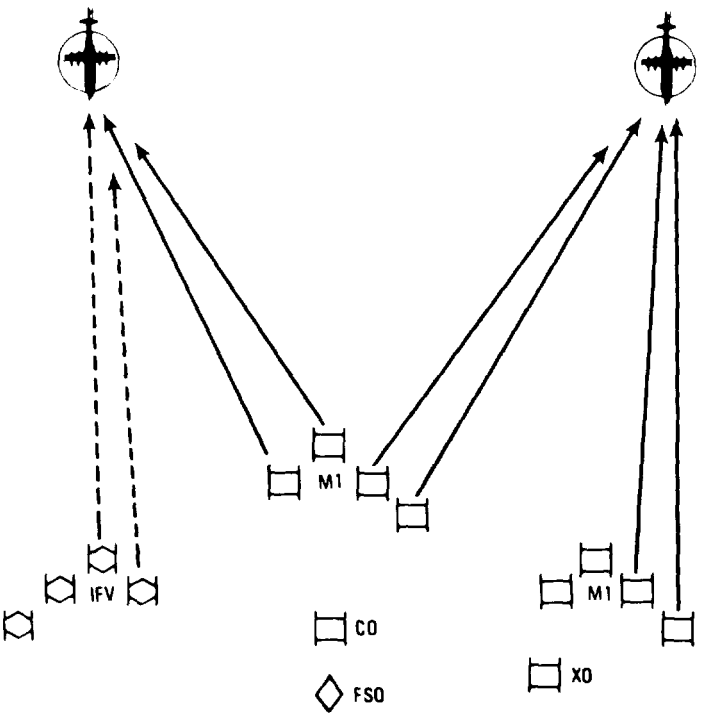
Reaction to attack by high-performance aircraft. This drill is used as an immediate reaction to attack by high-performance aircraft. It should be used only if the company team is being attacked. The platoons displace to alternate sides of the company team route or direction of maneuver and execute the platoon air attack drill (see the React to Attack by High-Performance Aircraft illustration). When the company team is not under attack by high-performance aircraft, but the aircraft are observed at a distance, all elements should freeze until the fast movers have passed.

REACT TO ATTACK BY HIGH-PERFORMANCE AIRCRAFT



React to attack by helicopters. This drill should be used when the company team is attacked by helicopters (see the Attack by Helicopter illustration). When en gaged, a minimum of one vehicle (designated by SOP) in each platoon engages a helicopter. The other vehicles scan for other helicopters. Use the on-board smoke grenade launchers and VEESS and maneuver right and left under cover of smoke. The commander then gives movement instructions to move the company. Tanks can fire main guns at hovering helicopters as IFVs engage with chain guns. The higher the volume of tire in the target area, the more effective the suppression will be.

ATTACK BY HELICOPTER



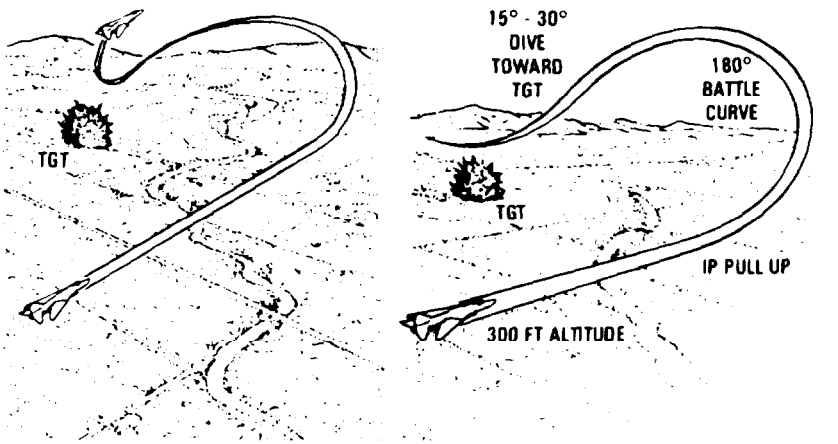
Air Defense Platoon Actions

The air defense platoon leader should stress to the maneuver commander the importance of passive air defense techniques. He should use covered and concealed routes to prevent the force from being detected by CAS aircraft and helicopters.

When the force comes under air attack, the air defense platoon must immediately engage the aircraft. Simultaneously, the TF will move to cover and concealment. The air defense platoon leader must exert positive control and direct all his systems to engage the aircraft and not maneuver with the TF taking evasive actions. Attacking aircraft rarely make only one pass over the force; therefore, observers must be vigilant and constantly search for follow-on aircraft.

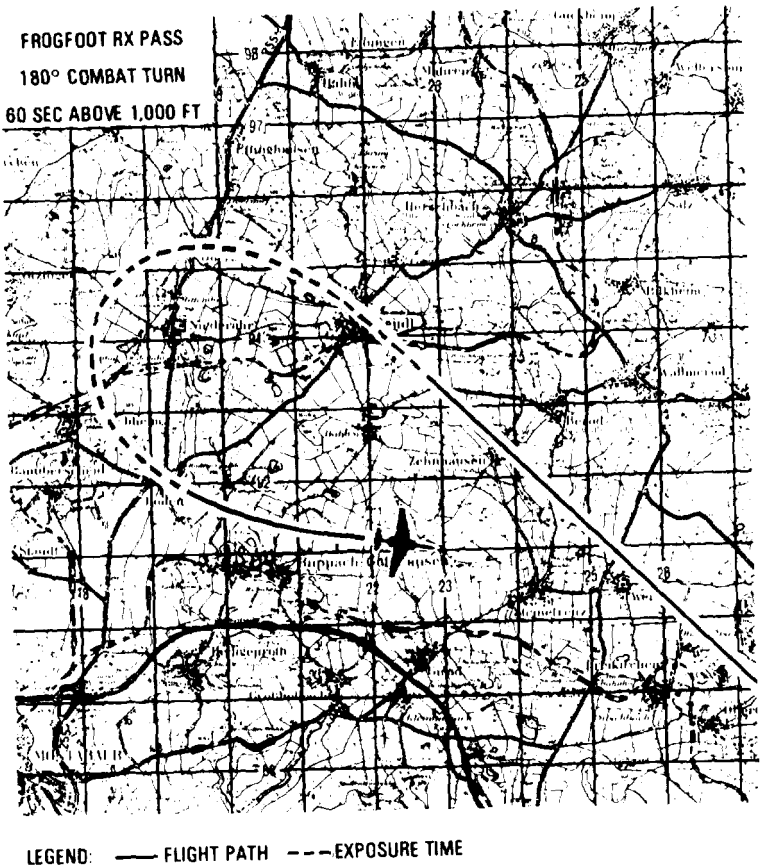
When attacking any mobile, yet concealed, target, visual acquisition by the enemy pilot is a must and one of these attack profiles will invariably be used. The "half combat turn" or the "180° combat turn" are the terms used in Soviet manuals. They are climbing, turning, and diving attacks. In the combat turn attacks, aircraft will be exposed for a considerable period of time for identification and suppression. Forward area attack profiles are shown in the Forward Area Attack Profiles illustration.

FORWARD AREA ATTACK PROFILES



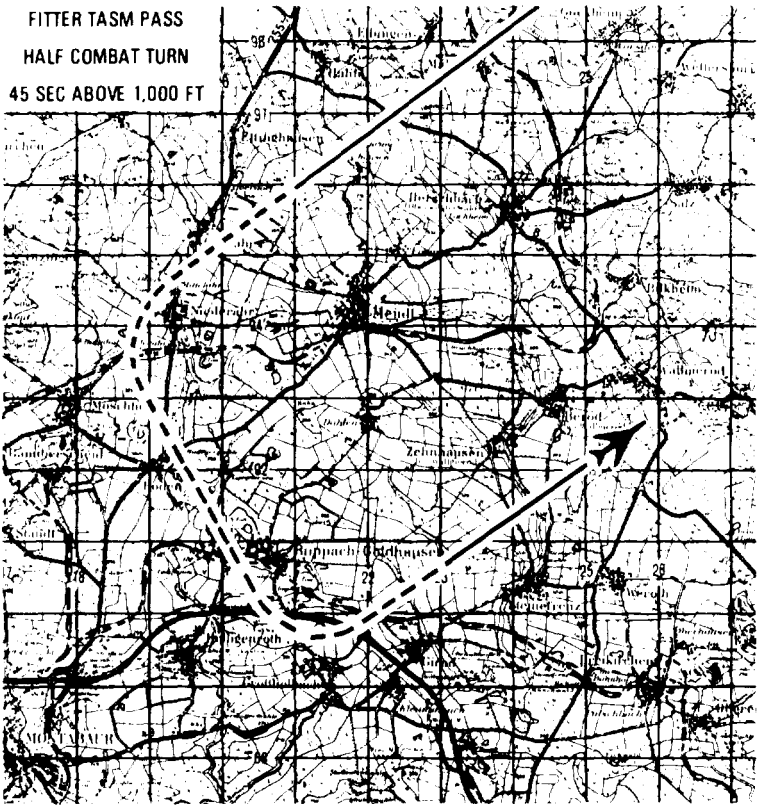
For a FROGFOOT making a rocket pass from a 180° combat turn (see the FROGFOOT 180° Pass illustration), exposure time is 50 seconds above 1,000 feet. During this time he will acquire, fire, and then depart.

FROGFOOT 180° PASS



For a FITTER firing a tactical air-to-surface missile (see the FITTER Half Combat Turn illustration), exposure time is 45 seconds. Again, note the exposure time. It is easier to identify and kill this attacker rather than transiting aircraft.

FITTER HALF COMBAT TURN



Tank main guns, machine guns, and Bradley chain guns should augment air defense fires. The platoon continues this type firepower until the threat is destroyed or driven off.

EW will normally be received by fire units and the platoon leader, The platoon leader must communicate this EW to the maneuver force in a mutually understandable language. Most maneuver units are not familiar with the MSCS, but most units do have an SOP item that can be used in lieu of MSCS. The ADA platoon leader should coordinate this with the supported unit upon receipt of the mission.

INDIRECT FIRE EVASION

Indirect fire is disruptive to a road march. The company team commander makes sure that —

Ž Platoons button up, mask if chemical agents have been previously used or the likelihood of their use is high, and continue to move out of the impact area.

Ž A spot report is submitted.

Ž If required, all platoons remain at MOPP level 4, check for presence of agents, and submit NBC reports. If agents are not detected and MOPP levels 3 and 4 are not directed, the company initiates unmasking procedures. Refer to Appendix D for further details.

Bear in mind that buttoning up reduces crew observation and plays into SEAD and should be resorted to only in response to intense or close artillery fire. The decision to button up rests with the squad leader. If on the move, the platoon will maintain its speed, direction, and interval, but each vehicle will have to short halt long enough for the driver to mask if required. The platoon leader will send an initial spot report to the team and or battery commander. A designated NBC vehicle from the company team and or TF will determine the presence of chemical agents. If the mission requires the platoon to remain stationary, permission must be obtained from the commander to move to alternate positions; otherwise, displacement to alternate positions is automatic. Once clear of the indirect fire effects, crews can open their hatches, but remain masked until ALL CLEAR is received by the platoon leader (unit SOP).

GROUND DEFENSE

If the company team is engaged by enemy ground troops during a road march, the platoons will —

Ž Return fire on the move.

Ž Submit spot reports.

Ž Evade ATGMs. (Refer to Appendix F.)

Ž Move rapidly to a covered and concealed position and continue to engage.

Ž Use smoke to screen movement if cover or concealment cannot be reached.

Ž Update spot report with additional information.

These can easily be done by using the action drills previously described.

When an air defense platoon or section is supporting a maneuver force and enemy contact or direct fire is encountered, a platoon or fire unit will execute the following four steps:

Ž Return fire and alert the platoon while moving to covered and concealed positions.

Ž Immediately report the contact to the company team commander.

Ž Be alert to the present situation and how it develops. Determine the best positions from which to observe for aircraft to support the maneuver force's operation.

Ž Give the company team and battery commander a thorough spot report on what happened.

HALTS

During the road march, the company performs three types of halts. These halts are described below.

Scheduled Halts

These are planned along the march route for maintenance, rest, or to follow higher-level movement orders. At scheduled halts, vehicles pull to the side of the road while maintaining march dispersion. Local security is established and crews perform during-operations maintenance checks. The company is ready to move at a moment's notice.

Unscheduled Halts

In case of obstacles or contaminated areas, the company's first priority is to establish security. If off-road maneuver is possible, the company maneuvers to bypass the impediment or stops to increase the MOPP level. If the company cannot get off the road, it forms a herringbone until the leader can determine a new course of action. During radio listening silence, each vehicle should send a crew member forward to the vehicle in front of it to attempt to determine the cause for the stop and prevent breaks in the column.

Disabled Vehicle Halts

Disabled vehicles must not obstruct traffic; therefore, they are moved off the road and their status is reported immediately. The crew establishes security and posts guides to direct traffic. If the crew repairs the vehicle, it rejoins at the rear of the column. If the crew cannot repair the

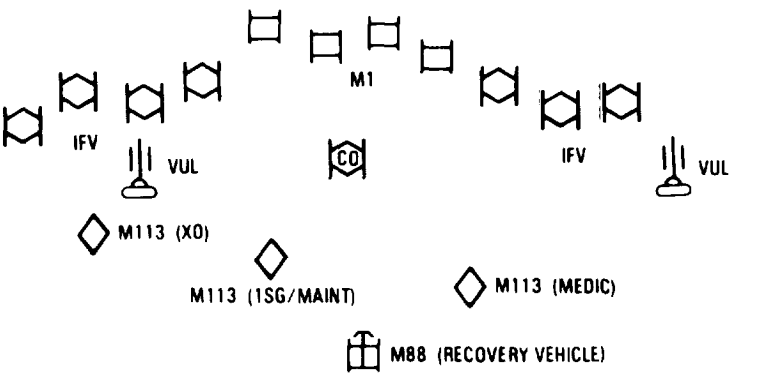
vehicle, maintenance elements recover it. SOP actions should be established to redistribute (cross-level) key personnel and equipment.

ACTIONS IN THE ASSEMBLY AREA

An assembly area is occupied to prepare for future operations. While it is not a battle position, it should be located on easily defensible terrain and should be planned like a defensive position. The company team could be required to occupy a portion of the battalion TF assembly area (see the Assembly Area (Part of TF) illustration) or it could be in its own assembly area requiring 360° security similar to the coil formation. An all-round defense is prepared within the time available. Desirable characteristics are concealment, room for dispersion, good routes forward, security from ground or air attack, and good drainage. The following activities take place in assembly areas:

- Issue orders.
- Organize for the mission (includes cross-attachment).
- Maintain weapons, equipment, and personnel.
- Conduct inspections.
- Resupply, refuel, and rearm.
- Rehearse.
- Verify weapon system status (boresight, test fire).
- Eat and rest.

ASSEMBLY AREA (PART OF TF)



ASSEMBLY AREA GUIDELINES

The following guidelines are used by the company team commander in organizing his company assembly area. Within the assembly area the ADA platoon leader and NCOs perform their tasks using the following guidelines:

Ž Clear the release point without stopping, and assure vehicles are positioned throughout the assembly area and covering all avenues of approach.

Ž Position OPs and or weapon systems to overwatch the movement of vehicles into positions. Position OPs and or guards to observe the avenues of approach into the assembly areas.

Ž Assign sectors of fire and observation to provide mutual support of platoon positions and verify by collecting and preparing a platoon fire plan.

Ž Review and refine planning of indirect fires.

Ž Coordinate with units on flanks so that the flanking unit's fire plans and supporting fires are interlocking and mutually supporting.

Ž Set up individual positions for OPs.

Ž Ensure camouflage procedures are initiated by vehicle crews to prevent detection from ground and air observation.

Ž Ensure platoon leaders prepare and submit platoon status reports to the company commander.

Ž Check to see that resupply, refueling, and rearming operations are taking place or have been completed.

Ž Check to see that equipment maintenance is performed.

Ž Check communications and make sure a platoon "hot loop" wire communications system is installed between the platoon position and the company CP which includes OPs and a wire communications system.

Ž Establish feeding procedures and make sure the company gets as much rest as possible.

Ž Receive an OPORD from the battalion commander.

Ž Prepare and deliver an oral OPORD to platoon leaders, to include wargaming sessions and briefbacks. Include any combat support units operating with them.

Ž Conduct necessary rehearsals.

Ž At STAND TO certain other actions are required. Ensure that all personnel are mounted in vehicles and prepared to tight or move on order. All vehicles must have communications (radio or wire) with the company team headquarters. Also ensure all equipment is retrieved and stored or operationally employed per the company team SOP, and OPSEC police call of the area has been completed.

As previously explained, the tactical situation will govern

whether the ADA platoon can do the items listed in the guidelines listed above. The ADA platoon leader will have to protect the supported force from air attack while the supported force may be doing other tasks. Still, the ADA platoon must also be resupplied, refueled, and rearmed. This is a judgmental factor on both the supported force commander and the ADA platoon leader. The ADA platoon and or section can go to 50 percent manning or alert to maintain air de fense of the supported force. Refer to SORs illustration (page 4-12), and unit SOP for further details, and also to Appendix G for overall ADA checklists.

Chapter 4

OPERATIONS

Whether supported maneuver units are engaged in the offense or in the defense, the key to successful ADA platoon operations is to establish and maintain positions that will provide protective cover for the supporting force. A unit cannot perform its mission unless it has taken all the measures possible to enhance its survival. This chapter will address how a platoon should operate to enhance its security and to conduct missions during limited visibility. Sustained operations and the effective distribution of fires will also be addressed.

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Section I. Security

The threat knows that he must first destroy or neutralize our air defense forces before he can successfully use his airpower. Before the threat can attempt to suppress our air defense weapon systems, he must determine where they are located. He has several ways in which to do this. These methods include, but are not limited to, HUMINT and SIGINT. HUMINT can come from members of the threat's intelligence agency, SMLM, enemy soldiers disguised as friendly troops, or civilian members of the local population. The enemy will attempt to gather SIGINT by intercepting and monitoring our C-E systems. This will include both radio and radar systems. ECCM techniques should be used to deny or minimize the threat's ability to collect information that impacts adversely on the unit's combat effectiveness.

COMMUNICATIONS SECURITY

COMSEC includes measures taken to deny enemy access to information from friendly communications. This includes crypto security, physical security of COMSEC information, and measures to ensure the authenticity of communications. When secure nets are not available, it is imperative that operators use authentication tables. Brevity is one of the keys to COMSEC. Unless

less a need exists to transmit, radios should remain silent, Necessary transmissions should be kept short – from 7 to 10 seconds. All reporting that does not need real-time transmission should be transmitted via written reports and messengers. Communications vulnerability can be reduced in the following ways:

Ž Reduce use of all radio nets. Communications discipline is a command responsibility. Unit leaders must actively control and limit transmissions.

Ž Reduce long radio transmissions by limiting traffic to time-sensitive and mission-essential messages.

Ž Use the lowest possible transmitter power output. This will allow only minimum radiated power to reach the enemy.

Ž Cut unnecessary radio checks and discourage operator chatter.

Ž Use couriers, messengers, and wire communications instead of radios when possible.

Ž Use terrain features such as hills, vegetation, and buildings to mask transmissions.

COVER

Cover is protection from enemy weapons. These include bullets, fragments, flames, nuclear effects, and biological and chemical agents. Cover will also provide protection from enemy observation. It may be natural or artificial. Whenever possible, Chaparral, Vulcan, and Stinger units should take advantage of natural cover (ravines, hollows, reverse slopes) and artificial cover (individual fighting positions, trenches, walls) to protect themselves, their vehicles, and their equipment from enemy fire. Engineers can provide assistance to enhance the cover of ADA units. Unit leaders should be knowledgeable of engineer support and how to obtain it. Refer to Chapter 8, Section IV, for further information. Rubble, abandoned equipment, craters, and even small depressions or folds in the ground can provide some cover. All unit members should make it a practice to look for and use all available cover.

CONCEALMENT

Concealment is protection from enemy observation. Every effort must be made to conceal equipment and to make the area look undisturbed. Well-concealed vehicles and fighting positions will deceive the enemy as to the location of a unit. Concealment includes not only camouflage, but also light, noise, movement, and odor discipline.

Some tell-tale signs alert the enemy to a unit's position, and you must minimize them.

VEHICLE TRACKS AND PERSONNEL FOOTPRINTS

When viewed from above, vehicle tracks and personnel footprints in the ground will readily disclose a unit's position. They can be minimized by taking the following actions:

Ž Move the vehicle away from the point of entry when siting it in a wooded area.

Ž Enter and travel through fields and meadows on the edges. In rural terrain, tracks are harder to see near boundaries. Remember that this terrain is seen as a checkerboard pattern from the air. Crisscrossing or driving diagonally across fields will point out a unit's position.

Ž Use existing trails and roads whenever possible.

Ž Travel in the same direction as the furrows when crossing a plowed field.

NOISE

Noise can be heard at great distances. Noise control is critical to prevent enemy forces from detecting a unit's position. Sound travels best when projected with the wind, when the relative humidity is high, during hours of darkness, and in open terrain. Do not expect an enemy to act on what he hears alone. But sound serves to alert him of your location and that something is happening. Noise discipline is difficult to enforce since necessary operations produce noises. The following sources of noise should be minimized:

Ž Generator noise. Generators should be placed in well-ventilated pits or sandbagged positions to reduce noise and thermal signatures.

Ž Metal striking metal. If it is necessary to hammer or strike objects, do it when other activities will cover the sound.

Ž Loud voices, horseplay, and laughter. Discipline in this area is difficult but absolutely necessary.

LIGHT

Light discipline is critical during night operations. Light can be seen at long distances at night, and may disclose your position. The following are some methods to curb light signatures:

Ž Use blackout markers when moving at night. Flashlights should be used with a blue or green filter. Avoid shining the light skyward.

Ž Restrict cigarette smoking to covered areas.

Ž Emplace equipment on reverse slopes away from likely routes of approach.

Ž Cover bottom flaps and cover all holes and tears in tentage. Repair or replace torn tents at the earliest opportunity. Use tent vestibules.

Ž Turn out all lights when entering or exiting tents. Use shades on all lights.

CAMOUFLAGE

Camouflage is man-made concealment. Camouflage means taking advantage of the natural environment, as well as applying natural and artificial materials. If camouflage is required, plan to get it from areas other than your unit's location. Live foliage for camouflage is best because dead foliage and artificial materials may not blend with natural surroundings. Camouflage nets are excellent artificial camouflage if properly erected. A well-sited, pattern-painted vehicle will have its camouflage improved by using the LSS. The LSS further reduces the vehicle's visual signature and de feats radar detection by scattering and absorption. Stainless steel fibers in the plastic garnish material absorb some of the radar signal and reflect most of the remaining signal in all directions. Only a small percentage of the signal returns to the radar for detection. The LSS should be at least 1 foot away from the vehicle, should extend to ground level, and should avoid squared-off edges. Always pay particular attention to ensure that the proper color pattern of the net is exposed.

LOCAL SECURITY

The threat to local security is from enemy sabotage, espionage, and pilferage. To counter this, ADA units employ physical security measures based on the following factors:

Ž Size of the area of operation.

Ž Maturity and sensitivity of the defended asset.

Ž Vulnerability and self-defense capability of the unit.

Ž Geographic location.

Ž Economic or political situation.

Ž Enemy capability.

Based on these factors, ADA units may employ the following local security measures:

Ž Brief all personnel on SAEDA.

Ž Limit operational information to persons with a need to know.

Ž Brief all personnel about an operation only at the last possible moment.

Ž Refrain from posting operational information (including radio frequencies and call signs) on vehicle windshields and in other non secure areas.

Ž Establish observation and listening posts for EW.

Ž Use challenges and passwords to screen all personnel entering restricted or sensitive areas.

Ž Construct field fortifications for ADA units, crew-served weapons, and automatic weapons. Emplace weapons first to take

advantage of the terrain, then improve the site with whatever natural protection is avail able. Mounds of dirt or rock, trend dunes, reverse slopes, and terrain folds provide quick protection. If time is available, improve the position by adding earth or sandbag revetments.

Ž Construct barriers and antiintrusion devices, such as protective fencing, concertina wire, minefield, antitank ditches, and trip flares.

Ž Keep individual weapons and explosive devices ready to cover gaps in the machine gun fields of fire. M16 rifles, M203 grenade launchers, and claymore mines can be used to fill this need.

Ž Work on hardening the site if the unit will be occupying it for a long period of time. Major site improvements will be made by supporting engineer units. The degree of site hardening will depend on how long the unit will occupy the position.

Section II. Distribution of Fires

Each fire unit is individually positioned and is separated from all other fire units supporting the same force. Decentralized control of the fires of Chaparral, Vulcan, and Stinger units is based on the fact that the elapsed time from target detection to target flyover is measured in seconds. To be timely, the firing decision must be made at the fire unit position. Authority to engage must be decentralized to the squad or crew level, Therefore, to control fires of their squads, Chaparral, Vulcan, and Stinger unit leaders must ensure that each crew member has all the information and instructions necessary to make a sound engagement decision.

RULES OF ENGAGEMENT

Control of Chaparral, Vulcan, and Stinger fires is exercised through air defense ROE which are directives that point out the circumstances under which weapons can fire or continue fire at hostile aircraft. The exc tion to ROE is the right of self-defense. See illustration on following page.

The rules of engagement establish varying degrees of control over air defense firings to provide protection of friendly aircraft while, at the same time, maintaining the level of defense required by the tactical situation. The rules of engagement tell the squad or crew what, when, and where to shoot.

RIGHT OF SELF-DEFENSE

The rules of engagement do not prohibit a unit or air defense weapon from shooting at an aircraft that is attacking it or its defended asset. The right of self-defense is never denied.

HOSTILE CRITERIA

Normally, the responsibility for target identification rests with the squad leader or crew chief. The exact criteria in use may vary with the tactical situation, from command to command, and in terms of time and space. All unit SOPs should contain clear and concise directions for squad leaders and crew chiefs for identifying and engaging hostile aircraft. For example, an SOP may list the following as hostile criteria.

ATTACKING FRIENDLY ELEMENTS

Aircraft may be classified as hostile if they are actively attacking the fire unit or a defended unit or asset. They may also be termed hostile if they perform any of the following acts over friendly troops or–territory without prior coordination:

Ž Discharge smoke, spray, flares, or chaff.

Ž Discharge parachutists or unload troops in excess of normal aircraft crew.

Ž Engage in mine-laying operations.

Ž Engage in aerial reconnaissance.

VIOLATING AIRSPACE CONTROL MEASURES

Airaft are considered hostile if they make unauthorized or improper entry into a restricted or prohibited area. Care should be exercised to avoid engaging a friendly aircraft, It may have inadvertently strayed into the restricted area due to a navigational error and may be returning to the rear of our lines.

Aircraft are also classified hostile if they operate at prohibited speeds, altitudes, or in prohibited directions. The determination of aircraft speed and altitude by ground observers is difficult. Extreme care should be used in applying these criteria.

VISUAL IDENTIFICATION

The moat common method of identifying aircraft by Chaparral, Vulcan, and Stinger units is through visual recognition. This requires that all crews be familiar with the ph ysical features of both hostile and friendly aircraft. For a detailed discussion of aircraft recognition, refer to FM 44-30.

IMPROPER IFF RESPONSE

For those systems with IFF (FAAR, Chaparral, and Stinger), the IFF response can determine whether an aircraft is friendly or unknown. There are three IFF responses: ***true friend, possible friend,*** and ***unknown. True friend*** can only come from aircraft equipped with a Mode 4 transponder. ***Possible friend is*** a Mode 3 reply and can come from any US or allied combat aircraft. The ***unknown*** response can be Mode 3 or Mode 4. It is a result of an incorrect reply or no response at all. Although you must consult local SOPS for specific actions to be taken based on IFF responses, the Chaparral/Stinger IFF Procedures illustration provides general guidelines on the actions to take.

Engagement Criteria

ADA engagement of hostile targets is governed by JCS publication. JCS Pub 12 requires that ADA weapons crews identify aircraft prior to engagement. Various criteria are detailed in this chapter which, if met, allow ADA to declare an aircraft as hostile. The requirement is to satisfy one or more of the listed criteria. Two of these criteria are the improper response to IFF or improper IFF response in conjunction with violation of prescribed physical locations, headings, altitudes, and speeds.

The IFF challenge is coded in either a complex, cryptosecure Mode 4 form or a simpler Mode 3 form. All US combat aircraft and helicopters are equipped with transponders to provide friendly Mode 4 and 3 replies. However, some aircraft belonging to our allies are not capable of providing friendly Mode 4 replies. They can only provide Mode 3 replies. Thus, since the Mode 4 code is secure, a friendly Mode 4 reply is considered a ***true friend*** reply. A friendly Mode 3 reply is considered only as a ***possible friend*** reply.

Local tactical directives will specify whether a Mode 3 return is to indicate a "friend." All other aircraft (those providing no IFF response) are given a tentative ID of "unknown." Electronic malfunction or physical damage may prevent the IFF interrogator or aircraft transponder from working properly. The absense of a functional IFF (IFF subsystem malfunction) on the fire unit will require the squad or crew to use other means to identify the aircraft. Under certain weapons control statuses and within the parameters of JCS Pub 12, fire units need not ***visually*** identify an aircraft prior to engaging that aircraft provided an improper IFF response has been received and the aircraft is in violation of established hostile criteria or airspace management controls. Also, engagement based solely on an "unknown" IFF return is permissible under certain rules of engagement as specified by JCS Pub 12.

CHAPARRAL AND STINGER IFF PROCEDURES

The gunner initiates the IFF sequence by pressing the IFF INTERROGATE switch. Once the gunner issues a challenge, the rest of the sequence is automatic. Aircraft with Mark X or Mark XII transponders automatically decode only if the interrogator is programmed with Mode 4 and Mode 3. Mode 3 is built into the interrogator; however, if the Mode 4 only position is used during programming, Mode 3 (Mark X) will not be challenged until the two or four days of Mode 4 codes have expired. The aircraft's transponder sends a coded reply. The reply is received by the Chaparral or Stinger antenna and is routed to the interrogator for decoding. The interrogator converts the reply into an audible tone which is then routed via the interconnecting cable to the gunner as a friendly tone. If the aircraft's transponder sends an incorrect reply to the IFF challenge, the reply is processed by the IFF system into an ***unknown*** tone. Additionally, aircraft not equipped with the transponders will not reply to the challenge, and this is also interpreted as an ***unknown*** tone. The gunner hears the friendly or unknown tone in his right ear or earphone immediately after challenging the aircraft. Interrogator programming is explained in TM 9-1425-429-12. The SHORAD IFF Procedures illustration shows the mode, tone response, and the squad or crew actions for Chaparral and Stinger in each of the weapons control statuses.

SHORAD IFF PROCEDURES

MODE	TONE OR SYMBOLIC RESPONSE	WEAPONS FREE	WEAPONS TIGHT	WEAPONS HOLD
4	FRIEND (Beep-Beep)	1] Cease track. 2) Continue searching.	1] Cease track. 2) Continue searching.	1) Cease track 2) Continue searching.
3	{POSSIBLE) FRIEND (Beeeeeeep)	1) Continue track and visually 10. 2) If visual 10 is "HOSTILE," engage. 3) If "FRIEND," cease tracking and continue searching.	1) Continue track and visually 10. 2) If visual 10 is "HOSTILE," engage. 3) If visual 10 is not positive "HOSTILE." continue searching.	1) Engage only in self-defense. 2) Visually 10 and report "HOSTILE' aircraft to higher authority 3) Continue track until aircraft is either out of sector or ''FRIEND" ID is determined.
3&4	UNKNOWN (Beep, Beep, Beep, Beep)	If challenge is 'IJN-KNOWN," engage.	1) Apply rules of angagememt and engage if hostile criteria are satisfied. 2) Visually 10 and engage if positive "HOSTILE." 3) Visually 10 and continue track if still "UNKNOWN." 4) Visually 10 end if positive "FRIEND," cease tracking.	1) Engage only in self- defense or in response to a for. mal order. 2] Visually 10 and report "HOSTILE' aircraft to higher authority, 3) Continue track until aircraft is either out of sector or "FRIEND" ID is determined.
EXTERNAL	SOURCE			
	IF HIGHER AUTHORITY DECLARES AIRCRAFT AS FOE	ENGAGE	ENGAGE	ENGAGE ONLY IN SELF-DEFENSE.

Note: Wherever "ENGAGE" apppears, it is assumed that another factors of hostile criteria have been satisfied as appropriate.

WEAPONS CONTROL STATUSES

WCSs are conditions which describe the relative degree of restriction with which the fires of air defense systems are managed. This degree or extent of control varies, depending on the relative priorities of two needs: the need to protect friendly aircraft and the need to maintain a high level of air defense for a specific tactical situation.

The area air defense commander orders the WCS and issues the WCS order to subordinate units in accordance with the local TSOP. However, lower commanders have the authority to impose a more restrictive WCS within their respective areas of operation for assigned, attached, or organic air defense weapons. WCSs may apply only to certain types of aircraft and only for specified time periods. For example, the status "WEAPONS FREE for helicopters; WEAPONS TIGHT for all other aircraft" is not unusual. The standard WCSs are shown in the Control Statuses and Definitions illustration.

CONTROL STATUSES AND DEFINITIONS

WEAPONS FREE —	Fire at any aircraft not positively identified as friendly. This is the least restrictive status.
WEAPONS TIGHT —	Fire only at aircraft positively identified as hostile according to the prevailing hostile criteria.
WEAPONS HOLD —	Do not fire except m self defense or in response to a formal order. This is the most restrictive status.

The right of self-defense is never denied in any WCS.

FIRE CONTROL ORDERS

Fire control orders are commands which control engagements on a case-by-case basis, regardless of the prevailing WCSs. These are usually given by the squad leader or crew chief for the purpose of fire control or for safety.

FIRE CONTROL ORDERS AND ACTIONS

ENGAGE –	This command orders a fire unit to engage (fire on) a specific target This order cancels any previous fire control order.
CEASE ENGAGEMENT —	This command stops tactical action against the specific target now being engaged. This order may be used to change an ongoing engagement from one target to another of higher priority.
HOLD FIRE –	This is an emergency fire control order used to stop firing and stop all tactical action. This order may be used to protect friendly aircraft.

LOSS OF COMMUNICATIONS

If communications with higher controlling authority break down for any reason, the unit must take immediate action to reestablish communications. TSOP will list specific actions the unit must take. Additional actions the unit should take are based on the WCS in effect.

WEAPONS TIGHT

The fire unit will remain in weapons tight. This condition will remain until released by proper authority.

WEAPONS HOLD

If a time limit was placed on the weapons hold, the fire unit will remain in weapons hold for this time limit and then revert to weapons tight. If no time limit was established, the fire unit will remain in weapons hold for 30 minutes and then revert to weapons tight.

WEAPONS FREE

If a time limit was established, the same rule applies as in weapons hold. If no time limit was established, the fire unit will immediately revert to weapons tight.

WARNING PROCEDURES AND ALERT STATUSES

To prepare units for enemy air attack, ADWs may be broadcast over the air defense EW net, These warnings provide general information on the air threat. See the illustration below.

AIR DEFENSE WARNINGS

RED —	Attack is imminent or in progress.
YELLOW —	Attack is probable.
WHITE —	Attack is not probable.

SORs vary the level of preparedness of fire units. These SORs should be defined in the local TSOP, and may be based on the ADW. For 24-hour, all-weather capable ADA weapon systems, it is necessary to develop a series of statuses that allow Chaparral, Vulcan, and Stinger leaders from platoon through

battalion to ensure that weapon system crews have time to conduct other required functions such as maintenance, refueling, rearming, crew rest, etcetera, See the illustration below.

STATES OF READINESS

1 — Weapon system ready, 100 percent operational, fully manned, and conducting assigned mission.

2 — Weapon system in standby, gunner on system, weapon system limited operation due to rearm, refuel, or other administrative function. Return to ADA mission in 5 minutes or lass.

3 — Weapon system off, system operational. Return to operation in lass than 20 minutes.

4 — Weapon system nonoperational

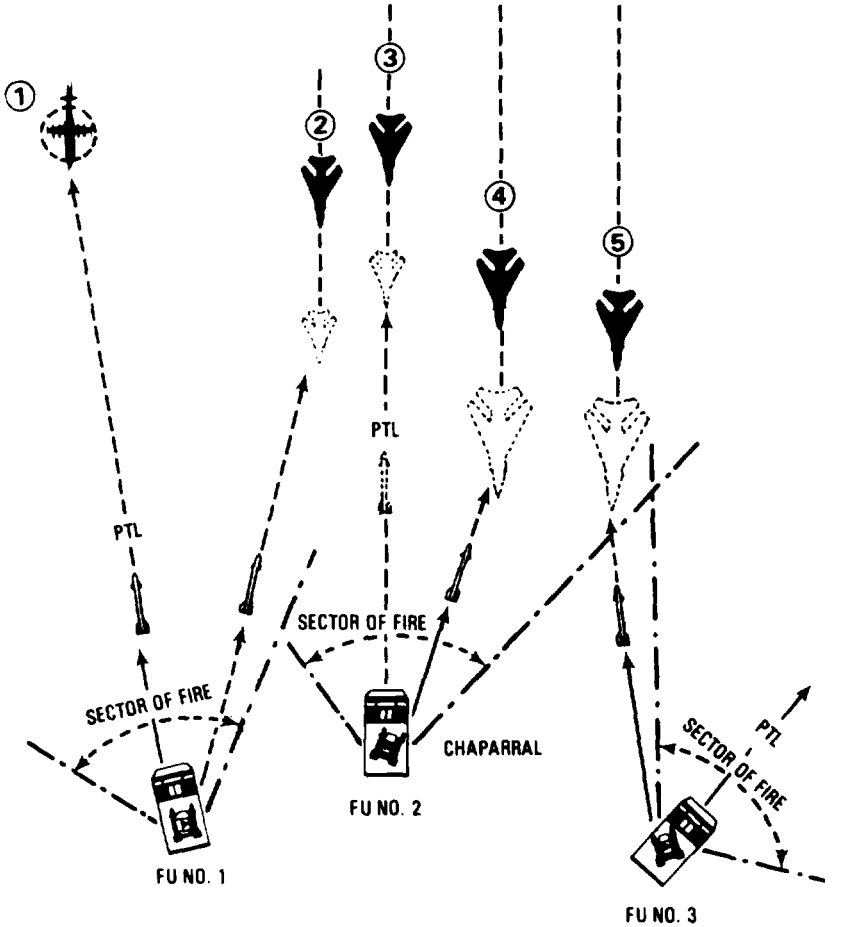
SECTORS OF FIRE AND PRIMARY TARGET LINES

Each Chaparral, Vulcan, and Stinger fire unit is normally assigned a sector of fire and a PTL to ensure that all aircraft attacking the defended asset are engaged. These assignments assist in the distribution of fires when the unit is defending against multiple targets attacking from different directions. Each fire unit normally concentrates its fires on the most threatening aircraft within its assigned sector or closest to its PTL. Typical control measures are PSF and PTL. The PSF is a sector defined by azimuth boundaries where the fire unit will focus its primary attention. The PTL is an azimuth along which the fire unit will focus its primary attention to determine which targets to engage first.

The assignment of a PSF or PTL does not restrict the fire unit to looking only at the sector or line. Rather, it means that, given two targets that are equal threats, the fire unit will fire first on the target within the PSF or the target closest to the PTL, then engage the other aircraft. In the Typical Fire Unit Control Measures illustration, fire unit 1 engages target number 1, the target which presents the greatest threat along its PTL. Fire unit 2 engages target number 4 because it is the closest. Fire unit 3 engages target number 5, which is closest to its sector of fire.

The responsibility for assigning a PSF and PTL is normally the platoon leader's, When two or more platoons are conducting the defense of a critical asset, it is imperative that close coordination be made by all the platoon leaders involved to ensure no gaps occur in the defense. Failure to coordinate fire unit locations and PSFs or PTLs could result in the loss of critical resources of the supported force.

TYPICAL FIRE UNIT CONTROL MEASURES



Notes: Fire unit No. 1 engages target No. 1, then engages target No. 2.

Fire unit No. 2 engages target No. 4, then engages target No. 3.

Fire unit No. 3 engages target No. 5.

NOT DRAWN TO SCALE

Section III. Limited Visibility Operations

Night combat operations normally achieve surprise and offer opportunities for success when daylight operations are impractical. This is especially true when a force lacks air superiority. Continuous pressure applied day and night, particularly against a weakening enemy, hastens his defeat. The fundamentals of night operations are the same as those for daylight operations; however, techniques may vary. For example, more control measures are used by units during night operations than during daylight operations. The distance between vehicles in a night convoy is normally shorter than it is in a daylight convoy.

NIGHT EMPLOYMENT CONSIDERATIONS

Darkness degrades the effectiveness of the enemy air attack and hinders Chaparral, Vulcan, and Stinger weapons' ability to acquire an accurate range and positive identification. Aircraft can be detected and acquired using radar, FLIR, sound, moonlight, reflected light, and engine exhaust flames, but ranging and positive identification become difficult. Temporary night blindness caused by firing of weapons further handicaps weapon crews conducting engagements at night.

Tell-tale missile signatures may show the location of friendly units to enemy aircraft, or they may subject the defended area to close scrutiny by enemy intelligence means. This may in turn result in an attack on the firing unit or collocated assets by enemy air, field artillery, or maneuver units.

The probability of destroying an aircraft may be low at night, the tracer streams of Vulcans and the missile signatures of Chaparral, Redeye, and Stinger may diminish the effectiveness of the attacker by causing him to abandon his mission or cause him to deliver his ordnance inaccurately.

Since Chaparral, Vulcan, and Stinger unit participation in the air battle may be reduced at night, platoon leaders should take advantage of any lull and concealment afforded by darkness to accomplish the following:

- Move weapons to new, alternate, or supplemental positions.
- Improve positions.
- Resupply weapons and crews (ammunition, POL, rations, et cetera).

Ž Perform required maintenance.

Ž Position weapons to provide better security against ground attack. Whenever possible, squads should be moved to establish a collective defensive position with the force they are supporting.

Ž Use Vulcan in defense against ground attack, depending upon the criticality of the situation and the availability of ammunition.

Ž Allow maximum crew rest by lowering alert state for crews or squads, as the situation permits.

When a maneuver force moves at night, the supporting ADA unit should move with that force so it can be in position at BMNT. However, the movement decision is governed by the factors of METT-T. For example, ADA weapons such as FLIR-equipped Chaparrals may be pre-positioned along the route of advance. In some cases, Chaparrals may be able to cover the maneuver force without necessarily moving with the supported force.

Darkness increases the difficulty of movement, naviga tion, observation, and control. The platoon leader should take as much time as possible to do reconnaissance in daylight.

MOVEMENT IN NIGHT OPERATIONS

Of particular importance to ADA units is the technique of movement. Units and vehicles may move closer together to keep in sight of each other, but should always avoid nose to tail closeness to limit casualties from area or indirect fire. Simple maneuvers may be used by tank and mechanized infantry units employing infrared or thermal imagery equipment.

ADA leaders must be aware of their mission, role, and function, and of how they will move, communicate, and provide the required support during night operations. It is relatively easy to get disoriented, lose contact with the supported unit, and become in effective. Good coordination prior to night operations is imperative. ADA leaders participating in night operations should be thoroughly familiar with the supported force's night employment techniques and procedures.

GROUND IDENTIFICATION, FRIEND OR FOE

In all night operations, troops and vehicles must be recognizable or risk being destroyed by friendly fire. Methods of distinguishing friendly and enemy vehicles during limited visibility

vary from common sense techniques to sophisticated thermal recognition cues. Some of the common techniques, such as colored smoke, reflecting light, whistles, and clickers, have been used for years. Other ground IFF measures include the use of the following:

Ž Blackout markers (front or rear depending on the mission).

Ž Reflective panels.

• Color-coded filtered light.

Ž Reflective tape strips or geometric designs to indicate unit identification.

Ž Horizontal or vertical tape on the backs of helmets to distinguish ranks or units.

Infrared devices, image intensifiers, and thermal viewers simplify the task of ground IFF since observers can see objects at close ranges with almost the same clarity as in daylight. At greater ranges, however, identification remains difficult.

LIMITED VISABILITY EQUIPMENT

Limited visibility equipment is generally broken down into two types: active or passive. Active equipment requires that some sort of energy, usually infrared light, be emitted to be effective; however, this energy source can also be detected by the enemy. Passive equipment does not emit energy. It makes use of available energy given off by the target and terrain or amplifies ambient light; thus, it is not detectable by the enemy.

PASSIVE EQUIPMENT

Passive equipment is further broken down into two categories: I^2 and thermal imagery. I^2 devices, like starlight scopes, simply amplify the existing light to produce an image on the scope. Flares, searchlights, and laser illuminators improve the capabilities of I^2 devices, but may damage them if the light source is viewed directly. I^2 devices do not work well in smoke, fog, snow, or rain.

THERMAL IMAGERY DEVICES

Thermal imagery devices are true limited visibility devices which can penetrate smoke, fog, rain, camouflage, and light vegetation. These devices work by "seeing" the heat that is produced by an object, such as a tank or a person's body. These devices work in daylight to see through camouflage or light vegetation.

CHAPARRAL, VULCAN, AND STINGER

Chaparral, Vulcan, and Stinger units have some limited visibility equipment. Some of the more common types are described in the following paragraphs.

Binoculars

Most Chaparral, Vulcan, and Stinger units have 7x50-millimeter binoculars. Although not designed for night vision, binoculars can improve the ability to see small changes in light patterns at long range.

AN/PVS-4

The AN/PVS-4 is a passive I^2 system for the M16A1 and the M60 machine gun. It has an effective range of 400 meters in starlight and 600 meters in moonlight. Although it is primarily used by the infantry, ADA units have a few authorized in their TOE.

AN/PVS-5

The AN/PVS-5 (night vision goggles) is primarily a passive device with a range of 150 meters for man-size targets or 300 meters for vehicle-size targets. It is designed for driving, performing maintenance, and similar tasks. It has a built-in IR light for viewing objects within two meters.

M19

The M19 driver's periscope is an IR viewing device with a range of about 18 meters. It is used with the Vulcan and APCs. IR rays are projected forward from headlamps at the bow of the vehicle to illuminate the field of view. These active IR lamps mean the Vulcan will be easier to detect. The IR headlamps should not be used if the supported unit is using passive devices.

Chaparral FLIR

FLIR is a passive thermal imagery device. Its range is slightly greater than the lock-on range of the missile seeker. It is compatible with all other types of limited visibility equipment. Detailed information on FLIR can be found in FM 44-4 and (S) FM 44-1A (U).

COMMAND AND CONTROL AT NIGHT

Procedural control of target engagement is a necessity. Currently, there is no automatic system or command and control structure that provides positive ID and timely fire distribution.

Positive ID is still required, but is not based solely upon visual aircraft recognition. All means available will be used to positively identify aircraft (visual, IFF, divisional ADA C' and EW, observed hostile acts, scope image). The squad leader or crew chief always has the right to orally supersede any gunner decision.

Some procedural controls and considerations apply. They are the same controls and considerations as those implemented

during daylight hours but apply in a more restrictive manner at night. They are —

Ž Weapons control status (FREE, TIGHT, HOLD).

Ž PTLs.

Ž Sectors of responsibility for search and fire (primary and alternate).

Ž OPSEC considerations.

Ž Mission of supported unit.

These controls and considerations assist ADA in determining whether or not to engage an aircraft at night. What recommendations can the platoon leader make to his supported unit commander as to what the weapon control status should beat night? His recommendations depend on the situation. To be given TIGHT at night places a considerable burden on the gunners, as it requires positive ID of an aircraft as hostile before it is engaged. FREE restricts friendly use of the airspace and keeps friendly pilots out of the area. This would take some of the decision load off the squad leader or crew chief. PTLs and sectors are the only procedural means of affecting fire distribution. Use of PTLs and sectors could be tightened at night for additional control. Using these controls in conjunction with WCSs is the best approach. Friendly aviation (particularly Army) plan extensive use of night operations. ADA platoon leaders must be aware of this fact and must ensure close coordination and C^2 have been effected ***prior*** to night tactical operations. Strict adherence to rules of engagement by ADA units is a ***must.***

OPSEC considerations, for night operations, mean tieing the WCSs into what the maneuver unit is doing that particular night. As previously discussed, ADA weapons have a distinctive signature when fired. The maneuver commander may not want his positions revealed and, consequently, ADA weapons supporting that unit may be at WEAPONS HOLD.

ADA PLATOON OPERATIONS AT NIGHT

Limited visibility reduces the commander's ability to control his forces. The unit must employ techniques that offset the limits tions of darkness. The commander must see the battlefield, make decisions quickly, and assign missions to platoons with the assurance that they will be capable of completing them. To achieve his purpose, the commander may plan for extensive illumination so that daylight control measures can continue

into darkness. The commander plans for additional control mea cures at night. These measures include the following:

Ž Graphic control symbols that can be identified on the ground at night.

Ž Light and sound signals tied to coordinated action.

Ž IFF measures for friendly forces.

Ž Contingency plans.

ATTACK

Because the ADA unit provides air defense protection to its force, the ADA unit must be closely involved with the maneuver force commander's planning and thoroughly familiar with his control meaeures during the attack. In preparing for the night attack, the single most important element is reconnaissance. Time permitting, leaders should conduct their reconnaissance once during daylight, once at dusk, and once during darkness. They should draw sketches of the battlefield showing routes to the objective, reference points, minefield, and obstacles. The sketches may be used with the map when giving the OPORD. Sketches should be made with black lines on white paper so they can be seen in darkness and can be used for quick reference during the attack.

Precombat Checks

After receiving the warning order, crews in the assembly area or defensive position must conduct their precombat checks of their weapons and vehicles. This includes a thorough inspection to make sure that sources of active light, such as headlight, taillight, and unnecessary instrument and dome lights, are either taped or disconnected. Operators must remember that light from inside vehicles can be seen through vision blocks so, as a minimum, the red dome lights should be used. Night vision devices should be mounted, checked, and boresighted if necessary, Operators should carry extra batteries for the devices they will use. Flashlights are fitted with red, red-IR, or blue-green filters. If precombat checks are conducted after sundown, light discipline must be enforced not only as a security measure but to permit soldiers to acquire and retain their night vision.

Night Vision Capability

Since current divisional ADA vehicles have no passive driving devices, operators may have problems when supporting an M1/M2 TF. One option is to have either the driver or squad leader (or both) ride head-out, equipped with AN/PVS-5 night vision goggles and have them key their movement to a specific vehicle in the supported unit formation.

DEFENSE

The purpose of the defense is to stop the enemy and seize the initiative. At night, passive vision devices add a new dimension to this mission by allowing greater engagement ranges, longer engagement times, and rapid movement to alternate and subsequent positions by air defenders and maneuver units.

To control the night defense, the commander uses normal daylight graphic control symbols, The objects which correspond to these symbols become more critical at night since they must be identifiable on the ground in darkness.

Commanders may improve their control of the defense by using event-oriented orders that allow subordinates to react quickly without verbal instruction. For example, in the confusion of battle, a platoon could be overrun if they wait for permission to withdraw. Given an event-oriented order, the platoon moves automatically when the enemy passes a specified landmark. Time-initiated action is used in the same manner. Example: 1st platoon relocates to battle position BRAVO 30 minutes after the end of EENT. This allows the platoon to conduct the move with a minimum of instruction and without a single transmission. Other tools that enhance the commander's control at night include platoon and company fire plans and a good night surveillance plan. Preparation for the night defense requires timely and thorough reconnaissance and precombat checks. If the maneuver force commander decides to control the night defense, it is imperative that we be thoroughly familiar with his plan as we should be fully integrated into his defense.

Section IV Sustained Operations

Sustained operations on the battlefield will require soldiers to fight almost continuously. Chaparral, Vulcan, and Stinger units must be well trained to adapt to the concept of high-speed and around-the-clock operations. Unit leaders must understand the psychological and physiological effects that sustained operations will have on their soldiers. Loss of sleep reduces both physical and mental effectiveness. Soldiers become less alert, have trouble focusing on a task for more than a brief period, and experience a short-term memory loss, making it difficult to learn new information or to remember new orders or missions.

SLEEP PLAN

The problem of sleep loss can be limited by a properly enforced sleep schedule. Such a plan conserves energy of the troops since some members must be alert at all times. Work and rest must be arranged so that at least one and preferably two crew members are awake and working at all times. Because it is necessary to complete the rotation during a 12-hour period, there will be times when one crew member will be resting while two or three others are working. The key is that the same individual should be scheduled to sleep at the same time during every 12-hour period. As with any operation, a sleep or rotation schedule must be enforced.

CREW ROTATION

Tasks should be rotated among cross-trained crew members to offset the effects of fatigue and performance deterioration. Exercise is the best way to revive a tired soldier; however, exercise should be relatively mild to avoid increasing the effects of sleep loss by further depleting energy reserves. Procedures for limiting performance degradation during continuous combat operations are as follows:

- The squad leader or crew chief and gunner should rotate gunner duties during periods of ADW red.
- During periods of ADW yellow or white, other squad members may occupy the gunner's position.
- During periods of intense combat, the best trained soldiers should be in the most critical positions.

Leaders should attempt to ensure every soldier gets at least 4 hours of sleep every 24 hours. Acceptable performance can be sustained on this amount of sleep for several weeks. Less than 4 hours sleep in 24 hours can lead to serious performance degradation.

STAND-TO

History has proven that the optimum time to launch an attack is just prior to sunrise. To counter this threat, STAND-TO is conducted 30 minutes prior to BMNT unless otherwise directed by unit SOPS. During this time all personnel and vehicles will be ready for immediate combat. All weapons will be ready and sighted along their assigned PTLs, prefire checks will be completed, radio nets will be checked (if not in radio listening silence or radio silence), and engines will be started if the tactical situation permits. Duration for STAND-TO will be determined by the tactical situation. After STAND-TO, the unit assumes a normal defensive posture.

COMBAT REPORTS

Combat reports are completed and submitted as directed by unit SOPS. These reports are necessary to analyze the tactical situation and to determine the need for administrative and logistical support. Combat reports will vary from unit to unit; however, the contents of the reports will be similar. Examples of combat reports are shown in the First Example of a Combat Report and the Second Example of a Combat Report illustrations.

FIRST EXAMPLE OF A COMBAT REPORT

ALPHA REPORT — Operation Reports.

This is _____ with Alpha Report No _____ EFF DTG _____

LINE 1 — Encoded location by grid coordinates of engagement
LINE 2 — Engaging unit cell sign
LINE 3 — Type of engagement (ground or air)
LINE 4 — Size of enemy or number of A/C by type (Example: 1 MiG 21/2 -BMPS)
LINE 5 — Number of enemy kills by type
LINE 6 — Number of wpn systems lost
LINE 7 — Ammunition expended, 20mm
LINE 8 — Ammunition expended, Chaparral
LINE 9 — Ammunition expanded, Redeye/Stinger
LINE 10 — Ammunition expended, 7.62-mm
LINE 11 — Ammunition expended, 5.56-mm
LINE 12 — Ammunition expended, .50 cal
LINE 13 — Time of engagement (if not a consolidated rpt)
LINE 14 — Sensitive items check — Negative response or state loss

Encoded locations (max of 5 per rpt) of firing units (6-digit coordinates) and btry/plt HO lines 15-20.

LINE 15 — 1 Sqd or Crew
LINE 16 — 2 Sqd or Crew
LINE17— 3 Sqd or Crew
LINE 18 — 4 Sqd or Crew
LINE 19 — 5 Sqd or Crew
LINE 20 — HQ
LINE 21 — ADW (Encode)
LINE 22 — DEFCON level (Encode)
LINE 23 — WCS [Encode)

Send only applicable lines to the particular report you are passing. Do not delay report because information is not available. This report is a composite of four subreports which can be sent by themselves at anytime.

They are (in order of precedence).

(1) Engagement Rpt – lines 1-13	IMMEDIATE
(2) Sensitive Item Rpt – line 14	ROUTINE
(3) Position Rpt – lines 15-20	ROUTINE
(4) Air Defense Status Rpt – lines 21-23	PRIORITY

SECOND EXAMPLE OF A COMBAT REPORT

SPOT OR CONTACT REPORT.

This is _____ with Spot Report No. _____ EFF DTG _____

LINE 1— Size of enemy force (one company, et cetera)
LINE 2 — Activity — what are they doing (moving east, et cetera)
LINE 3 — Location (6-digit coordinates encoded)
LINE 4 — Unit being observed (if known)
LINE 5 — Time of sighting
LINE 6 — Equipment (10 tanks, two BMPs, et cetera)

RECONSTITUTION AND RESUPPLY

In wartime, after a unit has been attacked and suffered equipment losses, there almost certainly will not be enough float equipment to replace all the losses. By moving major items of equipment among units, the repairs can be made to restore firepower as rapidly as possible. (The decision to move equipment is normally made by a higher com mander.) Resupply procedures for ADA units will normally be the responsibility of the parent unit. However, certain classes of supply can come from the supporting unit, once coordination has been made. The unit leaders should ensure that squad and crew logistical needs are forecasted well in advance to ensure timely resupply. Requests for resupply will normally go from squads or crews to the platoon headquarters and on to the parent unit. Established guidelines and procedures will vary according to the mission of your unit. Leaders must know the procedures for resupply to ensure that their units can sustain combat operations. This subject is addressed in more detail in Chapter 9, Combat Service Support.

Chapter 5

PREPARING FOR COMBAT

Well-led, trained, and motivated air defense platoons contribute effectively to winning battles. The maneuver commander will count on his ADA platoon leader and NCOs to be as expert on all air defense matters as he will be in his respective area. ADA leaders must be able to perform many tasks that are encompassed in these simple words — tactical and technical proficiency. To assist you in performing these tasks, this chapter will introduce the dynamics of air defense in the air-land battle and discuss common ADA employment fundamentals which are used in the divisional ADA platoon today.

DIVISIONAL ADA PLATOON IN THE AIR-LAND BATTLE

ADA will fight in every aspect of the air-land battle: the deep operation, the close operation, and the rear operation. Different elements of ADA will participate simultaneously in different sectors of the air-land battlefield as shown in the Air-Land Battlefield illustration. For example, Chaparral takes part in the deep operation (which is forward of the FEBA) by protecting friendly units in reserve. These units will be capable of influencing the enemy's rear area; therefore, they must be protected from enemy air attack. Additionally, Chaparral will participate in the rear operation as ground combatants against enemy air insertions attempting to destroy logistics bases, C^2 centers, and nuclear ammunition facilities.

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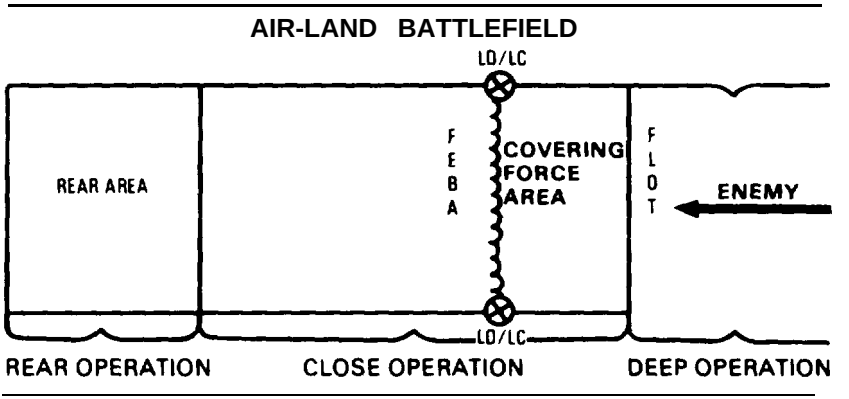
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TENETS OF THE AIR-LAND BATTLE

Some common terminology must be addressed in relation to the air-land battle and air defense. The four tenets of the air-land battle – ***agility, depth, initiative,*** and ***synchronization —*** are common throughout the combined arms team; however, they are applied differently. You should be careful not to equate the ADA principles of ***mix, mass, mobility,*** and ***integration*** directly to the tenets of the air-land battle.

Agility

Agility requires quick-minded, flexible leaders who can think and act faster than the enemy. They must know of critical events as they occur and act to avoid enemy strengths and attack the enemy where he is vulnerable. Air-land Battle doctrine is offensive in nature, always looking to create a window of opportunity to seize the initiative. ADA provides agility to the maneuver unit commander, as he attempts to outthink the enemy and take action before the enemy does, by providing air defense protection to the maneuver force.

An ADA platoon leader should execute or display agility in designing and applying his air defense plan.

Depth

Depth refers to time, distance, and resources. Knowing the time required to move forces — enemy and friendly — is essential to knowing how to employ fire and maneuver to destroy, to disrupt, or to delay the enemy. Commanders need depth of time, space, and resources to execute appropriate countermoves, to battle the forces in contact, and to attack enemy rear forces. In a

static asset defense, the most important aspect may well be your depth of resources — available fire units, ammunition, fuel, and soldiers.

If you are supporting a maneuver force, depth may take on a whole new meaning. The commander you support will consider all aspects of depth in planning and conducting combat operations. As with every other consideration, you must be prepared to support his concept or intent. The supported commander may determine that his rear assets (field trains, combat trains, et cetera) are particularly critical and highly vulnerable, and require coverage by your element. You must determine how you can cover his forward forces while simultaneously covering those high-priority assets to the rear. In doing this, you have introduced the aspect of depth into your tactical planning.

As with the critical asset defense, a depth of resources is an important consideration when supporting a maneuver force. Timely resupply of ammunition could be critical to your success. Do you have additional ammunition loaded on your ammunition truck? If not, when or where can you expect to get more? The same types of questions can be asked concerning your other support requirements, such as fuel and spares. In addressing these questions, you may determine that your depth of resources is extremely limited, but at least you have made the assessment and can put it into the overall equation of your capabilities and limitations.

Another thing to consider is your depth of personnel. During sustained combat, you may be conducting continuous operations. Think about how you can introduce the element of depth into your human resources.

Synchronization

Synchronized operations achieve maximum combat power. Synchronization results from an all-pervading unity of effort. In ADA, it is the ability of the commander to bring to bear all of the air defense elements with the combined arms elements to create an effective fighting team. At platoon leader level, this means knowing your weapon system and its capabilities and limitations to maximize the air defense protection of the maneuver element.

Initiative

Initiative implies an offensive spirit in the conduct of all operations. Having initiative means we make decisions and act more quickly than the enemy to disorganize his forces and to keep him off balance. The commander who does this well will control the tempo of the battle because he will choose the time, place, and most favorable conditions to fight. In ADA, the platoon leader is a key player as he assists the

maneuver commander in development of the concept of operation.

The keys to initiative are understanding the commander's intent and having the expertise, intelligence, and courage to ***take risks*** when the situation dictates a deviation from the plan or from doctrinal concepts. Taking risks means you have thought the situation through and feel that your actions are warranted and you have a reasonable likelihood of success.

COMBAT IMPERATIVES OF THE AIR-LAND BATTLE

Air-land Battle doctrine also demands that you understand the 10 combat imperatives listed in FM 100-5. It is important that you understand them if you are to know your role in the overall concept of the operation. The imperatives as described in the following paragraphs apply to ADA leaders at platoon level.

Ensure Unity of Effort

This means that you understand your commander's concept and intent and are highly responsive to his efforts to control the battle. Your relationship to your subordinate elements must be equally as clear and responsive. This imperative is highly dependent on the two-way flow of battlefield information or, in the absence of it, on a thorough understanding of the concept of the operation. The objective here is that everyone is "working off the same sheet of music," with the same objective in mind.

Anticipate Events on the Battlefield

The ADA unit commander must anticipate the enemy's actions and reactions. The platoon leader must develop the skills to anticipate events and foresee possibilities hours, days, or even weeks in advance.

Concentrate Combat Power Against Enemy Weaknesses

This is fairly self-explanatory, but there are several ways an air defender may consider this imperative. Do not allow enemy aircraft or ground forces to predict where you will deploy your weapens. If, after several encounters, enemy aircraft appear to become more proficient at locating your weapons, then look at ways to engage them from a location where they will not expect you to be. Conversely, study enemy tactics to find weaknesses which you can exploit by changing your tactics. Look at such things as ensuring weapons mix (gun and missile), or shifting the balance of your weapons mix to favor a particular weapon that has proven more effective than the others. In short, limit enemy effectiveness by keeping him off balance.

Designate, Sustain, and Shift the Main Effort

The key to this tenet is to make sure you know which unit the commander has assigned to the main effort within the force You are supporting. That unit will be one of your top priorities, if not the top priority. It is also important to keep in mind that if a secondary effort meets with unexpected success, you must be ready to exploit it by shifting your elements to a new main effort (agility).

Press the Fight

The maneuver force commander will press the fight by maintaining maximum pressure on the enemy once initial success has been achieved. This often means rapid advance and a significant increase in logistical requirements. It will also mean pushing soldiers to the limit of their endurance. The maneuver commander may have his reserve force pass through the lead element and assume the spearhead of the attack to allow part of the force some rest. You most likely will not have the luxury of removing part of your force from the battle. You must be ready to pass from support of the forward element to support of the reserve element being moved forward. If you have a maintenance team or additional ammunition, they need to be close behind you as you advance.

If you are defending a static asset such as a logistics area or an airfield, sustaining the fight will translate to simply ensuring that resupply of ammunition and fuel takes place as rapidly as possible. Any needed repairs are made as quickly as possible.

Move Fast, Strike Hard, and Finish Rapidly

This imperative is driven by the need to avoid prolonged concentration of forces because of the lethality of counterstrikes, especially nuclear or chemical. While the principle of ***mass*** is valid, you must be prepared to move and react quickly. Once the main objective is achieved, be prepared for a counterstrike, and also know the commander's plan for exploiting success.

Use Terrain, Weather, Deception, and OPSEC

In the light division, much emphasis is placed on this imperative. To provide coverage for a maneuver force, you and your soldiers must be able to operate in difficult terrain, during the worst kind of weather, and under limited visibility. These conditions can be an asset to a well-trained, fast, mobile force. If your platoon cannot operate under these conditions, you will be a detriment rather than an asset to the force you support.

The platoon participates in the supported unit's deception plan

as required. Dummy positions can be bait to draw an enemy attack and expose aircraft to friendly fires.

OPSEC measures used by the platoon include information security, physical security, SIGSEC, and ECM. OPSEC countermeasures are fully described in FM 44-3.

Conserve Strength for Decisive Action

The platoon leader must take all steps necessary to preserve the fighting strength of his unit. Air attack must not surprise the unit. EW against air attack is provided to SHORAD units, who in turn alert the force. Protection of troops and equipment from adverse weather, protection of troops from disease, and good supply and maintenance discipline are all measures which conserve a force's strength.

Combine Arms to Complement and Reinforce

Air defenders follow the principles of mixing weapon systems. A mix of weapons allows one system's strengths to compensate for another's limitations.

Understand the Effect of Battle on Soldiers and Units

The ADA platoon leader must be alert to small indicators of fatigue, fear, indiscipline, and reduced morale. He must be ready to take measures to deal with these before they cumulatively drive the unit to the threshold of collapse. During combat, the platoon leader must monitor and sustain the effectiveness of his subordinate leaders to the fullest extent possible. Soldiers react differently to different situations. Knowing his men and understanding their psychological makeup will assist him in the conservation of manpower.

TASK ORGANIZATION WITHIN THE COMBINED ARMSTEAM

The brigades will task organize for various combat missions. In a heavy division, brigades comprise mechanized infantry battalions and armor or tank battalions (both are called line battalions), plus support units. The numbers of each will vary. The total number of line battalions in each brigade will be three or four. Brigades will task organize their battalions to meet mission and terrain requirements, while allowing flexibility for contingencies.

There are many ways to task organize a brigade. When a brigade task organizes its battalions, combining infantry companics and armor companies, it is called a TF. A brigade that has task organized two battalions into TFs and left two battalions pure is shown in the Example of Brigade Task Organizing illustration on page 5-6.

EXAMPLE OF BRIGADE TASK ORGANIZING

TF 1-1 AR	2-2 AR	TF 3-3 INF	4-4 INF
A/1-1 AR	A/2-2 AR	A/3-3 INF	A/4-4 INF
B/1-1 AR	B/2-2 AR	B/3-3 INF	B/4-4 INF
C/3-3 INF	C/2-2 AR	C/1-1 AR	C/4-4 INF
(TF)	(PURE AR BN)	(TF)	(PURE INF BN)

TF commanders in pursuit of complete victory must deploy forces in adequate depth, arrange for continuous combat and combat service support, and take risks in exploiting the capabilities of their soldiers and equip ment. These considerations apply as much to the ADA small unit leader as they do to the supported unit commander. The ADA commander must also be aware of how these requirements relate to both his own operations and to the overall supported operation. He must consider the importance of the human factor in sustaining the fight, recognizing that the human fabric that binds units can compensate for equipment and operational shortcomings. The ADA platoon leader plays an important leadership role when his unit is employed in a support role.

The ADA platoon leader should be aware that the unit the platoon is defending could be pure infantry (meaning all elements are mechanized infantry), pure armor tank (all armor), or a combination of infantry and armor platoons together in what is called a “team. ” At battalion level, a combination of armor and infantry companies is called a "TF" at company level the armor and infantry platoon mix is called a “team.”

An ADA platoon leader must know the brigade organization. He must understand how the brigade is task organized for training and combat, and, most importantly, the ADA platoon’s mission.

The platoon leader must address the following questions:

Ž Does my battery task organize?

Ž To which team does my platoon go?

Ž Which brigade do we support?

Ž Where does my weapon system maintenance support come from?

In the Example of ADA Platoons Task Organized Within a Brigade illustration, one battery of Vulcan and Stinger and one platoon of Chaparral are task organized at brigade level.

EXAMPLE OF ADA PLATOONS TASK ORGANIZED WITHIN A BRIGADE

TF 1-1 AR	2-2 AR	TF 3-3 INF	BDE CONTROL
A/1-1 AR	A/2-2 AR	A/3-3 INF	2-192 FA
B/1-1 AR	B/2-2 AR	B/3-3 INF	A/1-440 ADA (V/S)
C/3-3 INF	C/2-2 AR	C/1-1 AR	(DS) (-)
1/A/1-440 ADA {V)(DS}	2/1/1-440 ADA (V)(DS]	3/A/1-440 ADA (V)(D)	3/A/4-395 ADA (C} (CORPS) (R)
A/4/A/1-440 (S)	B/4/A/1-440 (S)	C/4/A/1-440 (S)	B/1/901 ENGR (DS) (-)
			2D FSB/23 AR (DS)

ORGANIZATION OF THE SUPPORTED BATTALION'S COMMAND AND CONTROL FACILITIES

The ADA platoon leader must be familiar with the supported unit's C^2 organization and facilities. This will increase his effectiveness in supporting the unit.

BATTALION COMMAND GROUP

The command group is composed of the commander and personnel he has forward with him to help command and control the battle. The personnel the commander selects depends on the situation and his needs. The command group will usually consist of the commander, S3, FSO, and ALO. The engineer and ADO may also be with the command group, depending on the situation.

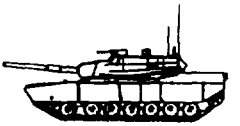
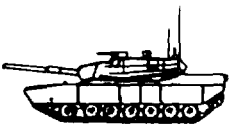
The command group fights the battle. The command group is highly mobile, displaces often, and may even move continuously. The commander may send his S3 to observe another area for a brief period, but the S3 will generally remain with the command group. An armor battalion command group is shown in the Armor Battalion Command Group illustration on page 5-8.

A mechanized infantry battalion command group is shown in the Mechanized Infantry Battalion Command Group illustration on page 5-8.

TOC

The primary functions of the TOC are to synchronize the operation, to conduct the deep and rear operations, and to plan. A secondary function is to coordinate combat service support. Battalion combat service support is coordinated in the ALOC.

ARMOR BATTALION COMMAND GROUP

1 AN/VRC-92 or AN/VRC-46 AN/VRC-43	1 AN/VRC-92 or AN/VRC-46 AN/VRC-43	1 FM RADIO 1 HF RADIO 1 UHF RADIO 1 VHF RADIO
		
1 LTC (BATTALION COMMANDER) 1 CPT (FSO)	1 MAJ (S3)	1 CPT (ALO)

MECHANIZED INFANTRY BATTALION COMMAND GROUP

4 AN/VRC-46 or 2 AN/VRC-92	2 AN/VRC-46 or 1 AN/VRC-92	1 FM RADIO 1 HF RADIO 1 UHF RADIO 1 VHF RADIO
		
1 LTC (BATTALION COMMANDER) 1 CPT (FSO)	1 MAJ (S3)	1 CPT (ALO)

Composition

The battalion TOC is composed of the S2 and S3 sections and other support elements. It also normally includes engineer, ***air defense,*** and combat support elements, depending on the mission of the unit. The personnel in the TOC monitor operations on a 24-hour basis. They maintain communications with organic, higher, and adjacent units; stay abreast of the situation; post maps; maintain records; et cetera. Most importantly, personnel in the TOC are continuously planning and providing information and assistance to the commander and his subordinate commanders.

Location

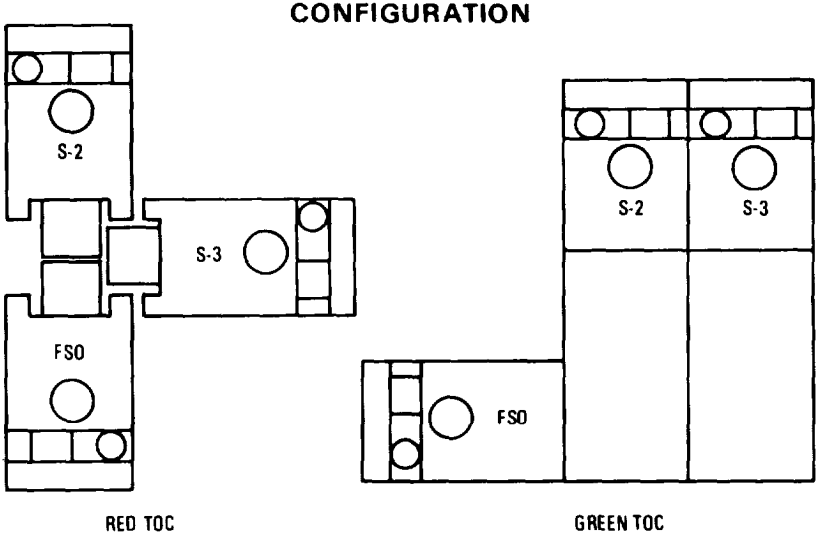
The location of the TOC will vary according to the type of operation in which the unit is engaged. As a rule, the TOC is farther forward in the offense than in the defense. The primary consideration for TOC location is its ability to communicate with higher and lower commands. It may be necessary, under some circumstances, for the TOC to send a radio relay team or a "jump TOC" to another location to ensure communications on all required nets.

TOC Configurations

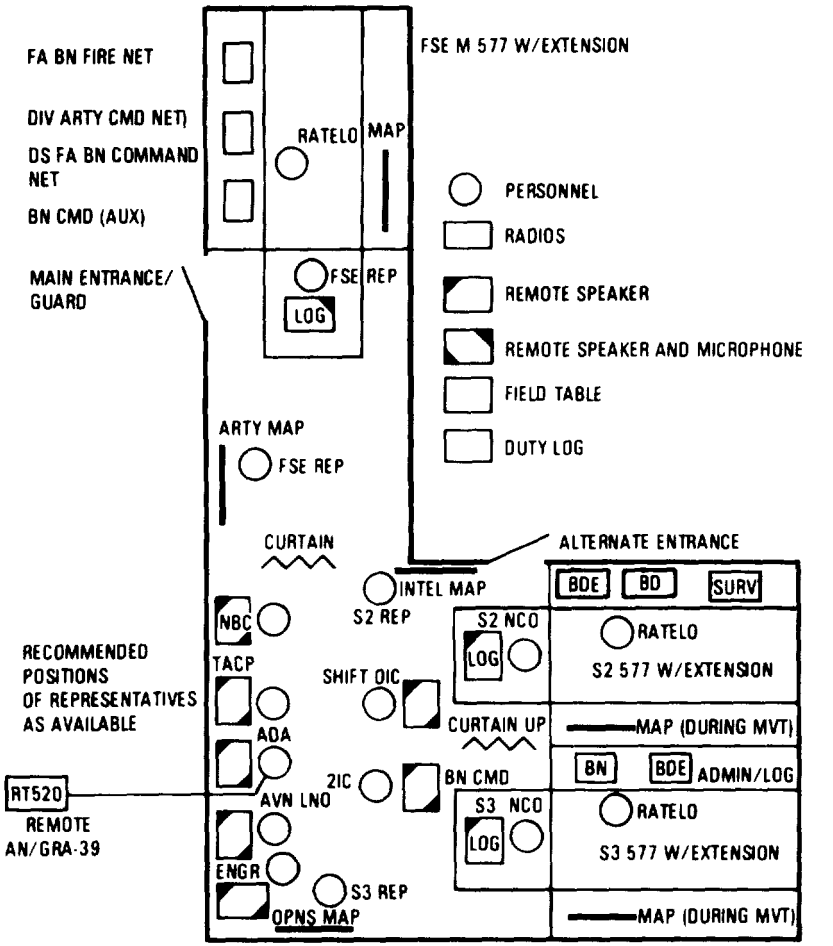
The configuration of the TOC is dependent upon the amount of time the TOC will remain at a location. For example, when the TOC will remain static for an extended period (more than 12 hours), the local SOP may dictate that all extensions and camouflage nets be employed (Condition Green). For shorter periods, the TOC may operate with ramps down (Condition Red) or only one extension erected (Condition Amber). The illustration below shows examples of TOC configurations.

A sample layout within the TOC is shown in the Sample Battalion TOC Layout illustration on page 5-10.

EXAMPLE OF SUPPORTED BATTALION TOC CONFIGURATION



SAMPLE BATTALION TOC LAYOUT



COORDINATION AND PLANNING

The ADA platoon leader works for and with the supported company team commander in battle as he works for and with his battery commander in garrison. The ADA platoon leader must be present when the maneuver commander prepares his plan so that it will be supportable from an air defense standpoint. If he is not present at the concept and planning stage, he maybe forced to support an unsupportable plan but, more importantly, the maneuver commander may be without effective air defense coverage. Operations and planning and coordination checklists begin on page 5-14.

COORDINATION

Use the backward planning process, be on time, and be knowledgeable and professional in your job. When in direct sup port of a maneuver battalion or TF the platoon leader must make face-to-face contact with the operations officer (S3) of the battalion or TF he has the mission to protect. This initial meeting is a key to air defense success. The following actions should be taken:

Ž Find out the commander's concept and intent prior to the development of the plan.

Ž Plan how best to use air defense for the mission.

Ž Brief the S3 on how air defense can best support his mission. Do not wait for him to tell you what he wants you to do. Remember, you are the air defense expert. Also, as the ADO and unit leader, you may need to speak to the supported unit commander to influence the decision process.

Ž Sell yourself and the capabilities of your weapon systems to show how your platoon can best support the commander's concept and intent.

AIR DEFENSE PLANNING

ADA platoon leaders must be positive and assume an active and aggressive role in planning air defense for the maneuver commander. The ADA platoon leader must —

Ž Understand the commander's intent and scheme of

maneuver. What does he want to do and how does he want to do it?

Ž Consider all phases of the plan from assembly area to final objective. Consider coverage of choke points, refueling operations, barriers, nighttime operations, nonmaneuver periods, and NBC operations, and consider the factors of METT-T.

Ž Develop air defense priorities in consonance with the maneuver commander's guidance.

Ž Use the backward planning process and good troop leading procedures.

Ž Be involved in the planning from conception to completion. Be aggressive and take an active role because it involves your platoon. You must provide the best ADA coverage possible.

Seldom has a plan, conceived on the drawing board, gone through to completion without several changes in the process. Consider all possible contingencies that could affect your support of the maneuver commander. Put your plans in an "if-then" format. ***"If*** this happens ***then*** I should do this." Having planned for all contingencies you will not be caught off guard. You will be able to implement well-thought-out plans that were developed before the battle began. Make time to plan. Use initiative; make adjustments and corrections. Doing so does not mean that your original plan was bad or inadequate. Battle will be very fluid and in many cases unpredictable. Do not die in place. Move to secondary or tertiary positions and implement contingency plans as required. Remember to weight your ADA coverage to the main battle effort.

AIR DEFENSE PRIORITIES

Air defense priorities are those selected assets which must be protected in priority by the sup porting ADA unit. To determine these priorities, the ADA platoon leader and the supported force commander must make an evaluation of critical assets. This provides an indication of the relative importance of each asset to the accomplishment of the force commander's concept of the operation. There are four factors considered in determining the relative importance of each asset and its need for air defense protection. These factors are criticality, vulnerability, recuperability, and the anticipated threat.

Criticality

Criticality is the degree to which the asset is essential to mission accomplishment. In priority, assets are categorized as

those which, if damaged, are capable of —

Ž Interfering seriously with the execution of the plan of action.

Ž Interfering with the ultimate execution of the plan of action.

Ž Causing limited serious interference with the final execution of the plan of action.

Vulnerability

Vulnerability is the degree to which an asset can prevent detection by enemy air and survive damage if attacked. This includes consideration of the asset's hardness, mission, mobility (the degree to which it can disperse or displace **to** another position protected by ADA weapons), and ability to employ passive and active self-defense protection measures. The evaluation must also consider the amount of engineer mobility, survivability, and topographical support available.

Recuperability

Recuperability is the degree to which the asset can recover from inflicted damage. This recuperability is measured in terms of time, equipment, and manpower to again perform its mission.

Threat

Threat characteristics are used to determine the appropriate ADA system(s) to protect the specific asset and are used by the selected ADA force to design the best air defense plan. These include enemy location and strength, type of enemy aircraft and ordnance past enemy attack characteristics, and enemy doctrine.

ALLOCATION OF ADA ASSETS

The ADA platoon leader considers the factors of METT-T, weighs them against the list of ADA priorities, and develops an initial allocation of resources to protect these priorities. Beginning with the highest priority asset, he decides how many ADA resources of each type to allocate **to** the protection of each asset.

The ADA platoon leader tailors his task organized ADA force to each priority asset. He must consider system capabilities and limitations in relation to the particular situation.

The platoon leader continues the process of analyzing each asset in order of priority and allocating resources to its protection until he has used all his available weapons. He reviews the allocations and may repeat the process several times before he develops the allocation which provides the best protection of the greatest number of priority assets. The platoon leader presents this list of air defense priorities and the ADA resources he recommends to protect them to the supported force commander for approval.

The force commander may approve these recommendations. He may reduce the list to increase the air defense for selected assets. He may expand the list to increase the number of assets afforded ADA protection. However, he must understand that expansion will normally reduce the effectiveness of the overall air defense plan.

In this phase of the process, the ADA platoon leader plays a critical role. As the air defense artillery officer, he must provide the supported commander with the advice which can make the difference between adequate and inadequate air defense artillery protection. This advice includes information on the best use of each air defense artillery weapon system. The platoon leader's advice, coupled with the list of ADA priorities and allocation of forces, will ensure proper consideration and maximum use of the limited number of weapons systems available. Finally, those assets approved for active air defense artillery coverage by the supported force commander are listed in the ADA Annex of the OPORD.

ADA COORDINATION AND OPERATIONS PLANNING CHECKLISTS

First, remember you represent your unit and all air defenders. The more professional your actions and the more extensive your knowledge, the easier will be your job and the jobs of all who follow you. The following checklists are provided for the ADO to use during coordination with the TF.

CHECKLIST 1
INFORMATION TO HAVE BEFORE COORDINATION BEGINS

Checklist 1 is used by the ADA officer as an aid to help him accomplish the mission. It consists of the following items:

_____(1) What is your platoon's support relationship (DS, GS, GSR, R)? What is your platoon's command relationship (OPCON, attached)?

_____(2) What is the method of employment and resupply based on the battalion SOP and the command and mission relationships?

_____(3) What Weapon systems do you have and what are their capabilities?
- Ž Against air threat?
- Ž Against ground threat?

_____(4) What are the anticipated enemy capabilities(air, ground, electronic warfare, NBC)?

_____(5) Do Personnel have necessary maps and map graphics of the area of operation?

CHECKLIST 2
INFORMATION TO TRANSMIT TO DEFENDED UNIT

When in direct support, attached or OPCON, be prepared to brief the supported unit commander on the air defense situation and provide this information to his staff. Always ask yourself the following questions:

____ (1) Are you prepared to brief early warning procedures, frequencies, and what the MSCS grid reference point is?

____ (2) Are you prepared to teach small-unit air defense?

____ (3} Do you have the following information for your supported unit?

____ (a) Weapons control status.

____ ((b} Air defense warning.

____ (c) Rules of engagement.

____ (d) Hostile criteria. Examples of air defense hostile criteria follow:

- Bearing the insignia or having the configuration of an enemy aircraft.
- Emitting ECM or dropping ECM devices (chaff and reflectors, et cetera) over friendly elements without prior coordination.
- Attacking a friendly position or committing a hostile act (proceeding on an attack maneuver against friend lies).
- Discharging spray or smoke over friendly elements without prior coordination.
- Dropping flares over friend ly positions without prior coordination.
- Performing improper or unauthorized information gathering in areas that are designated as restricted or prohibited.

____ (4) Are YOU prepared to develop an air defense annex (if necessary) for the supported unit OPORD or OPLAN?

____ (5) What other air defense coverage is in the sector (location and ranges of supporting or adjacent Hawk, Patriot, and SHORAD elements), and what is the effect on the supported unit concept of operations?

____ (6) HOW many People do you have (by name, rank, SSN, MOS, and meal card number, if appropriate)? Furnish ALPHA roster to supported unit for casualty reporting.

If you are attached, you should also have answers to the following questions

____ (7) What types of equipment and how many of each do you have?

Vehicles: _____ Radios: _____ Special Equipment: _____

____ (8) What is the status of your equipment (do you presently need any assistance)?

____ (9) How is system peculiar maintenance being handled and are there any space or equipment requirements the supported unit needs to provide?

CHECKLIST 2
INFORMATION TO TRANSMIT TO DEFENDED UNIT
(continued)

____(10) What is your standard fuel and ammo expenditures rate?

MOGAS____ AMMO ____ :Special POL requirements ____ DIESEL ____

____(11) HOW long do you plan to be associated with the supported unit?

____(1 2) Where and whom do YOU contact for maintenance support?

Automotive _____

Systems _____

Communications _____

____(1) What are the Department of Defense Identification Codes (DODIC) for your specific types of ADA ammunition?

____(2) What provisions have you made for administrative support, such as mail, showers, medical support, and pay?

CHECKLIST 3
INFORMATION TO GET FROM SUPPORTED UNIT

Checklist 3 will assist the ADA officer to obtain necessary information from the supported unit to accomplish the ADA mission.

You should always obtain the following information and material

____(1l) From S2.

- Ž Expected threat.
- Ž Air threaT.
- Ž Ground threat.
- Ž Unit's priority Intelligence requirements (PIR/ADA PIR).
- Ž Map.

____(2) From S3

- Ž Supported unit OPORD or OPLAN and tactical SOP to include overlays, preplanned locations, and the commander's intent and concept of the operations and any follow-on operations.
- Ž Commander's priorities (what units expect heaviest ground and air action, what assets are most critical, most vulnerable, and easiest to recover or replace). The platoon leader then develops the ADA priorities based on the commander's concept and analysis of criticality, vulnerability, recuperability, and threat.
- Ž Special or modified brevity or operations codes, key words, or emergency procedures (that is, movement to or location of alternate frequency and call signs, if not included in CEOI).

CHECKLIST 3
INFORMATION TO GET FROM SUPPORTED UNIT
(continued)

- Points the supported unit comma nder wants covered in his daily briefs.
- CEOI and resupply.
- The supported unit's MOPP and how changes are disseminated

____(3) From S4.

- Class I — pick-up point and time, feeding cycle.
- Class II — resupply of NBC suits and gear and batteries.
- Class Ill — refueling locations and times.
- Class V — arrange ments for supply of specialized ammunition (20-mm, missiles, pyrotechnics, et cetera).
- Class IX — procedures for ordering and receiving parts and the location and time for pickup.

If you are attached, you should also know following:

____(4) From S4. How resupply is handled and if your unit has been considered in the planning.

____(5) From S3/S4. Who maintains your non-system-peculiar equipment and where they are located.

____(6) From S1. A complete standard name line roster of your platoon.

CHECKLIST 4
RECOMMENDATIONS AND DECISIONS

Recommendations typically made by the DS, attached, or OPCON ADA officer are shown in the checklist below

____(1) Probable air approaches.

____(2) positioning for all air defense resources in the TF.

____(3) Best method of employing small arms for air defense.

____(4) Improvements in passive air defense measures:
- Location.
- Dispersion.
- Camouflage.
- Position fortification
- Emission and transmission control.

CHECKLIST 4
RECOMMENDATIONS AND DECISIONS (continued)

_____(5) Possible priority assets based on:
- Criticality.
- Vulnerability.
- Recuperability.
- Threat.

_____(6) Possible collocation of assets.

Chapter 6

AIR DEFENSE ARTILLERY SUPPORT OF MANEUVER FORCE IN DEFENSE

The main purpose of defensive operations is to destroy an attacker. Defensive operations are also used to hold or deny enemy use of terrain, to gain time, or to weaken the enemy. In the defense, the company team is usually supported by artillery, mortars, attack helicopters, CAS, ground surveillance radar, engineers, and ADA.

The defense may be dynamic, involving frequent movement between battle positions or counterattacks. ADA platoons must be flexible and respond quickly to these mission changes. This chapter explains how defensive operations are conducted.

TASK FORCE DEFENSIVE MISSIONS

To defend against the enemy attack, the TF normally conducts any combination of the five defensive missions. These five missions are briefly described in the following paragraphs.

DELAY

A delaying unit trades space for time and inflicts maximum destruction on the enemy while avoiding decisive engagement. To be successful, a delaying force must preserve its freedom to maneuver causing the enemy to deploy repeatedly. As the enemy gets everything organized — artillery firing, ground units deployed, and attack maneuver started — the delaying force moves to a new set of battle positions and the enemy must once again go through the same time-consuming process of redeploying and continuing his attack.

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Task Force Defensive Missions 6-1
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Hasty Defense in Sector 6-3
Defense of a Strongpoint 6-10

COUNTERATTACKS

A unit may conduct a counterattack to block an impending penetration or stop a force that has penetrated the FEBA. The unit may counterattack through forward defenses to seize terrain and or attack enemy forces from the flank and rear to destroy them. Counterattacks may also be conducted to spoil an enemy attack by delaying, disrupting, or destroying the enemy's capabilities to launch an attack.

DEFENSE OF A BATTLE POSITION

A BP is a general location on the ground selected on the basis of METT-T, from which maneuver units can defend. Such units can be as large as battalion TFs and as small as platoons. A unit assigned a BP is located within the general location of the BP.

A BP is designed to concentrate fires of the TF, limit maneuver of the TF, or place the TF in an advantageous position to counterattack. Units plan to maneuver within the BP as well as outside of the BP to adjust defensive tires or to seize opportunities for offensive action.

DEFENSE OF A SECTOR

A defensive sector is an area designated by boundaries within which a unit operates. Defense in sector is the most common defense mission for forward battalion TFs. Based on considerations of METT-T, the battalion sector is generally 5 to 8 kilometers wide and 8 to 12 kilometers deep. Sectors may be used both in the MBA and CFA. Sectors are generally deeper than they are wide to permit the defending unit to fight the battle in depth. A unit receiving this mission must defeat enemy forces within its sector boundary and maintain its own flank security.

DEFENSE OF A STRONGPOINT

To create and defend a strongpoint implies retention of terrain at all costs with the purpose of stopping or redirecting enemy armored formations. Battalion strongpoints can be established in isolation when tied to restrictive terrain on its flanks to fully block a chokepoint. Strongpoints may also be located on high-speed, ground avenues of approach.

ENEMY IN THE OFFENSE

In scenario form, here is how the enemy may attack the friendly maneuver force. As nightfall approaches, the enemy begins probing friendly defenses. They rely heavily on night reconnaissance. They also probe continually through the night, breaching obstacles and identifying friendly positions.

At sunrise, they begin their attack with a ***massive rolling artillery barrage.*** Enemy aircraft realize ADA is degraded when buttoned up and wearing gas masks. If fast moving aircraft are flying, ***they attack immediately after the artillery attack.***

Aircraft fly to rear area assets, but continually target ADA assets. The enemy reconnaissance element then feigns an attack; their mission is to draw fire so friendly forces compromise their locations. The reconnaissance element then aggressively ***smokes friendly locations*** and the ***main attack*** begins with the first echelon forces, The attack will be supported by their ***helicopters.*** The enemy uses ***mass and speed*** to overcome the friendlies.

The ***first echelon*** punches through the defense heading ***straight for their objectives.*** The ***second echelon takes advantage of the disruption*** caused by the first echelon and mops up isolated friendly pockets of resistance. Their attack is characterized by one word — ***aggressiveness.***

HASTY DEFENSE IN SECTOR

To get a clear picture of how an ADA platoon fits into the battalion TF in a defensive situation, it is necessary to briefly outline the defensive situation within which the company teams and other supporting troops organize and tight. For detailed discussion of battalion TF operations, see FM 71-2J.

The following paragraphs outline an example of a hasty defense in sector. This example is used as a vehicle to show how the ADA platoon leader could apply ADA principles and guidelines in support of the maneuver unit commander's scheme of maneuver.

SITUATION

After the successful attack, the TF commander is directed by brigade headquarters to prepare a hasty defense in sector.

The TF is task organized as follows:

Ž COMPANY A
3 mechanized platoons

Ž TEAM B
2 mechanized platoons
Ž tank platoon

Ž TEAM C
2 tank platoons
Ž mechanized platoon

Ž COMPANY D
3 tank platoons

Ž TF CONTROL
Command group
Scout platoon
Heavy mortar platoon
ADA platoon (+)
GSR section

Bravo team and the scout platoon are sent forward as the security element to provide EW of enemy activity and to conduct counterreconnaissance. The battalion commander locates his command group well forward to better see and control the battle.

COMMANDER'S INTENTIONS

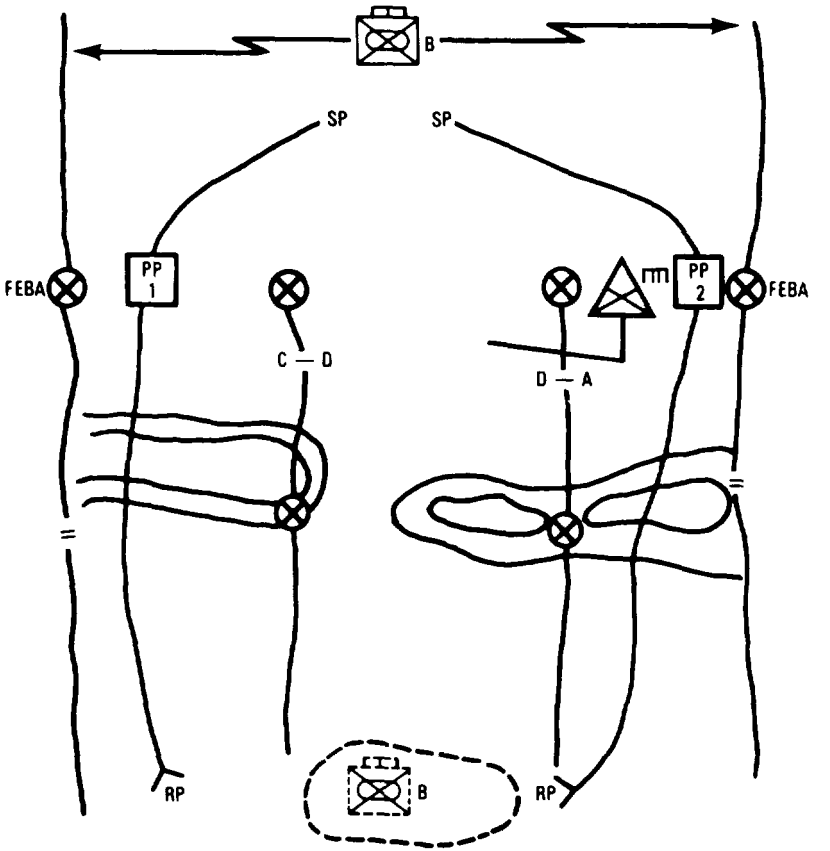
The commander's intent is to destroy the enemy's forces well forward in the MBA by counterattacking from his defensive position as shown in the Task Force Defense in Sector illustration. To do this the commander decides to defend in three sectors, keeping one company in reserve.

SECTOR DEFENSE

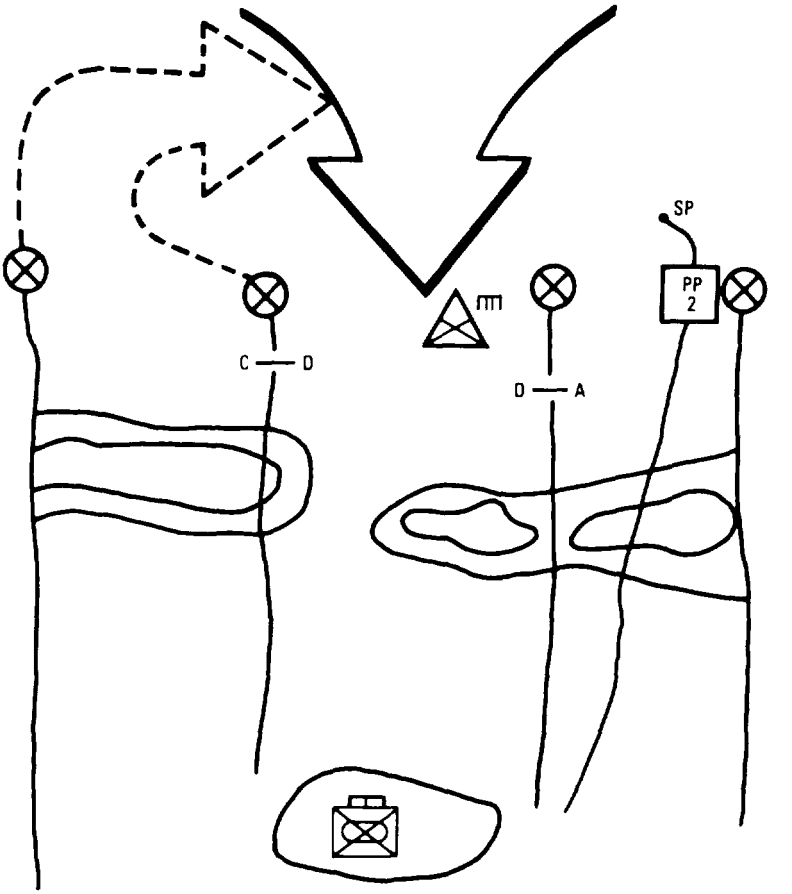
Company A, Team B, and Company D prepare hasty positions forward while elements of Team B coordinate passage points and reconnaissance routes back to their proposed defensive position behind Company D. Elements of Team B also coordinate routes to on-order battle positions in Company A's and Team C's sectors (see the Task Force Defense in Sector illustration on page 6-5).

As the battle develops, the security force identifies the enemy force's main effort to be in Company D's sector. The security force conducts a passage of lines and occupies the position in the rear. The enemy's attack is initially blunted by Company D causing a decrease in the enemy's momentum. Team C's commander sees a window of opportunity to counterattack and informs the TF commander of his intended action (see the Team C's Counterattack illustration on page 6-6).

TASK FORCE DEFENSE IN SECTOR



TEAM C's COUNTERATTACK

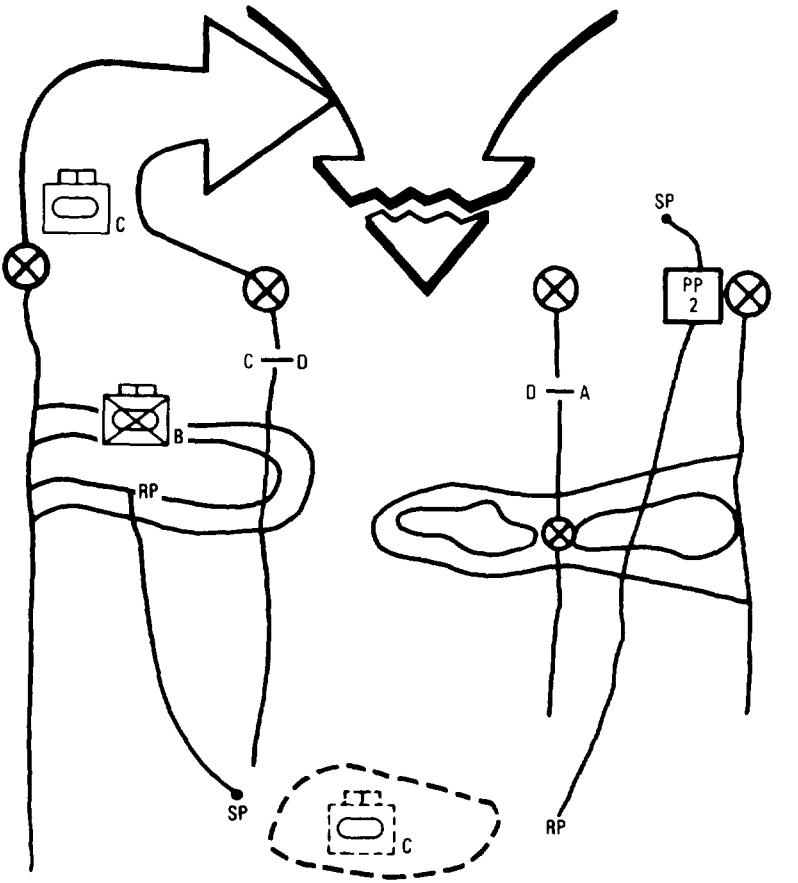


The TF commander approves Team C's counterattack. He preserves unity of effort by synchronizing the movement of Team C and the reserve element, Team B. Team B moves forward

to occupy the left flank as Team C moves out to conduct its counterattack (see the Team B Occupies the Left Flank illustration).

Team C successfully disrupts and destroys the first echelon enemy forces. After completion of this successful counterattack, Team C executes a passage of lines in Team A's sector to occupy the position in the rear to rearm and regroup.

TEAM B OCCUPIES THE LEFT FLANK



AIR DEFENSE ARTILLERY CONSIDERATIONS

Based on the TF commander's concept of the operation, the ADA platoon leader must systematically analyze a number of important areas to provide the TF with adequate air defense. ADA employment considerations in support of a combined arms TF undergoing a hasty defense in sector mission are briefly described in the following paragraphs.

Tactical Considerations

The ADO considers asset prioritization (criticality, vulnerability, recuperability, and threat). Based on the concept of the operation, the TF tanks which occupy defensive positions perpendicular to the enemy's high-speed avenue of approach are the most critical asset. The TF tanks are also the most vulnerable asset because of their relative location in the defensive scheme and the difficulty in concealing a tank.

In addition to the above, the ADO also considers the factors of METT-T. Doctrinally the enemy's ground and air (fixed-wing aircraft) forces can be expected to move along the high-speed avenue of approach which, in this case, is Team D's sector of defense. Enemy ATGM helicopters, however, use terrain features in the MBA to conceal their movement and enhance their survivability as they engage our armor forces. It can be seen in the Team B Occupies the Left Flank illustration that the flanks of the defending force provide excellent concealment for the movement of the enemy's helicopters.

Employment Principles and Guidelines

Based on the tactical situation, all Vulcans should be placed on the high-speed avenue of approach in a ***massed*** configuration. This is shown in the Air Defense Artillery in Sector Defense illustration, with their PTLs oriented to the north (6,400 mils).

Stinger crews should be employed on the flanks of the TF's defensive positions. This will provide protection (mix) from enemy helicopter activity.

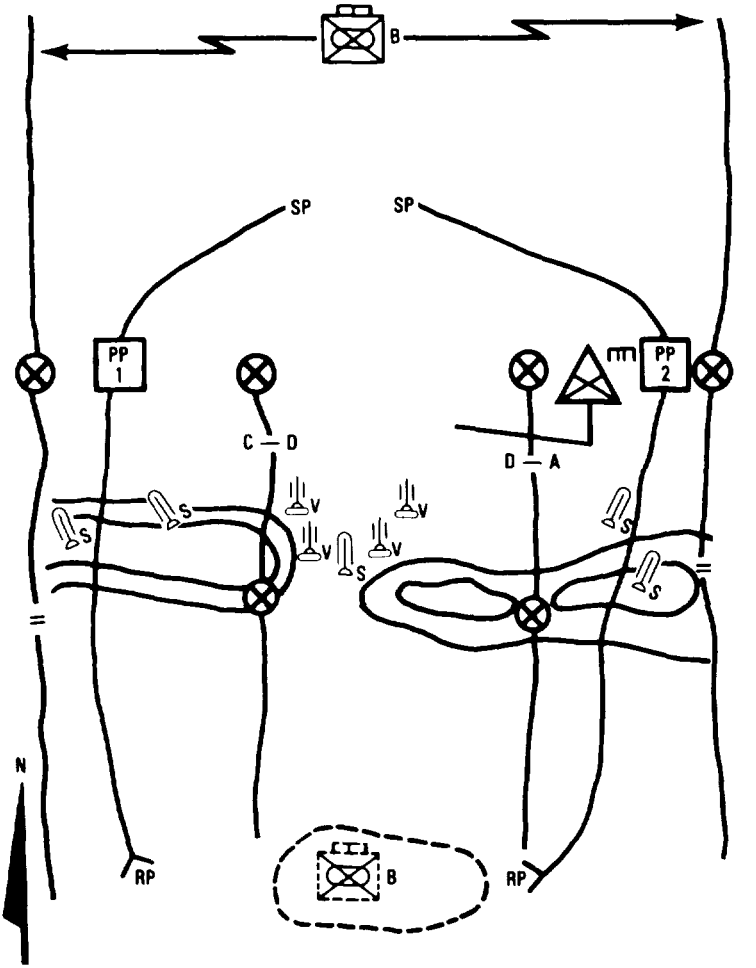
Based on the size of the TF defensive sector, it is possible to achieve ***mutual support*** between all the weapon systems. For example, Vulcan may be emplaced at 1,000 meters and Stinger may be emplaced at 2,000 meters.

Additonal Tactical Considerations

The practice of using passive air defense measures is essential to the success of the air defense mission. Always camouflage ADA positions and dig in.

Select primary and alternate firing positions which have good fields of fire with as much cover as possible, Proper use of time in preparation for a TF operation is vital to ensure that ADA elements adequately perform their mission.

AIR DEFENSE ARTILLERY IN SECTOR DEFENSE



Command and Control

Command and control is the process of directing the activities of military forces to obtain an objective. The following items play a major role in the command and control process.

Control. The platoon leader should always locate himself in the best position to control the platoon. While the platoon sergeant should be out of the direct battle, he should be close by to take over control of the platoon in case the platoon leader becomes a casualty.

Coordination. Coordination is essential to the success of the assigned mission and is especially important if the ADA platoon and the battalion TF have never worked together. This coordination should occur between the ADA platoon leader and the TF S3 and or his designated representative.

Communications. The platoon radio net should be setup as follows:

• Platoon leader should have one R-442 on the company command net, one R-442 on the TF net, and the RT-524 on the platoon net.

• Vulcan and Stinger squad and crew leaders should have their RT-524s on the platoon net and their R-442s on the TF net.

Ž Radios should operate in low power when possible to prevent enemy location of our positions.

Ž Wire, as a means of platoon communications, should be used in all defensive situations when possible.

Technical Considerations

Vulcan gunners should boresight cannons upon arriving at their defensive position. Muzzle velocity and air density switches should be placed to the appropriate settings.

Logistics

The ADA platoon is in DS of the TF. Therefore, all logistics support except for fuel and medical should come from its parent battery.

DEFENSE OF A STRONGPOINT

The previous example of a hasty defense in sector showed some of the ADA considerations which the platoon leader could use to accomplish his mission. In this example (strongpoint defense) the ground tactical situation is changed. Again, the scenario is a battalion TF with an ADA platoon in support.

SITUATION

As the TF continues the movement forward, the TF commander is ordered to stop and retain the ground around the enemy's obstacle at all cost. The brigade commander instructs the TF

commander to prepare to stop an enemy motorized rifle regiment. The brigade commander also informs the battalion commander that a pure tank battalion maybe used in his sector to conduct **an** armor counterattack. The brigade commander therefore reorganizes the brigade issuing a new task organization. The battalion will fight with pure mechanized infantry. The TF is task organized as follows:

- COMPANY A
3 mechanized platoons

Ž COMPANY B
3 mechanized platoons

- COMPANY C
3 mechanized platoons

- COMPANY D
3 mechanized platoons

Ž TF CONTROL
Company E
Scout platoon
Mortar platoon
GSR section
Engineer section
ADA platoon

The TF commander sends out a security force made up of the scout platoon and the GSR section. This security force will employ to screen possible enemy avenues of approach.

Initially, the IFVs in companies A, B, and E move forward to deceive the enemy as to the location of the main effort. They simultaneously begin preparing primary positions to the rear that will support the main engagement area (Blue). Companies C and D prepare the main strong point which must be made impassable to tanks. The infantry in companies A and B prepare separate supporting strongpoints to the left and right of the main strongpoint as shown in the Battalion Task Force Strongpoint Defense illustration on page 6-12.

Each company assists the combat engineers as they prepare the obstacles.

As the enemy formation comes into range, the IFVs and TOWs in companies A, B, and E begin destroying the enemy early from their forward positions. As the enemy nears the forward positions companies A, B, and E move to their primary positions, drawing the enemy into the prepared engagement areas as shown in the Execution Matrix illustration on page 6-13.

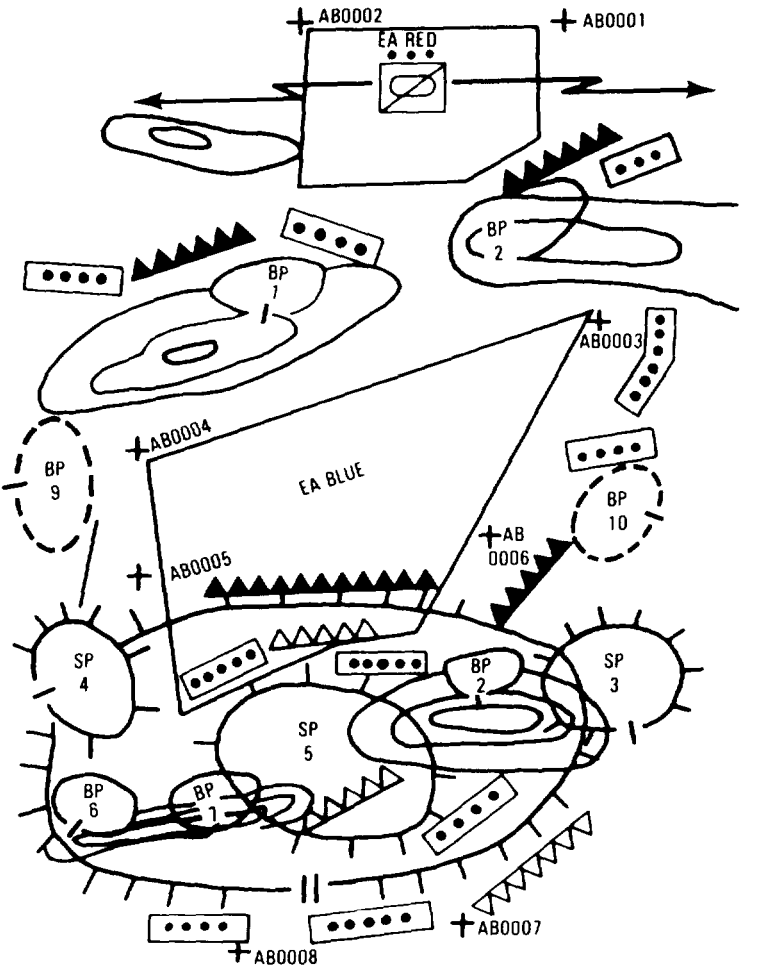
Scouts man OPs to keep the enemy under observation.

The minefield and obstacles that have been placed throughout the depth of the battlefield string out the attacking enemy, causing them to attack the strongpoint piecemeal. The obstacles forward of the strongpoint canalize the enemy, thereby confusing them as to the true location of friendly positions. The enemy receives flanking shots as they try to bypass the obstacles in front of the strongpoint.

The strongpoint successfully stops the enemy echelon, and the

enemy is destroyed in the de fensive area. Companies A, B, and E quickly move forward to prepare for the second echelon forces.

BATTALION TASK FORCE STRONGPOINT DEFENSE

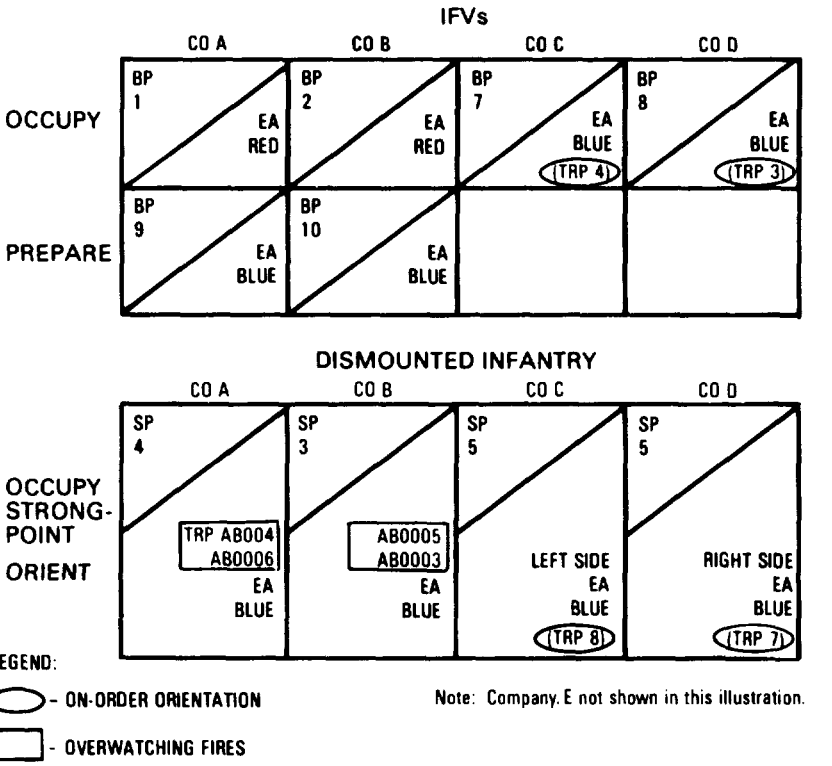


EXECUTION MATRIX

The ADA platoon leader may be issued an execution matrix as part of an overlay or planning map. Execution matrices are used to assign initial and on-order mission, positions, and fire control guidance to units.

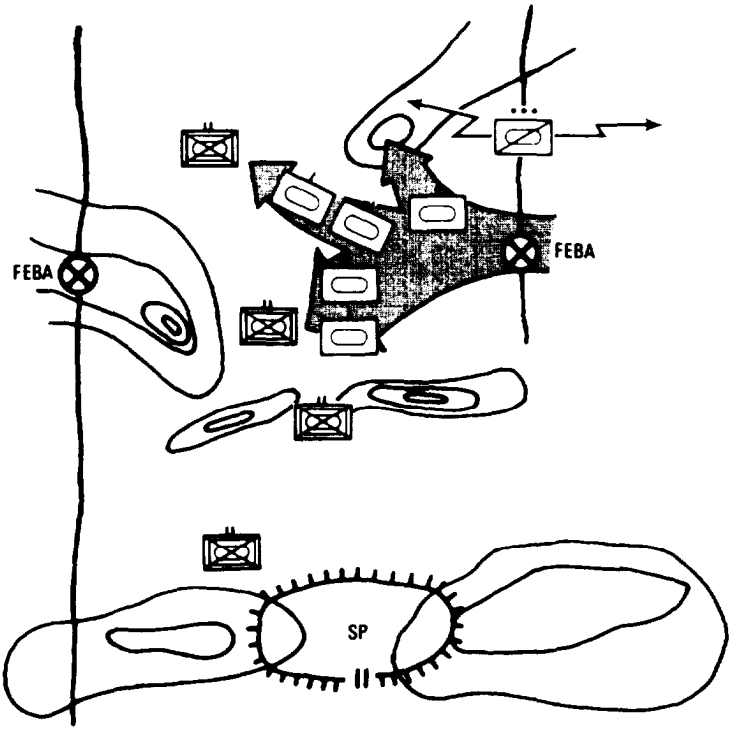
The matrix is constructed as follows. Each set of positions is represented by a horizontal row of boxes. In each box, the assigned BP is recorded in the upper left half of the box; the initial orientation and subsequent orientations are recorded in the lower right half. On-order orientations are circled. Overmatching fires during movement to subsequent BPs can be designated by placing a square over the TRP orientation.

Levels of preparation are recorded to the left side of each horizontal row of boxes. Specific subordinate units are recorded above each vertical row of boxes. General orientations for the entire unit are recorded to the right of each horizontal row of boxes. The execution matrix maybe placed directly on the planning map or overlay.



When the enemy attack stalls, the brigade commander initiates the tank battalion counterattack to defeat the enemy's second echelon. This deep attack catches the enemy's strung-out second echelon forces at a weak point. The tank battalion successfully disrupts and destroys the second echelon forces as shown in the Task Force Counterattack illustration.

TASK FORCE COUNTERATTACK



AIR DEFENSE ARTILLERY EMPLOYMENT CONSIDERATIONS

ADA employment considerations in support of a combined arms TF undergoing a strongpoint defense are briefly described in the following paragraphs.

Tactical Considerations

The ADO considers asset prioritization (criticality, vulnerability, recuperability, and threat). The critical asset vital to the success of this defensive mission is strongpoint five which is composed of companies C and D). If the enemy is able to break through this strongpoint he could easily turn the flanks of the defense and, with his follow-on echelons, rout the other defensive positions. This area is also most vulnerable to the enemy's main offensive thrust as it lies astride his high-speed avenue of approach.

In addition to the above, the ADO also considers the factors of METT-T. Doctrinally, the ene my's ground and air (helicopters) forces can be expected to use the high-speed avenue of approach to push their offensive thrust forward. Since the TF has emplaced a number of mine fields in the forward battle area, the enemy's movement will be more canalized than usual, thereby creating a target-rich environment.

Air Defense Artillery Principles and Guidelines

Since the critical area of this defense is strongpoint five, it is important that the ADA assets be concentrated in a defensive posture around this strongpoint. Because of the Vulcan's range limitations, it is imperative that they be employed within mutual support range and that the defense be integrated with Stingers. Another consideration is to obtain positions that provide good coverage for Vulcan fires in the ground role— flanking shots into EAs or as additional coverage of mines and obstacles. Because the high-speed avenue of approach is from the north, it is important that the ADA coverage be weighted in that direction as shown in the Example of an Air Defense Artillery Defense of a Strongpoint illustration on page 6-16.

Additional Tactical Considerations

Other tactical considerations the ADO must address are planning, preparation, and execution.

Plan. Time is critical! Aggressively learn the TF scheme of maneuver as it is being developed by the S3. Immediately develop your recommendation. It is essential to get your plan approved quickly so your people can begin rehearsing withdrawal routes and improving positions.

Plan and brief

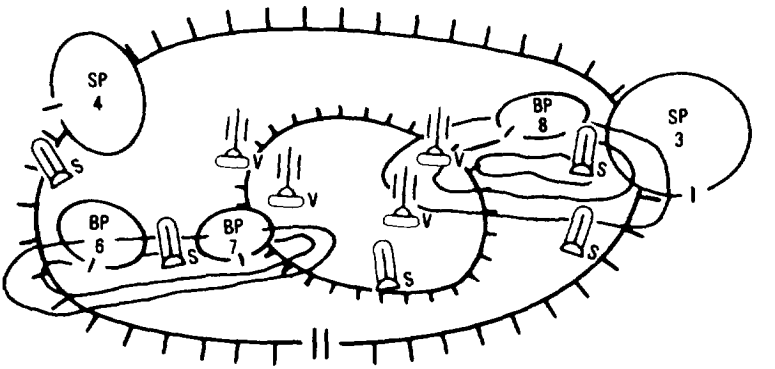
Ž Disengagement criteria (who to coordinate withdrawal with and when).

Ž Location of rally point.

Ž Self-defense criteria.

• Integration with maneuver force (units on left and right and control of fires).

EXAMPLE OF AN AIR DEFENSE ARTILLERY DEFENSE OF A STRONG POINT



Squad leaders must have a complete understanding of the scheme of maneuver. Ensure squad leaders have graphics on map. Have squad leaders ***back brief!***

Explain the scheme of maneuver looking at terrain from a hilltop.

Prepare. Coordinate withdrawal routes and recognition symbols (VS-17 panels). Consider the obstacle overlay. Rehearse your withdrawals under unfavorable conditions, in darkness, or when wearing masks. Bound back in pairs. If you are in a position overnight, reconnaissance your withdrawal route again in the morning. There is no telling what obstacles the enemy may have emplaced.

Prepare for artillery attack. Squad leaders' actions are greatly reduced when buttoned up inside track — they must dig in CP or OP.

Distances are deceiving; use TRPs to help plan your engagements (good range cards for all positions).

Pre-position ammunition and missiles. (Dig it in).

Integrate into ground defense during any night mission. At

night, integrate Vulcans into final protective fire.

Get out in front of positions and look from the enemy's perspective.

Your best cover is ***complete hull defilade.*** Get down in a dry stream bed or behind crest of hill and use OPs. Be aggressive and take advantage of dozer-blade equipped tanks or engineer dozers when other positions are being dug in. ***Survive!***

Have the platoon sergeant out of the immediate battle area but poised for quick response to personnel and vehicle losses.

Lay communications wire

Vulcans keep your ramps up! This facilitates quick exits and avoids having "pants down" when surprised.

Execute. Monitor TF command net and provide TF EW — know what is going on. Recommend to S3 changes based on situation.

Chapter 7

AIR DEFENSE ARTILLERY SUPPORT OF MANEUVER FORCE IN OFFENSE

Offense is a fluid operation. It can be a series of offensive operations beginning with a movement to contact and going all the way to a pursuit. The offense can shift forward or backward as the resistance varies.

When operating with maneuver units, air defense elements must be fully knowledgeable of the tactics of combined arms operations. ADA leaders must understand operations such as movement to contact, reconnaissance in force, passage of lines, and exploitations.

This chapter explains and illustrates several examples of offensive operations. ADA platoons could be involved in any of these actions.

TASK FORCE OFFENSIVE MISSIONS

A TF must be well planned. In planning TF offensive missions the leader must consider the actions discussed starting on page 7-1.

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Breaching an Obstacle	7-19

ENEMY IN THE DEFENSE

Normally the enemy goes on the defense only when his offense cannot succeed. The enemy will stay on the defense only long enough to generate a new attack. The defense is organized in successive belts. These are designed to provide depth to the defended area. These belts are heavily supported by artillery, ADA, engineer, and aviation assets. Normally, the defense consists of a security zone, a main defensive belt, and a second defensive belt. Each defensive belt consists of a series of mutually supporting, self-sufficient company- and platoon-size strongpoints echeloned in depth. Strong, mobile tank heavy reserves are retained as a counterattack force. The enemy makes extensive use of obstacles, barriers, mine fields, and entrenchments both forward of and within each defensive belt. This impedes the advance of opposing forces and channels them into planned killing zones.

DELIBERATE ATTACK

It is necessary to briefly outline the ground tactical situations within which the maneuver units task organize and fight in the offense. TF NACK, 3-25 armor, will be the model battalion to explain how an ADA platoon should be integrated into a TF scheme of maneuver to provide effective air defense.

SITUATION

The battle begins with the enemy attacking. After several hours of intense fighting the enemy's attack in the 54th Mechanized Infantry Division's sector is stalled. While the enemy begins to reorganize behind his initial defensive positions, as shown in the Stalled Enemy Reorganizes His Defense illustration, the 54th Mechanized Infantry Division receives permission to counterattack. The division conducts a main attack while the 2d Brigade provides a supporting attack on the division's right flank. Each of the three battalion-size TFs in the 2d Brigade are given the mission of attacking and destroying specific enemy strongpoints with on-order missions to continue their attack deep, taking advantage of the disorganized enemy. TF NACK is the center TF in the 2d Brigade.

The TF is task organized as follows:

- COMPANY A
  3 mechanized platoons
- TEAM B
  2 mechanized platoons
  1 tank platoon

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- COMPANY A
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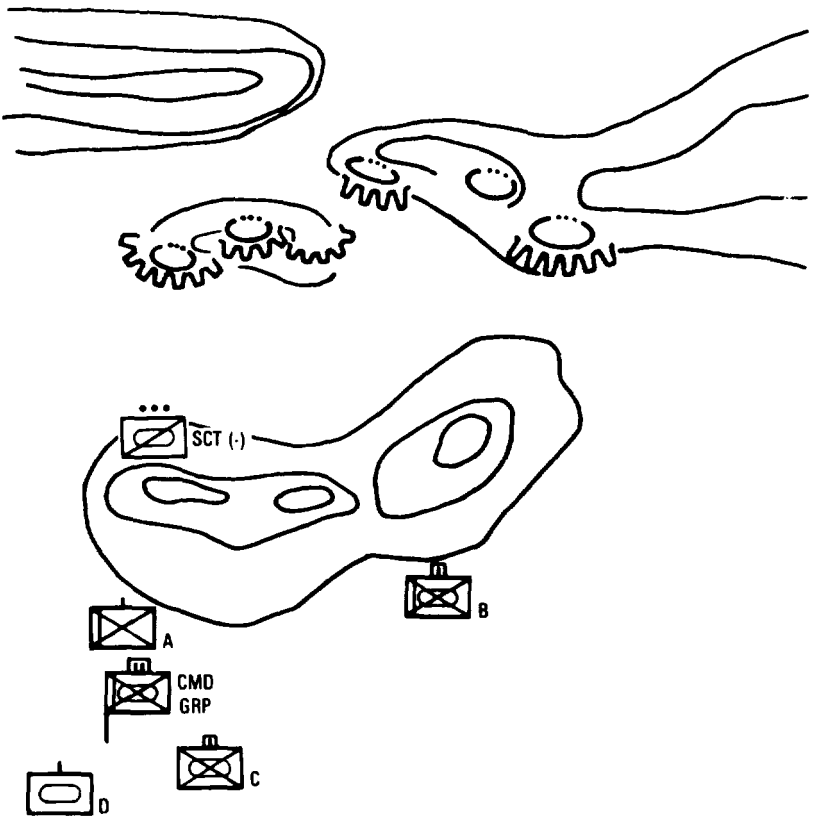
Ž TEAM B
2 mechanized platoons
1 tank platoon

Ž TEAM C
2 tank platoons
1 mechanized platoon
engineer platoon (-)

Ž COMPANY D
3 tank platoons

Ž TF CONTROL
Company E
Scout platoon
Heavy mortar platoon
ADA platoon
GSR section

STALLED ENEMY REORGANIZES HIS DEFENSE

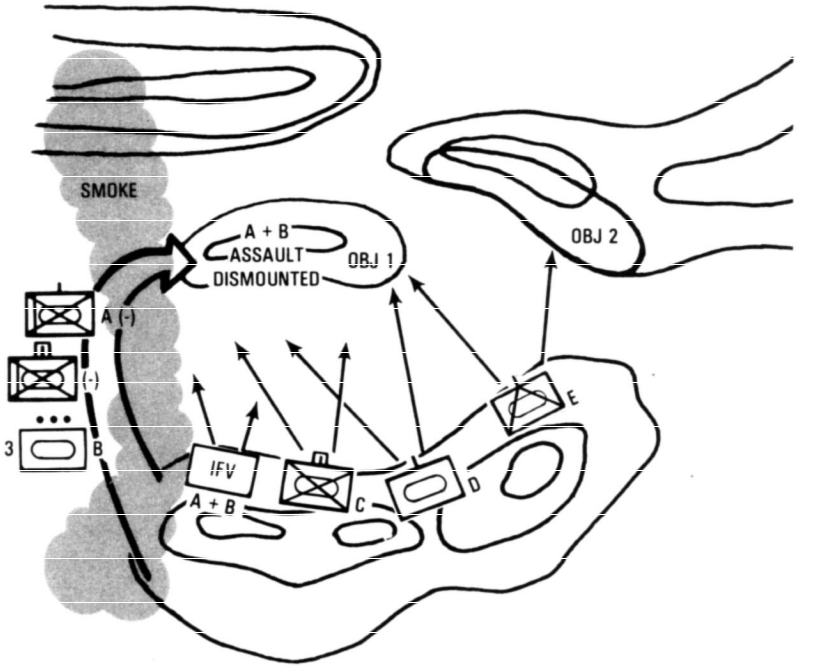


CONCEPT OF OPERATION

The scout platoon will conduct extensive reconnaissance prior to initiation of the attack to determine the enemy's weak point: specifically, where the enemy lacks the ability to mass his antiarmor fires. The TF commander then plans his attack (using the indirect approach) concentrating the TF effort at the enemy's weakest location.

Team C and Companies D and E will overwatch as the infantry in Company A and Team B attack dismounted. A smoke screen will obscure the left flank of the enemy as shown in the Dismounted Attack illustration. Dismounted infantry will reduce trench lines, bunkers, fortified positions, and antitank weapons.

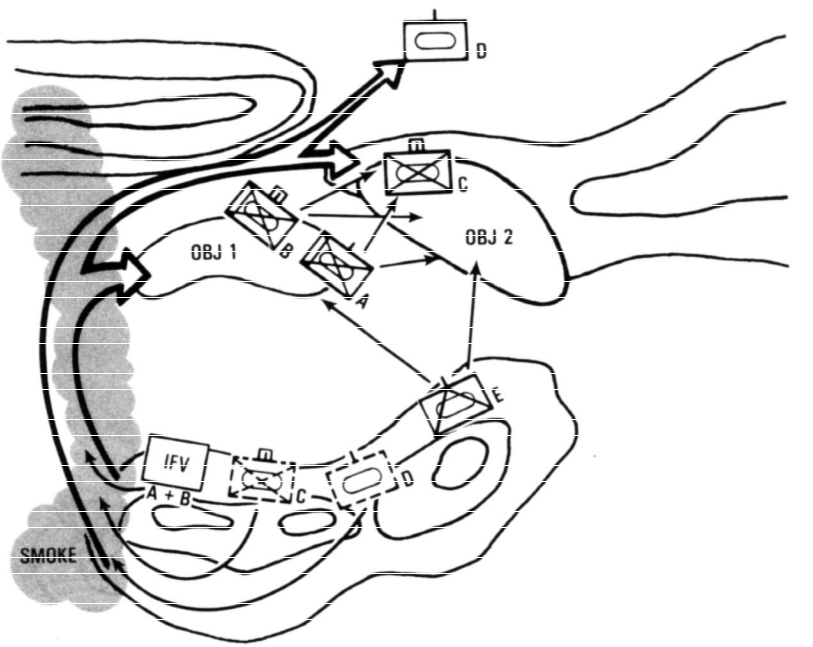
DISMOUNTED ATTACK



Closely following the dismounted infantry, the tank platoon in Team B exploits the initial breach. The IFVs in Company A and Team B initially overwatch the dismounted attack until antitank defenses are destroyed, and then assist the tank platoon in exploiting the breach,

When Company A and Team B overrun objective 1, as shown in the Company D Exploits the Penetration illustration, they hold the shoulders of this penetration and overwatch as Team C attacks objective 2. Company D exploits the penetration by continuing the attack deep into the enemy's reserve area and enveloping any additional enemy positions from the rear.

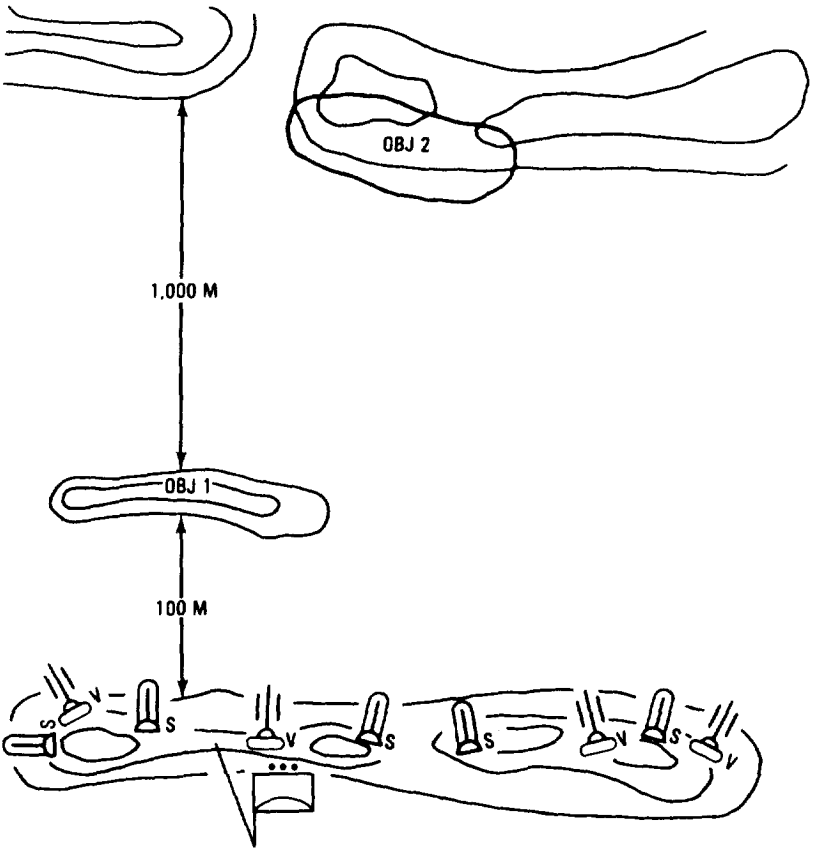
COMPANY D EXPLOITS THE PENETRATION



AIR DEFENSE ARTILLERY EMPLOYMENT

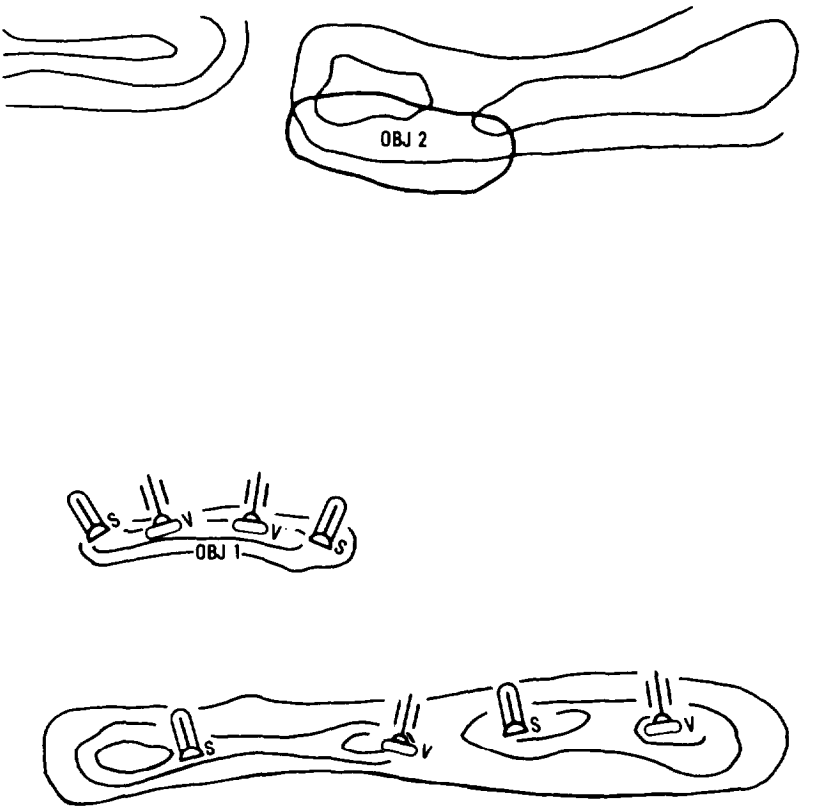
Initially, the ADA platoon (+) should overwatch the TF's movement. This is shown in the Air Defense Artillery Overwatch Positions illustration.

AIR DEFENSE ARTILLERY OVERWATCH POSITIONS



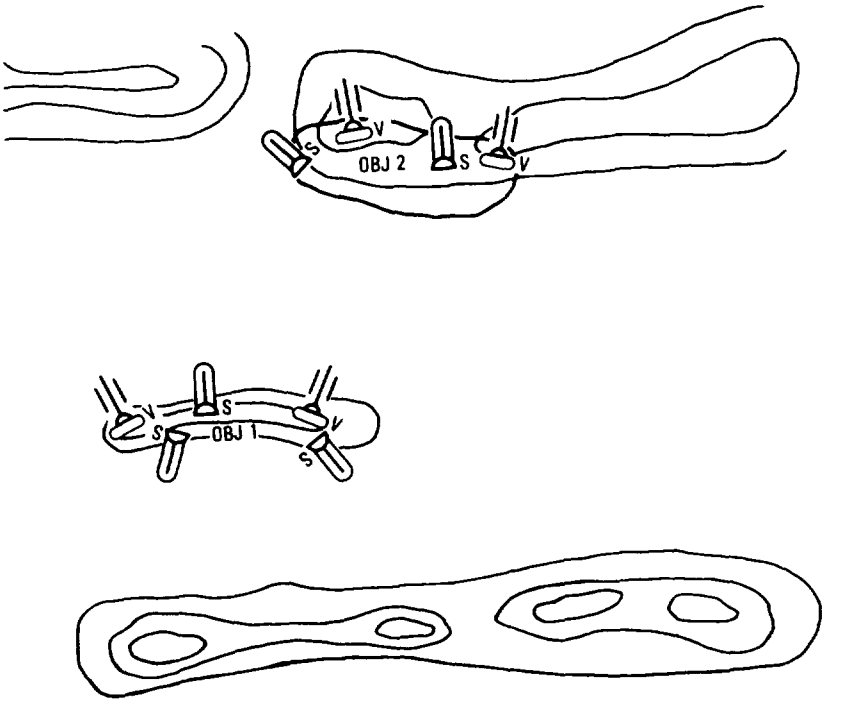
When Company A and Team B overrun objective 1, one gun and or Stinger section should move forward along the attack axis of advance to support the TF's continuing attack on objective 2. The TF's bound to objective 2 is well beyond the overwatch element's effective range, as shown in the Task Force's Long Bound illustration.

TASK FORCE'S LONG BOUND



ADA elements that remain in the overwatch position will provide air defense coverage for the elements moving to objective 1. When objective 2 is secure the overwatch elements will move forward to take up overwatch positions in objective 2, as shown in the Air Defense Artillery on Objectives 1 and 2 illustration. The gun/Stinger section on objective 1 reorients to the rear and flanks for 360° coverage, as shown in the Task Force's Long Bound illustration. Both gun and or Stinger sections must protect the force's flanks to provide adequate air defense against an enemy air counterattack.

AIR DEFENSE ARTILLERY ON OBJECTIVES 1 AND 2



AIR DEFENSE ARTILLERY CONSIDERATIONS

The air defense mission in this offensive situation is to provide ADA for a maneuvering combined arms TF. Unlike standard defensive operations, offensive operations are dynamic in nature. To provide adequate air defense for the TF the ADA platoon must be flexible. The TF can expect to meet enemy forces in dug-in, heavily fortified defensive positions. Anti-armor weapon positions will be prepared to make extensive use of engagement ranges. ADA weapons are high value targets for enemy anti-armor gunners; therefore, ADA leaders must make extensive use of map reconnaissance prior to initiation of offensive operations to select positions that provide some protection from these fires.

When the TF has an overwatch element, the ADA platoon should position itself with this element to provide air defense for the attacking elements unless the bound of the maneuver element is beyond 1,000 meters. If the bound is more than 1,000 meters, the ADA platoon leader must send a section of no less than two Vulcans forward with the bounding team to provide adequate air defense coverage. This rule also applies in cases where the fields of fire of the Vulcans in the overwatch positions are restricted by some terrain feature and adequate air defense cannot be given to the maneuver units.

The ADA platoon can expect to encounter Mi-24 HIND helicopters and Su-17 FITTER and Su-25 FROGFOOT aircraft during this type of operation.

Asset Priority (Criticality, Vulnerability, Recuperability, and Threat)

Attacking elements of the TF are the force's highest priority assets. They are critical to the success of the attack and they have low recuperability. They are likely to be targeted and are especially vulnerable to CAS aircraft during their movement to the objective.

EMPLOYMENT GUIDELINES

The ADO considers and applies, as required, guidelines. These guidelines are listed in the following paragraphs.

Weighted Coverage

ADA coverage in the overwatch position should be along the long axis of the position. Fires should be oriented toward the objective.

Early Engagement

Early engagement is critical in the offense. The ADA platoon leader should position his weapons so that 2/3 of the weapon system's effective range extends in

front of the maneuver force. This reduces the enemy's chance of engaging TF elements before ADA elements can bring fire to bear on them.

Mutual Support

The ADA platoon leader should position his weapons to achieve mutual support while the platoon overmatches the maneuver element bound to objective 1. Achieving this will ensure there are no gaps in the air defense coverage of the maneuver force.

EMPLOYMENT PRINCIPLES

The ADO considers and applies certain principles, as required. These principles are listed in the following paragraphs.

Mass

To provide adequate air defense coverage for the TF, Vulcans should not be employed in less than pairs. Employing Vulcans in less than pairs is not as effective.

Mix

It is imperative that Stinger and Vulcan are properly integrated into the operations. In this way their inherent capabilities can complement each other.

Integration

This principle is the key to the ADA platoon's successful accomplishment of its mission. The platoon must be able to fully integrate into the supported commander's concept of the operation.

Mobility

Vulcans can stay with the maneuver elements. Stingers also can to a degree, but they are able to maintain mobility through bounds (from overwatch position to overwatch position).

Reconstitution

The ADA platoon leader must plan to reconstitute as necessary when all the platoon assets are on the objective. This will be one of the few times during offensive operations that the platoon leader will have the opportunity to have direct face-to-face contact with his subordinate leaders, It is at this time that the platoon leader can assess the platoon status and issue any new information to his subordinate leaders. Ammunition and fuel must be rapidly redistributed during consolidation on the objective.

Command and Control

During offensive operations it is important that platoon elements maintain visual contact (bounding or overmatching). Crew members should use visual signals (hand and arm and flag) as much as possible.

Radio Communications

Communications are important to any operation. Radio communications are the same as in defensive operations.

Early Warning

EW should be furnished by the FAARs. If this capability does not exist, the platoons must de penal on the division EW broadcast net.

Logistics

Logistics are essentially the same as in defensive operations; however, the platoon leader must not relegate the platoon sergeant to the role of class I and V CSS resupplied. The platoon sergeant's command and control expertise is needed during offensive operations, especially when platoon elements are widely separated. During offensive operations, fuel, ammunition, and forward support maintenance must be available. The combat service support system must be operating at peak efficiency.

MOVEMENT TO CONTACT

The TF NACK 3-25 commander reports to higher headquarters the destruction of the enemy forces, and is directed to move forward and regain contact with the enemy. The TF is reorganized as follows:

- TEAM A
  2 mechanized platoons
  1 tank platoon

Ž TEAM B
2 mechanized platoons
1 tank platoon

- TEAM C
  2 tank platoons
  1 mechanized platoon

- COMPANY D
  3 tank platoons

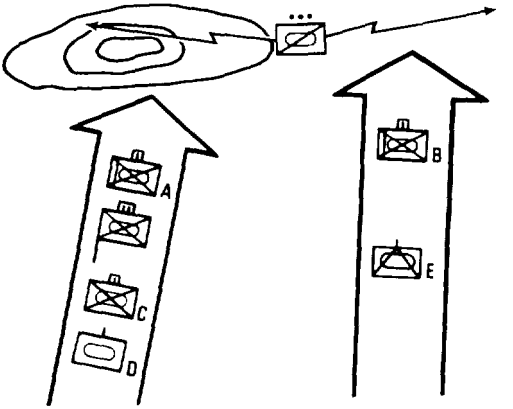
Ž TF CONTROL
Company E
Scout platoon
Heavy mortar platoon
ADA platoon

SITUATION

The commander sends the scout platoon forward to screen the front. The TF moves out on two axes of advance. The left axis is the main effort. The leading teams on both axes of advance maintain mutual support between them, as shown in the Task Force Movement to Contact illustration on page 7-12.

The scouts report a moving enemy and immediately they move to observe and report the enemy's movements and reaction. The enemy situation is not fully known.

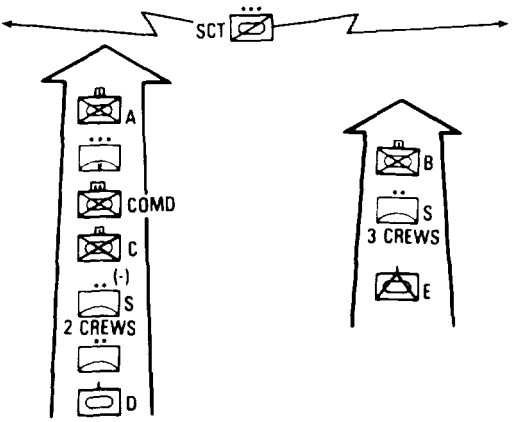
TASK FORCE MOVEMENT TO CONTACT



AIR DEFENSE ARTILLERY EMPLOYMENT

To support the TF's scheme of maneuver, the Vulcan platoon plus two Stinger crews will be part of the main attack element's march column, as shown in the Air Defense Artillery Guns With the Column illustration. Integrating three Stinger crews into the supporting element's march column will provide overmatch as well as flank low-altitude air defense.

AIR DEFENSE ARTILLERY GUNS WITH THE COLUMN



AIR DEFENSE ARTILLERY CONSIDERATIONS

The ADO considers the factors of METT-T. In this example, the ADA platoon must be prepared to support the TF during its movement to regain contact with the enemy force. Usually, when the TF regains contact with the enemy, the enemy will be in defensive positions designed to stop the offensive thrust and turn the initiative in their favor. Time to prepare for this phase of the operation is severely limited, so the ADA platoon leader must prepare the best he can with a detailed map reconnaissance of the area. During this reconnaissance, the platoon leader should look for good covered and concealed overwatch positions that are along the TF's projected avenue of advance.

In addition to the above, the ADO considers asset prioritization. The lead maneuver element of the TF is the most critical to the mission's success, as this element will engage the enemy once the TF regains contact with them. Accordingly, this element is the most vulnerable to enemy CAS.

EMPLOYMENT PRINCIPLES AND GUIDELINES

Both Vulcans and Stingers integrated into the march column will provide a mix of weapons. Such a mix will provide a better capability of thwarting the enemy's attempt to disrupt the TF's movement.

While the TF is traveling in a march column configuration, ADA weapons must be placed in the front and rear of the march column to engage enemy aircraft (early engagement) before they can successfully launch an attack on the vulnerable column. Depending on the METT-T factors, some ADA weapons may be employed on the flanks of the march column.

CHOKE POINT PASSAGE

As a continuation of the movement to contact example, the passage through choke points is a critical and vulnerable military operation. Maneuver units must, because of terrain consideration, mass into relatively small areas. The benefits of dispersion are consequently lost and vulnerability to air attack increases.

More importantly, choke points often cannot be hidden or disguised. They are as obvious to the enemy as they are to us. The targeting of choke points is a common technique because of its

high return; therefore, the requirement to adequately defend them is obvious.

Choke points can be natural or man-made and can vary from bridges and defiles to passage points and gaps between obstacles. The overriding consideration in defending a choke point is that the force negotiating it loses freedom of evasive maneuver. Destruction .in detail can easily occur if adequate precautions are not taken.

There are two general techniques for providing air defense to choke points: propositioned defense and hasty defense from the line of march.

PRE-POSITIONED DEFENSE

Pre-positioning ADA assets to cover choke points is the best means of providing timely protection. ADA units can deploy prior to arrival of the maneuver columns and thereby provide continuous protection until the force has passed the choke point.

The planning considerations for the air defense mirror those of the defense of a static critical asset as described in FM 44-3, Chapter 6.

This technique, however, is only useful when friendly forces control the ground on and around the choke point. When this is not the case, a hasty defense from the line of march must be implemented.

HASTY DEFENSE FROM THE LINE OF MARCH

When planning an advance into hostile territory, the air defense commander and the supported force commander must identify all natural choke points along the route of march. They must also take into consideration the likelihood of enemy obstacles and the means to breach them. The breaching operation in itself will result in a choke point.

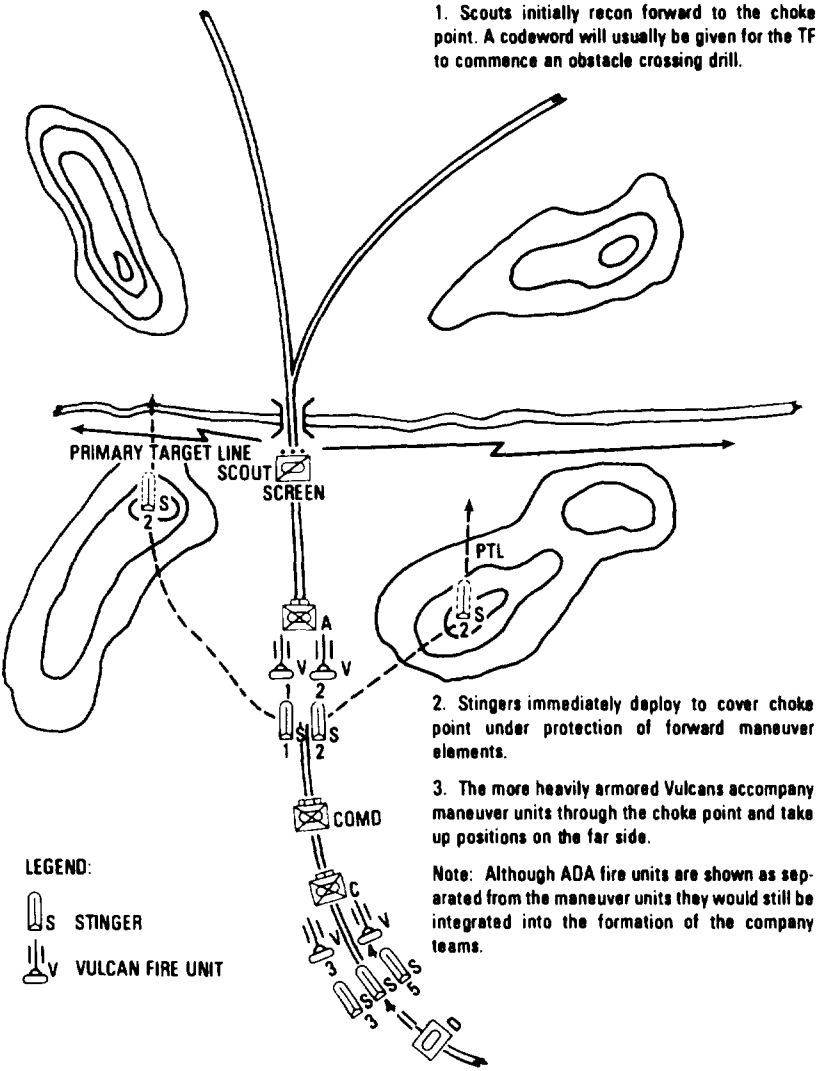
The air defense commander must then tailor his order of march to facilitate the rapid deployment of his units into a hasty defense. The deployment, as shown in the Hasty Defense of the Choke Point illustration, should be practical and conducted as part of an obstacle crossing drill, with the minimum requirement for orders and reconnaissance.

After the force has negotiated the choke point, deployed air defense artillery units will fall back into the line of march at the rear of the column.

HASTY DEFENSE OF THE CHOKE POINT

ADVANCE TO THE CHOKE POINT

1. Scouts initially recon forward to the choke point. A codeword will usually be given for the TF to commence an obstacle crossing drill.



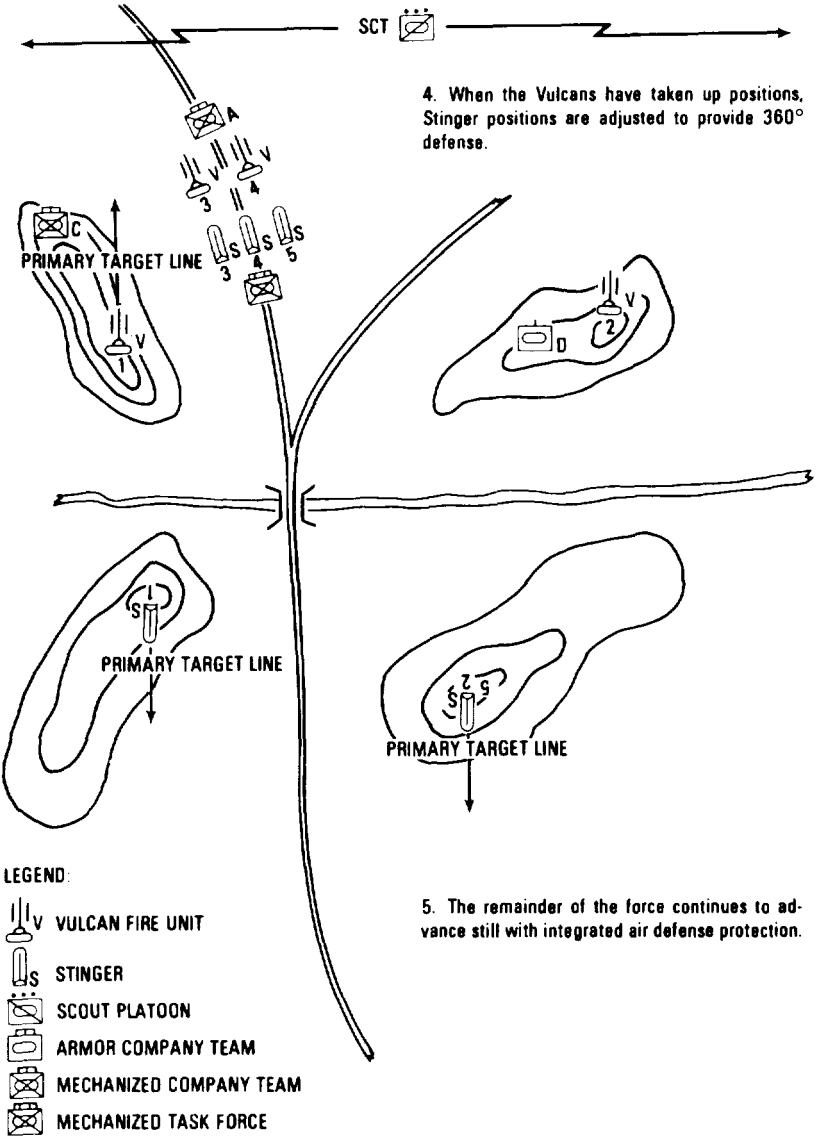
2. Stingers immediately deploy to cover choke point under protection of forward maneuver elements.

3. The more heavily armored Vulcans accompany maneuver units through the choke point and take up positions on the far side.

Note: Although ADA fire units are shown as separated from the maneuver units they would still be integrated into the formation of the company teams.

HASTY DEFENSE OF THE CHOKE POINT (Continued)

ADVANCE TO THE CHOKE POINT



4. When the Vulcans have taken up positions, Stinger positions are adjusted to provide 360° defense.

5. The remainder of the force continues to advance still with integrated air defense protection.

HASTY ATTACK

The hasty attack example herein is a continuation of the movement to contact discussed in a previous paragraph. The task organization is the same.

SITUATION

The first two teams from the left axis (Teams A and C) move into hasty defensive positions to fix the enemy elements. Company E moves forward to support the hasty attack, as shown in the Task Force Deploys for a Hasty Attack illustration.

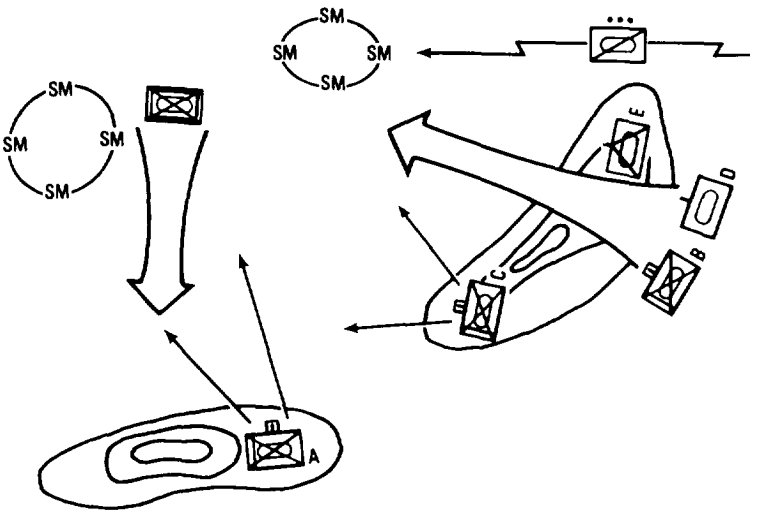
Mortar fire is quickly used to disrupt the enemy maneuver. FASCAM are used to block the approach at a choke point and suppress possible enemy overwatch positions.

Scouts push forward to cover likely enemy counterattack routes on the flank.

The tanks in Team B and Company D attack the enemy left flank with the IFVs providing close overwatch. The IFVs do not accompany the assault. The IFVs protect the tanks and reduce their own vulnerability by use of close and long overwatch.

Teams B and D successfully disrupt and destroy the enemy force.

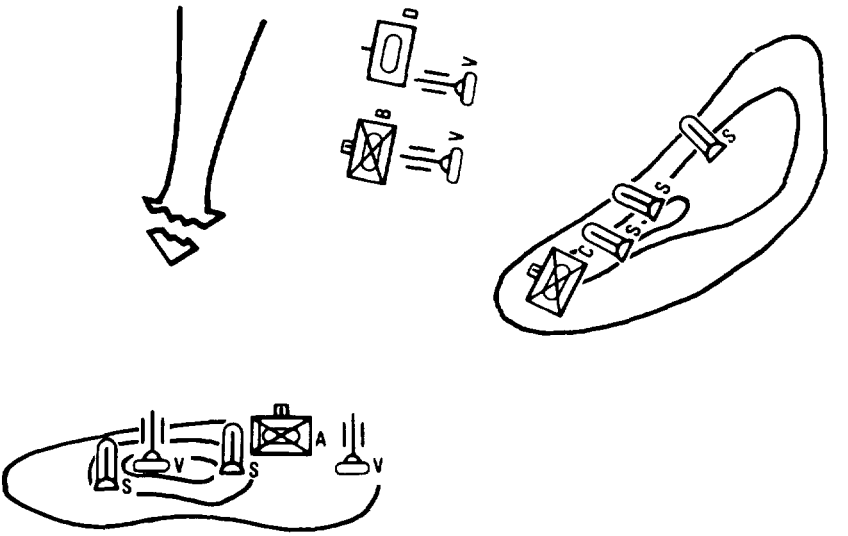
TASK FORCE DEPLOYS FOR A HASTY ATTACK



AIR DEFENSE ARTILLERY EMPLOYMENT

The Vulcan and or Stinger platoon supporting the main maneuver elements moves forward to overwatch the elements maneuvering toward the enemy's position. Because the movement of these elements is beyond the Vulcan's engagement range, a section of two Vulcans will maneuver forward with the TF elements. The section makes sure to stay 200 to 300 meters behind the maneuver elements using cover and concealment to preclude being an easy anti-armor target. The Stinger section (-) will provide air defense for the main assault force from overwatch positions secured by the supporting maneuver forces as shown in the Air Defense Artillery Supports the Hasty Attack illustration.

AIR DEFENSE ARTILLERY SUPPORTS THE HASTY ATTACK



BREACHING AN OBSTACLE

As a continuation of the hasty attack example, the TF NACK 3-25 commander continues to move his force forward on two axes. Team B spots an antitank ditch and reports the obstacle to the TF commander.

SITUATION

The TF commander orders Team A to establish an overwatch as the scout platoon attempts to locate a bypass on the left, and a platoon from Team B attempts to locate a bypass on the right. Elements from Team B also attempt to locate weaknesses in the obstacle.

Concerned about the vulnerability of his left flank, the TF commander puts the TF in a hasty defense and notifies Company D to be prepared for an enemy flank attack from the left. The scouts and Team B report no bypass available. Heavy indirect fires impact on Team A and all units don chemical protective equipment.

The TF commander orders Team B to conduct a hasty breach, as shown in the illustration on the next page. Teams A and C and Company E gain fire superiority over the defending force with direct fires while the heavy mortar platoon obscures the enemy's field of fire with smoke and indirect fires. Company B reports a weak point in the obstacle where the tank ditch is partially filled.

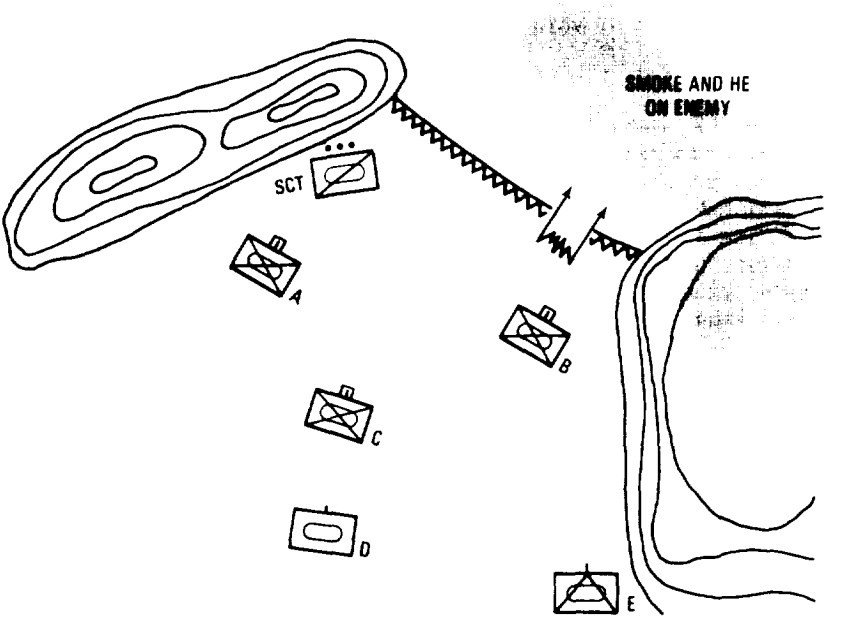
The fire of Company C's tanks is redirected. The tank fire is concentrated at the weak point in the obstacle placing rounds into and on top of the tank ditch. The wall collapses at this point and further fills in the tank ditch.

While the other units provide suppressing fires, Team B moves toward the ditch. The tanks move forward and push dirt into the ditch.

As Team B breaches the obstacle, the tank platoon from Team B crosses the obstacle and attempts to establish an overwatch position on the far side. Enemy contact is made and the tank platoon immediately assaults the enemy position. Fires from Teams A and C are shifted as Team B's tank platoon overruns the enemy position. After the enemy position is destroyed, Team B establishes far side security.

The TF commander orders Teams A and C through the breach to become the new lead, with Team B and Company D following Team A.

TEAM B CONDUCTS A HASTY BREACH

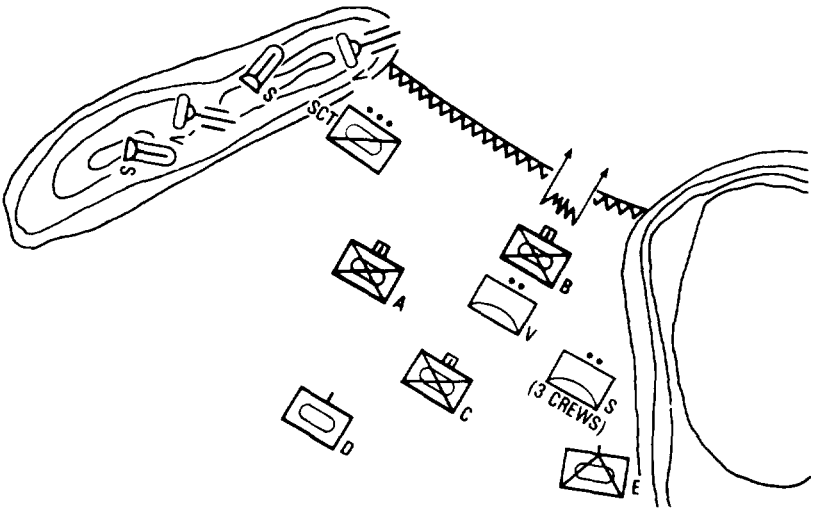


AIR DEFENSE ARTILLERY EMPLOYMENT

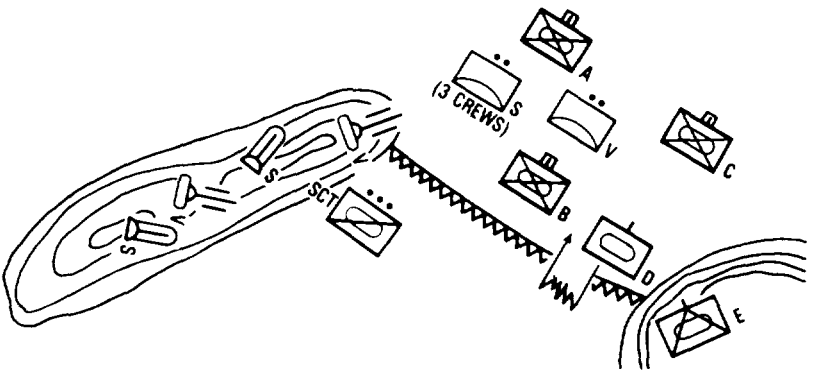
In this example, ADA weapons take overwatch positions, as shown in the Air Defense Artillery Supports the Breaching Operation illustration. After a lane is cleared in the obstacle, a mixed force of ADA weapons should follow the lead maneuver unit through the obstacle to establish low-altitude air defense coverage on the other side of the obstacle. See the Air Defense Continues Support of the Maneuver Force illustration.

After the remaining units of the TF have breached the obstacle, the last air defense element should clear the obstacle and assume covered and concealed overwatch positions until the next phase of the offensive operation begins.

AIR DEFENSE ARTILLERY SUPPORTS THE BREACHING OPERATION



AIR DEFENSE ARTILLERY CONTINUES SUPPORT OF THE MANEUVER FORCE



Chapter 8

COMBAT SUPPORT

Mortars, FA, army attack helicopters, naval gunfire, and USAF tactical aircraft provide fire support to the maneuver brigade. Engineers, military intelligence, and military police elements provide additional support. A TF plans the combat support efforts. The air defense platoon leader makes sure the ADA combat support plan will support the commander's scheme of maneuver. If it does not, the platoon leader does additional planning and coordination. The platoon requests combat supporting fires and assistance from the TF when in a DS role and from the ADA battery commander in all other support relationships. This chapter discusses combat support for maneuver elements.

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Section I. Indirect Fires

The maneuver commander integrates all fire support and maneuver assets to maximize combat power for the combined arms team. It is mandatory that all vehicle commanders, platoon leaders, platoon sergeants, and unit commanders know how to call for and adjust indirect fires. Requests for fires or adjustment fires are made over the company team command net (see Section III), A detailed discussion of call for fire and adjustment procedures is found in Chapter 6, FM 6-30. Joint application of firepower (J-Fire) reference guide TRADOC Pam 34-2 contains information on artillery and mortar, CAS, and naval gunfire support.

MORTAR

The platoon receives mortar support from the maneuver battalion heavy mortar platoon. The support provided to the platoon depends on the mission and the element assigned priority of fires. Mortars are more responsive than FA to requests for supporting fires. Their disadvantages when compared to artillery are

their short range and limited ammunition.

Mortars are effective for:

• Obscuration. Smoke will obscure the enemy's vision when fired on or near his position.

Ž Illumination. Battlefield illumination allows observation for direct- and indirect-fire engagements.

Ž Suppression. Suppressive fires will force the enemy to button up or move. It will also cause the enemy to be more concerned about survival than about firing his weapons.

• Destruction. Dismounted infantry units and thin-skinned vehicles can be destroyed by mortar fire.

FIELD ARTILLERY

FA support is provided by an artillery battalion placed in DS of the maneuver brigade. Other units and types of weapons may be available depending on the factors of METT-T. FA advantages are long-range accuracy, lethality, variety, and volume of fire.

FA support is effective for the following:

• Battlefield illumination. Illuminating shells light the battlefield at night.

Ž Obscuration. Smoke rounds can be used to blind enemy tanks, observers, and line-of-sight ATGM systems.

Ž Suppression. Suppressive fires force the enemy to button up.

Ž Destruction. Improved conventional munitions are particularly effective when employed against personnel and lightly armored vehicles. External fuel tanks can be penetrated using airbursts of high explosives and set afire with white phosphorus. Scatterable mines can be delivered by FA to block or canalize enemy movements.

Section II. Fire Request Channels

The DS FA battalion provides FISTs for a maneuver brigade's company team elements. An important item of equipment found with the mechanized infantry and armored FIST is the FISTV. The FITSV's laser capability for ranging and designating targets for attack with precision guided munitions brings a new dimension to fire support.

FIRE SUPPORT TEAM

FISTS are attached to company-size maneuver elements on order, and they stay with these units during an operation. Each FIST is equipped and trained to provide –

- Fire support advice and coordination (company FSO).

ŽObservation capability.

ŽCommunications to all available tire support.

- Liaison for supporting FA.

The FIST monitors four radio nets:

- Company command net.
- Company fire control net.

ŽBattalion mortar fire direction center net.

- Artillery fire direction net.

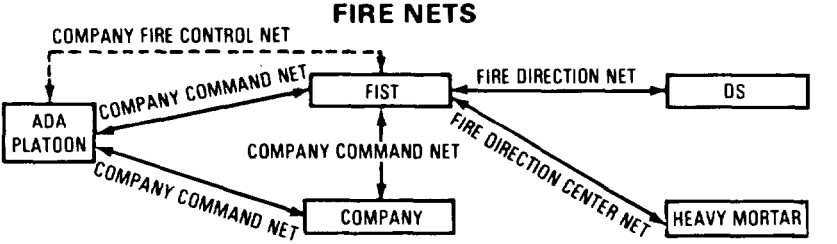
The FIST headquarters is the net control station for the company fire control net. Fire support coordination between platoon leaders and the FIST is usually conducted face-to-face. The company fire control net is used for coordination (when this must be made by radio) and for processing fire missions from the platoon leaders.

The company command net allows direct coordination among platoon leaders, the company commander, and the FIST chief. Platoon leaders may use this net to request fire support. The FIST chief monitors the net to remain abreast of the tactical situation.

MORTAR FIRE DIRECTION CENTER NET

The maneuver battalion fire direction center net is used by the battalion mortar platoon and battalion FSO. The FIST may enter this net to request additional fire support. The FIST also operates in the fire direction net of the DS battalion. This allows direct coordination between the FA battalion, the battery FDCs, and the maneuver battalion FSO. The FIST may plan and coordinate all indirect-fire support on this net. The ADA platoon leader must know the communications nets (see the Fire Nets illustration), frequencies, and call signs the FIST uses to request fire support, if needed. Requests are made to the company FSO or platoon FOs.

FIRE NETS



Section III. Call for Fire

There are three phases to most missions fired by FA or mortars. These phases are call for fire, subsequent adjustments, and fire for effect.

The initial call for fire establishes communications. The initial call also provides enough information to enable the firing unit to fire the first round.

The observer then enters the subsequent adjustment phase by sending deviation and range corrections to the tiring unit to bring the adjustment round(s) onto his aim point. When the observer's adjustments will bring the next round within 50 meters of the aim point, he directs the firing unit to fire for effect.

Fire for effect will cause the firing unit to change its method of fire from one gun firing an adjustment round to all guns firing the type and number of rounds requested by the observer. If the effects on the target are acceptable, the observer will end the mission. If they are not, the observer repeats the fire for effect. The following paragraphs include a more detailed discussion of the three phases of a fire mission.

INITIAL CALL FOR FIRE

The standard call for fire and the simplified call for fire for immediate suppression will require observer authentication from the CEOI prior to firing. This is a standard procedure.

STANDARD CALL FOR FIRE

The standard call for fire includes the following six elements:

Ž Identification of the observer (call sign).

• Warning order (type of mission, method of target location, and any request for increased volume of fire).

Ž Target location (grid, or shift from a known point).

• Description of target (a verbal picture of what the observer sees).

Ž Method of engagement (recommendation of type of ammunition, sheafs, and trajectory).

Ž Method of fire and control (at my command, time on target, request splash, request time of flight). If a method of fire and control is not desired, this element may be deleted.

SIMPLIFIED CALL FOR FIRE

The simplified call for fire (immediate suppression) will require observer authentication from the CEOI prior to firing. The simplified call for fire contains the following elements:

• Identification.

Ž Warning order.

Ž Target location.

The platoon leader requests immediate suppression (see the illustration below) when he encounters unexpected enemy direct fire. Immediate suppression missions have priority over other fire missions. The time available for these missions is usually shorter.

IMMEDIATE SUPPRESSION



FO



FDC

"THIS IS H24 – IMMEDIATE SUPPRESSION – GRID 211432 – OVER."	"THIS IS H69 – IMMEDIATE SUPPRESSION – GRID 211432 – OUT."

SENDING THE CALL FOR FIRE

The call for fire may be standard or simplified. These calls are explained below.

STANDARD

The standard call for fire is sent in three radio transmissions as follows:

Ž First transmission (identification and warning order).

• Second transmission (target location).

Ž Third transmission (target description, method of engagement, and method of control).

SIMPLIFIED

Send the simplified call for fire in one transmission. The FDC's message to the FO tells him how many guns will fire for effect, the firing unit, the number of rounds, and any element that differs from the call for fire.

METHODS OF TARGET LOCATION

The warning order does not indicate the grid method which will be used in the location of a target. See the explanation on use of the grid method in the following paragraphs.

GRID

Using your map, determine the six-digit location of the target. If the location of the target has been previously registered and has been assigned a target number, the target number is sent instead of the coordinates (see the Initial Call for Fire (Grid) illustration).

INITIAL CALL FOR FIRE (GRID)



YOU

FDC



CALL FOR FIRE	
"A4Z57 — THIS IS G3H07 — ADJUST FIRE — OVER."	"THIS IS A4Z57 — ADJUST FIRE — OUT."
"GRID 180513 — INFANTRY PLATOON IN THE OPEN — VT IN EFFECT — OVER."	"GRID 180513 — INFANTRY PLATOON IN THE OPEN — VT IN EFFECT — AUTHENTICATE AB — OVER."
"AUTHENTICATIONS IS C — OUT."	
MESSAGE TO OBSERVER	
"BRAVO — 2 ROUNDS — OUT."	"BRAVO — 2 ROUNDS — OVER."
" DIRECTION 1650 — OVER."	"DIRECTION 1650 · OUT."

SHIFT FROM A KNOWN POINT METHOD

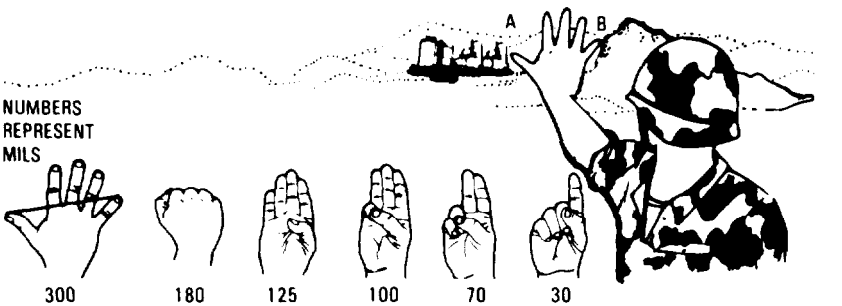
The shift from a known point method of target location requires the observer and the firing unit to identify the known point. The observer shifts from planned targets that have been assigned target numbers. The observer determines the direction to the target, the number of meters the target is located left or right of the known point, and the number of meters the target is short or beyond the known point.

The observer first computes a modified OT factor by dividing the range (in meters) to the known point by 1,000 then rounding it off to the nearest whole number.

To determine the number of meters left or right, the observer measures the number of roils between the target and the known point.

The Determining Mils illustration shows some rules of thumb used to estimate the number of roils between points.

DETERMINING MILS



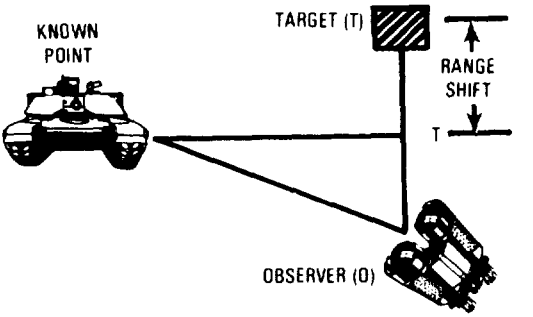
The observer multiplies the number of roils by the modified OT factor. This is shown in the Observer Target Factors illustration.

OBSERVER TARGET FACTORS

DISTANCE FROM YOU TO TARGET (IN METERS)	OT FACTOR
0-949	0.6
950-1,499	1
1,500-2,500	2
2,501-3,499	3
3,500-4,500	4
4,501-5,499	5

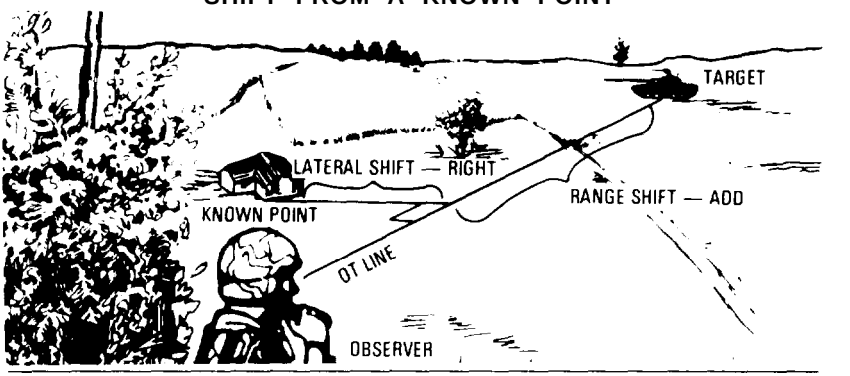
The observer estimates the difference in range between the target and the known point (see the illustration below).

RANGE



After all computations are completed, the observer sends his initial request for fire. In the warning order, the observer states "SHIFT," followed immediately by the target number assigned to the known point. In the target location, the observer provides the direction to the ***target,*** the number of meters (left or right) in change of direction, and the number of meters (add or drop) in change of range. The two illustrations below and on the next page show the initial shift from a known point fire request.

SHIFT FROM A KNOWN POINT



INITIAL CALL FOR FIRE (SHIFT FROM A KNOWN POINT)



FO

FIRE MISSION
(SHIFT FROM A KNOWN POINT)
INITIAL FIRE REQUEST



FDC

"H66, THIS IS H44 — ADJUST FIRE — SHIFT AA7733 — OVER."	"THIS IS H66 — ADJUST FIRE — SHIFT AA7733 — OUT."
"DIRECTION 5210 — LEFT 380 — ADD 400 — DOWN 25 — OVER."	"DIRECTION 5210 — LEFT 380 — ADD 400 — DOWN 25 — OUT."
"COMBAT OP IN OPEN — ICM IN EFFECT — OVER."	"COMBAT OP IN OPEN — ICM — AUTHENTICATE LIMA FOXTROT — OVER."
"I AUTHENTICATE PAPA — OUT."	
MESSAGE TO OBSERVER	
"CHARLIE — 1 ROUND — OUT."	"CHARLIE — 1 ROUND — OVER."

SPOTTING AND SUBSEQUENT CORRECTIONS

Upon receiving "SHOT – OVER" from the FDC, the observer prepares to spot the round for correct deviation, range, and height. The spottings (see the Deviation and Range Adjustment illustrations on page 8-10) are:

Ž For deviation: left, right, or line.

Ž For range: over, short, range correct, or doubtful.

Ž For height of burst: meters above the ground.

Prepare subsequent corrections to be sent to the FDC by applying the following principles of adjustment.

DEVIATION CORRECTIONS

The observer determines the distance in meters that he wants to move the burst by multiplying the observed deviation in mils by the OT factor (see the Observer Target Factors illustration on page 8-7). The observer expresses deviation corrections to the nearest 10 meters. The observer ignores minor deviations (corrections of 20 meters or less).

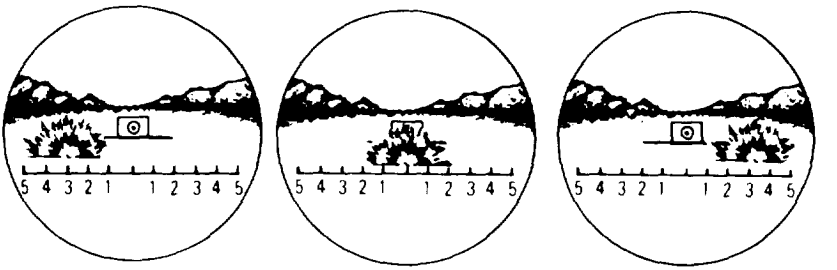
The observer sends deviation corrections to the FDC to move the burst on line with its target as "RIGHT" or "LEFT (so many meters}."

RANGE CORRECTIONS

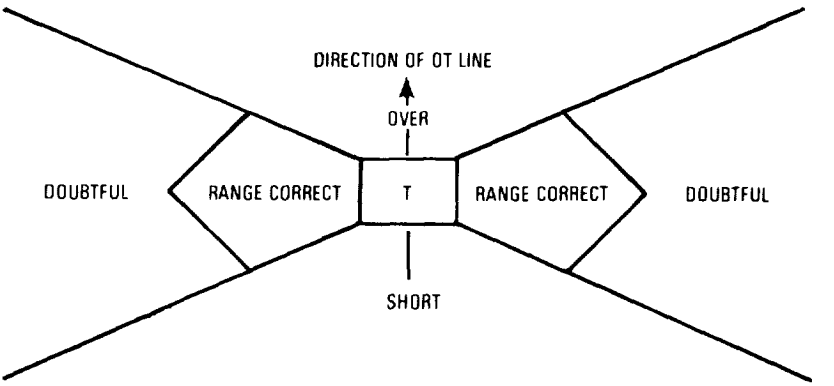
The observer establishes a range bracket when adjusting fire on a target. After he makes the first range spotting, the

observer makes a range correction that will cause the next round to fall on the opposite side of the target. For example, if the first range spotting is ***short,*** the observer should ***add*** a sufficient amount to obtain an ***over*** spotting on the next round. Likewise, if the first spotting is ***over,*** he should ***drop*** a sufficient amount to obtain a ***short*** on the next round. The observer then cuts each range correction in half, moving each round successively closer to the target (see the Minimum Range Adjustment Guide illustration on page 8-11).

DEVIATION



RANGE ADJUSTMENT



MINIMUM RANGE ADJUSTMENT GUIDE

RANGE TO TARGET (IN METERS)	ADD OR DROP
0-999	100 METERS
1,000-1,999	200 METERS
2,000 plus	400 METERS

Throughout the adjustment phase, it is essential that the observer exercise good judgment rather than automatically splitting the range bracket. For example, the observer adds 400 meters after an initial range spotting of ***short.*** The second range spotting is ***over,*** but the burst is close to target. A range change of "DROP 100" rather than "DROP 200" is appropriate. The observer must aggressively use every opportunity to shorten the adjustment phase, correct the initial round on target, and fire for effect. Successive bracketing procedures should be used only when time is not critical.

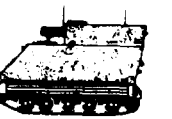
When making corrections, always move the spottings to the target (see the Subsequent Corrections illustration). For example, if the spotting was left and short of the target, you would make a correction of "RIGHT (so many meters)" and "ADD (so many meters)."

SUBSEQUENT CORRECTIONS



OBSERVER

FDC



ADJUSTMENT OF FIRE

"SHOT — OUT."	"SHOT — OVER."
"RIGHT 120 — DROP 400 — OVER."	"RIGHT 120 — DROP 400 — OUT." "SHOT — OVER."
"SHOT — OUT." "LEFT 40 — ADD 200 — OVER."	
	"LEFT 40 — ADD 200 — OUT." "SHOT — OVER."
"SHOT — OUT." "DROP 100 — OVER."	
	"DROP 100 — OUT." "SHOT — OVER."
"SHOT — OUT."	

Fire for effect when you split a 100-meter bracket, or when you hit a target. If the effect on the target is satisfactory, send "END OF MISSION" to the FDC. If the effect on the target is insufficient, the observer can request another fire for effect at the same grid by sending "REPEAT" to the FDC, or he can shift the impact of the fire for effect by giving a range or deviation correction followed by "REPEAT" to the FDC.

Section IV. Air Support

The ADA platoon leader must be aware of the presence of any friendly aircraft in the area of operation. These aircraft fall into several categories. They include army aviation assets, air force aircraft, and RPVs. This section discusses the most prevalent types of aircraft support likely to be available in the forward area.

ATTACK HELICOPTERS

The attack helicopter is primarily an antiarmor weapon system. Attack helicopter units are maneuver units and are normally integrated into the ground scheme of maneuver. When working with ground maneuver units, the attack helicopter unit may be under the OPCON of the ground maneuver force. Normally, the ground maneuver force with OPCON of these aviation elements is a maneuver brigade or, when necessary, a battalion. The attack helicopters support the company team during offensive and defensive operations by providing highly maneuverable combat power to the company's higher headquarters. Aeroscouts working with the attack ships usually arrive before attack aircraft, and establish communications with ground forces to learn the situation and mission from the commander. The aeroscouts identify targets, choose general attack positions, and control attack helicopter fire. The company team commander and his platoon leaders may become involved in attack helicopter operations during the conduct of a passage of lines, by directing attack

helicopter fires into known enemy locations, and by receiving target information not visible from the ground.

To achieve sufficient integration with the supported maneuver commander, the ADA commander and or leader and army aviation representative must ensure close cooperation prior to, and throughout, the entire operation. This integration enhances the capabilities of ADA and aviation assets and compensates for the limitations of both.

CLOSE AIR SUPPORT

The USAF provides CAS. CAS strikes can be either preplanned (by battalion) or requested on the basis of immediate need through the battalion FAC. CAS is used to advantage as an antiarmor weap on against large enemy formations. When a CAS mission is in progress, the FAC on the ground or in the air acts as a link between the unit and the attacking aircraft. Although the company team commander can provide information for the planning process, CAS planning normally begins at battalion level. CAS request communications are described in TRADOC Pam 34-2. Compatible service radios and their frequencies are described in this publication. It should be noted that while the USAF will provide the bulk of CAS, in some theaters marine and naval aviation assets will also provide CAS. In some instances they may provide CAS (for example, the Grenada operation).

MARKING FRIENDLY POSITIONS

Friendly positions should always be marked during close air strikes. Marking must not compromise friendly positions to enemy observers. Marking is usually necessary when friendly troops are less than 300 meters from the target.

The smoke grenade is the most common ***position*** marker, but it has limitations. Some colors can blend with the background. (Violet or white smoke shows up well with most backgrounds.) Wind may cause smoke to drift above trees.

Rocket or 40-millimeter flares attract attention at night. These munitions are sometimes effective as markers during the day.

Signal mirrors are probably the best ground-to-air devices to attract attention, if there is sunshine and if the operator is proficient. A pilot can see a mirror flash miles away. VS-17 signal panels are good visual references.

Strobe lights are pocket-size, battery-powered signal lights that produce brilliant white or

blue flashes at about 1½-second intervals. The flash is visible at night for 1 to 3 miles. Vehicle lights, such as unshielded red taillights, are visible to a pilot for several miles at night. Chemical glow lights can also be used to mark friendly positions.

Section V. Intelligence Support

Battle success depends on the force commander's ability to see the battlefield. He must surprise the enemy and catch him at a disadvantage as often as possible. The commander must avoid enemy strength and exploit enemy weaknesses. To do this, the commander must know the conditions in which the fight will take place and the nature, capabilities, and activities of the enemy.

INTELLIGENCE OPERATIONS

The purpose of intelligence operations is to obtain reliable information about the enemy, weather, and terrain as quickly and completely as possible. The results are an essential basis for planning friendly operations and for estimating enemy capabilities, courses of action, and intentions. Intelligence seeks to discover the type, strength, location, organization, and behavior of enemy forces; their direction and speed of movement; and their intentions.

MILITARY INTELLIGENCE

Information from the division, brigade, or battalion military intelligence officer normally assists in designating possible enemy air avenues of approach and ground avenues of approach. The military intelligence representative can also inform the platoon leader about the number of fixed- and rotary-wing sorties expected, and the type of aircraft expected in a specific area. Also, the resources of the military intelligence representative can be useful in preparing battlebooks and plans.

Information-gathering elements from the military intelligence battalion may be attached down to battalion TF level. These elements normally consist of ground surveillance radar teams and remote sensor teams. Because ground surveillance radar teams require a line-of-sight to their observed area, they will most frequently be located forward and close to the platoon.

Platoon leaders should coordinate to gain information of immediate importance to the platoon. Leaders should also be aware of the distinctive radar signature the ground surveillance radar unit makes when operating. Do not position ADA systems close to ground surveillance radar teams. Some items which the platoon may request from intelligence sources include information on the air threat and weather.

AIR TH R EAT

The ADA platoon needs to know the composition of the air threat. Platoon personnel must know as much as possible about the enemy aircraft they will encounter and any new variations of ground attack techniques which may develop. Specific items include the following:

Ž Mission and target (CAS, forward maneuver elements, ADA).

Ž Ordnance (250-kilogram bombs, 30-millimeter cannon, AS-11).

Ž Mission times (most probable times, prior to or with a ground attack).

Ž Strength (numbers, size of sorties).

WEATHER

Weather conditions affect ADA operations to a considerable degree. Frequently, battle plans are based on weather information. Therefore, current and accurate weather information is an important part of the intelligence sup port. Specific items include the following:

Ž BMNT, EENT, SR, SS, MR, MS, percentage night illumination.

Ž Percentage of cloud cover (partly cloudy, scattered, overcast).

Ž Trafficability, road conditions, et cetera.

Ž Humidity. (High humidity affects IR-guided weapons.)

Brigade and battalion TF commanders decide how to use the engineer company or platoon. They may use it as a unit or attach all or part of it to their subordinate elements. In fast-moving offensive operations, the tendency is to attach engineers to the lead company team. In the defense, commanders generally keep engineer units intact to construct major obstacles.

MOBILITY, COUNTERMOBILITY, AND SURVIVABILITY

Combat engineers assist the TF in mobility, countermobility, and survivability.

Mobility tasks for engineers include —

- Countermine operations.
- Counterobstacle operations.
- Gap-crossing activities.
- Combat road and trail construction and maintenance.

Countermobility tasks for engineers include mine warfare and obstacle development.

Survivability tasks for engineers include —

- Fighting positions.
- Protective emplacements.
- Protection for support facilities.

When combat engineers are attached to the battalion TF, the element attached may be all engineer platoon or larger unit. When the air defense platoon is supporting at the battalion TF level, the point of contact for requesting engineer support is the battalion TF commander.

SURVIVABILITY SUPPORT

Engineer resources and time will seldom be sufficient to do all that is required in modern highly mobile combat operations. To select fighting positions, commanders must consider both maximum weapons effect and cover. Frequently, tradeoffs must be made. However, engineers can provide excellent cover and effective positions for weapons.

Individual soldiers will provide themselves with quick, basic, protective positions. Armored vehicles will find defilade positions.

The ADA platoon leader should utilize all available engineer assets to ensure the survivability of his platoon. This includes having his weapons

dug-in, clearing access or egress routes for positions, clearing fields of fire, and constructing obstacles.

OTHER ENGINEER SUPPORT

The engineers also furnish timely information and intelligence about obstacles, field fortifications, and routes in the division area. The engineer terrain support element can provide studies and information pertaining to the terrain in the operational area. Information is available on area trafficability, lines of communication, hydrography, and status of bridges. The engineer squad is equipped with an APC to transport the squad's basic load of equipment and demolitions. The squad's limited capabilities are enhanced by additional equipment from the engineer company and or the platoon headquarters element. When planning obstacles or defilade positions for weapons systems, the ADA platoon leader can rely on the engineer platoon and squad leader to advise him on construction time and materials needed. The engineer platoon leader or squad leader may not be able to construct positions for the ADA platoon. However, he may be able to provide the materials so that the platoon can construct its own positions.

Chapter 9

COMBAT SERVICE SUPPORT

The supplies the platoon most often needs are food, fuel, ammunition, and spare parts. Maintaining an adequate level of supplies within the platoon is a matter of making timely requests for resupply. For example, if the platoon leader waits for ammunition levels and other basic loads to become very low before requesting resupply, then the platoon will not have enough supplies to accomplish the mission. The platoon must resupply and refuel at every available opportunity. This chapter discusses those CSS functions most pertinent to the ADA platoon.

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Section I. Combat Service Support Functions

The CSS system provides support to weapon systems and the soldiers who man them. Those who direct the CSS effort ensure that critical weapon systems are supplied with sufficient ammunition and fuel, that such systems are quickly repaired or replaced where damaged or inoperative, and that soldiers are available to operate, repair, and maintain the systems. Combat equipment should be armed, fueled, fixed, and manned as close to the point of employment as the tactical situation permits.

COMBAT SERVICE SUPPORT FOR CHAPARRAL, VULCAN, AND STINGER

The responsibility for CSS depends upon the support relationships the ADA element has with the supported force (see the Support Relationships and Responsibilities illustration on page 2-7).

The ADA battalion headquarters provides unit-level legal, medical, and administrative sup port for units of the battalion. The division provides DS to the ADA battalion and its subordinate

elements. The battalion S4 and the battery maintenance technicians provide technical supervision of supply and unit maintenance support for the batteries. Most of the unit-level supply and unit maintenance functions are accomplished at battery level.

When the support relationship is any other than attached, the ADA elements request higher level CSS directly from DISCOM agencies (that is, DS battery to FSB), ***with more information provided to the Chaparral and or Vulcan battalion for follow-up as necessary.*** However, when an ADA battery or ADA platoon is supporting a brigade or battalion TF and is attached for CSS, the supported brigade or battalion TF must plan, coordinate, supervise, and control all of the logistical support.

COMBAT SERVICE SUPPORT FUNCTIONS

The ADA battalion provides a variety of CSS to its batteries and platoons and is the link with division and corps service support units. CSS includes —

- Supply.
- Maintenance.
- Transportation.
- Field services.
- Personnel services.
- Health services.

Supply is providing those items required to equip, maintain, and operate a unit. Supply operations involve the process of determining requirements and requesting, procuring, storing, and distributing items to fulfill those requirements.

Maintenance includes those actions required to keep equipment operational or to return it to service. The goal of maintenance is to keep the absolute maximum number of weapon systems combat ready and on line.

Transportation is the means of moving personnel, equipment, and supplies. In every instance this must be to the right place and at the right time.

Field services include laundry, bath, clothing exchange, bakery, textile renovation, and salvage. They also include graves registration, decontamination, clothing renovation, post exchange sales, and the provision of general duty labor.

Personnel services include personnel management, leaves, passes, postal services, religious activities, legal assistance, financial assistance, casualty and strength reporting, welfare activities, and rest and recreation. All of these help the commander maintain a high state of morale

within the unit. The goal of personnel services is to man each piece of equipment with qualified, motivated crews.

Health services include health preservation and field sanitation. Health services also include immunization, medical aid, evacuation, and safety. Field sanitation methods learned in training are equally important in the combat area.

Section II. Supply Support

Supply is the acquisition, distribution, and care of material in storage, and the salvage of supplies. Supply includes the determination of kind and quantity of materials. Supplies include all items necessary to equip, maintain, and operate a military command.

In this section, the ADA platoon leader will receive a basic overview of how he can make the supply system work for him in his unit. Supply becomes a major effort in a combat environment.

CLASSES OF SUPPLY

The grouping of supplies into 10 classes provides meaningful major categories. Through this grouping method, items can be readily identified to each particular class.

CLASS I. SUPPLIES

Divisional ADA batteries normally draw rations from a DISCOM Class I distribution point located in the division or brigade support areas. When supply lines are long, the ADA battalion has the option to pick up Class I supplies and establish a battalion ration breakdown point for the batteries. Ideally, batteries prepare meals and the platoons pick them up at the battery trains area. However, time and distance factors make it impractical for the platoons to go back to the battery trains area for Class I; therefore, the ADA battalion uses battery LRPs to eliminate most of the time and distance problems.

CLASS II, IV, VI, VII, AND IX SUPPLIES

Divisional ADA elements submit their requirements for Class II, IV, VI, VII, and IX items to the appropriate DS unit which forwards them to the DMMC. The battery supply sergeants are responsible for ensuring that the requisitions go to the appropriate DS units and that a separate copy of each goes to the ADA battalion S4. The battalion S4 has the responsibility to ensure that proper coordination for supply and services is made, and that the requested items are delivered properly.

CLASS III SUPPLIES

The battalion S4 submits a periodic bulk POL forecast to the DMMC indicating any change to the previous consumption rates. Empty fuel tankers or containers presented at any distribution point may be filled with fuel as long as the ADA battalion S4 and the supported unit S4 have coordinated for POL. Batteries operating within a division send their assigned tankers to the closest division Class III distribution point for bulk supplies. When the battery POL distribution point is located within the BSA, coordination is made for the batteries to be allowed to pick up Class III at the brigade POL distribution point. When an ADA unit is not operating in a division or a brigade, its parent unit must coordinate for refueling with the nearest POL support facility.

The physical location of a platoon assigned a mission away from its parent battery makes it imperative to coordinate Class III, which will be supplied by the supported unit. Likewise, a battery tanker that goes forward to refuel the ADA element may help refuel some of the supported unit's vehicles. In either case, coordination between the ADA battalion S4 and the supported unit S4 is essential.

CLASS V SUPPLIES

Class V supplies are provided through ATPs or ASPs. The ADA platoon is resupplied with ammunition using the following procedures.

Ammunition Request

The ADA platoon leader keeps a daily record of ammunition expenditure by his platoon. He coordinates with the supported battalion TF S3 and S4 according to the ammunition report form which should be in the TSOP. The ADA lieutenant fills out the ammunition report listing the quantity needed. If the ADA ammunition is not listed in the

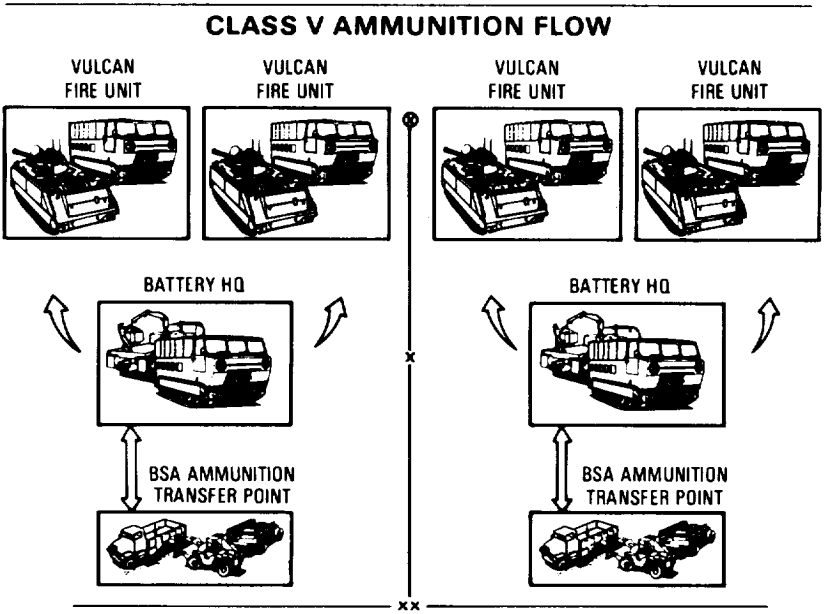
TSOP, the ADA platoon fills in a DODIC for each type of ammunition his platoon needs along with the correct nomenclature. The S4 fills out a request for the ammunition to the DAO. The ADA ammunition may be stocked at the ATP, but most likely will be stocked at the division ASP. Ammunition DODICs are shown in the Air Defense Artillery Ammunition DODIC illustration.

AIR DEFENSE ARTILLERY AMMUNITION DODIC

KIND	DODIC NUMBER
20-mm Linked all HEIT-SD-M246	A 792
20-mm Linked 4 HEI 1 TP-T	A 655
Redeye weapon	P JO1
Missile, Chaparral	P A44
Missile Round, Stinger	P L90
Weapon Round, Stinger	———

Ammunition Delivery

When the platoons request Class V resupply (in GS, R, or DS support relationship), the batteries move to the BSA and pick up ammunition. They then return to an RP close to the battery trains or platoon area. The platoon ammunition vehicles then move to the RP where a guide from the battery takes them to the rear. Resupply must be accomplished quickly. Ammunition is then trucked to the platoon position and loaded directly into the fire unit. The Vulcan fire unit ammunition distribution flow (as shown in the Class V Ammunition Flow illustration on next page) is from the BSA to the fire unit. For attached ADA unit Class V resupply refer to Section VI, Personnel Service Support.



CLASS VIII SUPPLIES

The medical company of the FSB provides division-level health services on an area basis. The ambulance platoon provides ground evacuation from unit-level medical elements of the combat and combat support battalions. The ADA battery medics requisition and receive their Class VIII supplies through the medical company of the FSB.

CLASS IX SUPPLIES

Repair parts and components are discussed in Section III, Maintenance. The availability of spare parts is an important factor in obtaining Class IX supplies.

OBTAINING SUPPLIES

The platoon sergeant or the platoon leader is the CSS coordinator for the platoon. The platoon sergeant informs the platoon leader of logistical requirements. The platoon sergeant keeps the platoon leader informed on the personnel and

equipment status. The platoon headquarters should do all CSS coordination for the entire platoon with the supported unit.

Normally, the platoon leader obtains all classes of supply in accordance with the battery's SOP. The battery's supply operating procedures are outlined and controlled by the battalion's logistics SOP.

If his element is attached to another ADA unit or a maneuver unit, the ADA platoon leader must coordinate with the appropriate officer or NCO from that unit to ensure that his platoon receives the supplies it needs. Also, he must ensure that all classes of supplies are available when his platoon needs them. This coordination is normally made with the TF battalion S4.

Once the supply requirement has been determined and requested, the platoon leader's representative should be available at all times to pick up and distribute these supplies. The platoon leader should supervise this distribution.

Remember, the most often needed supplies are food (Class I), fuel (Class III), ammunition (Class V), and spare parts (Class IX). The platoon leader always knows the platoon's supply status and ensures that:

Ž The platoon is properly fed and has adequate water for drinking and personal hygiene.

Ž The platoon is refueled in a concealed area or during hours of darkness if possible.

Ž Other supplies such as medical equipment, NBC equipment, tools, individual clothing and equipment listed in CTA 50-900, maps, batteries, and other expendable items are available before and during operations.

COMBAT SERVICE SUPPORT AT NIGHT

Principles of CSS in night operations are the same as those used during the day. However, at night, techniques are employed that assist in offsetting the effects of darkness. Consideration is given to the following activities:

• Additional security forces may be necessary to protect forward supply operations and prepositioned supplies.

• Personnel perform maintenance in temporary or permanent shelters or in total darkness using night vision goggles.

Ž Supply personnel must plan activities with careful consideration of the type of illumination they can use.

Ž Anticipated consumption rates for some items of supply increase. For example, shelters, batteries, and replacement night vision devices will be in greater than normal demand.

Ž Battery support personnel follow a predetermined work and rest schedule to ensure continual support for future operations.

While night combat affects all classes of supply, Classes I, III, and V present the most significant problems. As night combat activities increase, Class I supply points and kitchens may operate around the clock. In rear areas, battery mess teams may operate with filtered lights as long as they remain inside kitchen tents or other shelters. Most units in forward positions will feed a C-C-B ration cycle. Normally, A rations are not used during night combat since they must be prepared in the rear area and are usually cold by the time they reach forward positions. On the other hand, C and B rations can be prepared quickly and served hot in most situations. Battery commanders must also remember that when units are involved in night operations, a light meal should be planned between midnight and 0200. These are the hours when the body tends to slow down due to fatigue and the need for food is greatest. A hot liquid and some type of sandwich or fruit is recommended.

At night, the platoon sergeants may want to reduce the movement of their combat vehicles by guiding the ammunition and fuel trucks directly to each vehicle's fighting position. This technique is good but has some drawbacks. The noise generated by fuel dispensing units and the noise of ammunition being transferred from trucks to the fire units may be unacceptable. As an alternate method combat vehicles can return, one or two at a time, to a "service station" operation 100-200 meters behind the fighting positions. If the "service station" is in a depression or behind an embankment, the noises generated by the operation will be partially deflected. This method of resupply also offers some protection from snipers and other direct fire weapons. After completing resupply, the platoon sergeant returns the CSS vehicles to the RP for their return to the battery.

Section III. Maintenance

Properly performed maintenance keeps equipment combat ready. Maintenance functions include inspecting, testing, servicing, repairing, requisitioning, recovering, and evacuating equipment, vehicles, and radios. The operator is limited to checking and replacing easily accessible items (for example, tires, tracks, and lubricants). When the operator discovers a fault which he cannot repair, he is responsible for reporting it to his first line supervisor.

Maintenance tasks are divided into three categories for repair (unit maintenance, intermediate maintenance, and depot). The platoon leader is primarily concerned with the unit level of maintenance.

UNIT MAINTENANCE

Unit maintenance is the responsibility of the unit assigned the equipment. It is performed by the crew member and the unit's mechanics.

Crew or operator maintenance includes proper care and operation of equipment. The crew members perform preventive maintenance checks and services on all assigned equipment. These services include inspecting, cleaning, lubricating, and adjusting.

Checks and services that must be performed are divided into three groups. They are as follows:

Ž Before-operation checks and services.

Ž During-operation checks and services.

Ž After-operation checks and services.

The vehicle operator's manual (the -10 series) lists these checks and services and their procedures. Leaders must make sure checks and services are performed using the operators' manuals and not from crew members' memories. Crew members must record any equipment faults they cannot correct on a DA Form 2404. This form will be turned over to the platoon sergeant. The platoon sergeant will give a copy of the DA Form 2404 to the appropriate maintenance team. The maintenance team has mechanics who are trained to help crew members repair equipment faults. Mechanics have test equipment that allows them to identify and correct faults rapidly. Faults beyond the unit level of repair are referred to the supporting intermediate maintenance activity via a job order utilizing the DA Form 2407.

INTERMEDIATE MAINTENANCE

Intermediate maintenance support and repair parts supply are provided by intermediate maintenance units composed of ordnance, signal, and engineer trained personnel. Intermediate maintenance is organized into DS and GS elements. IDSM units support divisional elements. IDSM is characterized by high mobility and a forward orientation. MSTs from IDSM support units can be sent forward to make on-site repairs. IGSM is accomplished at echelons above corps.

CREW AND LEADER RESPONSIBILITIES

To function effectively as a team, each team member must not only know his own responsiabilities, but must also know those of the other team members. For effective unit maintenance support, the responsibilities of the chain of command and other individuals affecting maintenance must be defined.

SQUAD OR CREW MEMBER

The squad or crew member performs operator or crew maintenance on his track, weapon system, and all assigned equipment. He performs preventive maintenance checks and services and prepares operator or crew forms and records. As a crew member, he maintains the automotive and turret systems of his vehicles, the communications system, NBC equipment, ammunition, basic issue items, components of the end item, and other authorized equipment. He participates in field recovery, application of field expedients, and initial battle damage assessment. As a licensed operator, he is required to operate the vehicle and equipment in a safe manner.

The squad or crew member must apply his individual skills both in the field and in garrison. To be successful, he must use the appropriate operator TM and LO and must adhere to the readiness criteria and unit SOP. The crew member must know preventive maintenance checks and services; operator and crew forms and records; use of operator controls and indicators; ammunition maintenance and storage; supply accountability; and maintenance of basic issue items, components of end items, and additional authorization list equipment. He should understand the principles of recovery, crew duties for periodic services, initial battle damage assessment for his crew equipment, and the application of field expedients. In addition, the crew member should know how the forward maintenance support concept will support his mission on the battlefield. The squad or crew member is the basic maintainer of air defense weapons.

SQUAD OR SECTION LEADER OR CREW CHIEF

The squad or section leader is responsible for the combat readiness of his vehicles and all assigned weapons and equipment. He trains his crew in the performance of all operator maintenance tasks. He uses the appropriate operator TMs and LOs to conduct maintenance and maintenance training. The squad or section leader supervises all crew maintenance functions and prioritizes tasks that must be accomplished. He inspects crew equipment and applies readiness criteria to

deficiencies. The squad leader or crew chief is responsible for the safe operation of his vehicle and the driver training of his crew. He hand receipts all equipment and must fully understand the user hand receipt procedures.

Crew chiefs and squad leaders must ensure the proper operation of their vehicles and equipment. They must be fully skilled in operator level troubleshooting, recovery operations, and application of field expedients. Crew chiefs and squad leaders make the initial battle damage assessment. They should understand the forward maintenance support concept and mission and capabilities of the forward support maintenance team. The squad leader and or section sergeant is an integral part of the maintenance chain of command. Squad leaders and section sergeants should fully understand the capability of their vehicles and crews and be able to assess their ability to move, shoot, and communicate.

PLATOON SERGEANT

The platoon sergeant is the maintenance coordinator for the ADA platoon. He is the chief advisor to the platoon leader on all maintenance matters. He provides quality control for all crews' maintenance and close supervision of crews during maintenance activities. The platoon sergeant, with the platoon leader, supervises platoon maintenance training. He ensures high maintenance standards through on-the-spot corrections and scheduled inspections.

The platoon sergeant supervises precombat checks, recovery operations, initial battle damage assessment, and the application of field expedients. As a maintenance supervisor, he must know how to complete and process operator and or crew forms and records. He must also know readiness reporting criteria and the general capabilities of the battery and battalion maintenance teams. He should understand the forward maintenance support concept and the relationship between his platoon, the battery's maintenance team, and the supported unit's maintenance procedures.

PLATOON LEADER

The platoon leader is an integral part of the maintenance chain of command. He possesses the individual skills of the squad or section leader and crew member, and he possesses the supervisory or organizational skills of the platoon sergeant.

The platoon leader should be able to safely operate all assigned platoon equipment. He

must be especially skilled in operating procedures, preventive maintenance checks and services, troubleshooting in accordance with the operator's TM, the preparation of operator or crew forms and records, and recovery operations.

The platoon leader and the platoon sergeant are responsible for crew maintenance training to include effective driver training. The platoon leader supervises platoon maintenance periods, preparation of vehicles for repair at battalion or DS level, and participation of the crew in periodic services. He conducts scheduled and unannounced inspections of all platoon equipment.

The platoon leader ensures a high standard of maintenance. He ensures that all deficiencies are being reported in accordance with published readiness criteria. A part of his inspection will include a review of operator or crew forms and records. The platoon leader prioritizes battlefield recovery at platoon level and determines proper recovery procedures. The platoon leader and platoon sergeant are the first individuals above the squad or team leader to perform initial battle damage assessment. Accordingly, the platoon leader must be able to relate observed symptoms to probable faults.

The platoon leader must have the knowledge and skill to plan and supervise effective maintenance periods. He also knows the responsibilities of crew members during periodic services and the preparation of vehicles for repair and recovery. The platoon leader must be able to apply readiness reporting criteria to deficiencies reported on vehicles and equipment. He should be proficient in proper inspection techniques (what to inspect, when to inspect, and how to inspect).

Platoon leaders must understand the mission of the battery and battalion maintenance teams and how they can serve his platoon. He should possess the knowledge to supervise precombat checks, preventive maintenance checks and services, applications of field expedients, vehicle recovery operations, and the performance of initial battle damage assessment. He must understand the forward support maintenance concept and his platoon's relationship with the unit's maintenance team, to include its mission and capability.

FORWARD SUPPORT MAINTENANCE CONCEPT

The equipment operator or crew member initiates the maintenance process on-site. Equipment may be mired, have a mechanical or electrical failure, or be damaged by accident or enemy action. The operator or crew member begins corrective action.

Corrective action includes the following:

- Making an initial status report to the platoon leader describing the inoperable conditions, location, and circumstances.

Ž Using another vehicle to tow inoperable equipment subject to hostile fire to a secure location as quickly as possible.

- Screening combat recovery operations with smoke.

- Estimating the situation to determine support requirements.

- Using self-recovery, field fixes, expedients, and assistance from other elements in the vicinity to put a vehicle back into action.

- Requesting assistance from the platoon sergeant.

When the platoon sergeant and the platoon leader determine repair is beyond the platoon's capability, they contact the battery maintenance officer who dispatches the battery maintenance team. The battery maintenance team may also request the intermediate support maintenance team for on-site repair. Procedures for requesting support are spelled out by the unit SOP to include applicable communications security requirements. Information required includes the following:

Ž Unit identification.

Ž Equipment identification.

Ž Location (grid coordinates).

Ž Nature of damage.

Ž Evaluation of on-site repair — extent of damage, level of repair, and estimated time required. (Only maintenance personnel are qualified to determine level of repair and estimated time required.)

- Required repair parts.

- Enemy situation, security, and NBC consideration.

- Recommended route of approach.

- Pickup points for unit guides if required.

Should the vehicle be repaired on site or evacuated to the rear? The unit maintenance and TSOPs will outline specific procedures to follow once the maintenance team confirms vehicle battlefield damage. As the platoon leader, you must know your unit's maintenance and TSOPs and understand how they work.

DESTRUCTION

Every effort is made to evacuate damaged equipment, but when this is impossible, it must be destroyed. Platoon leaders must make sure crews are trained to destroy the vehicle rather than

allow it to fall into enemy hands. The operator's manual explains how to destroy each item of equipment. Also, your unit SOP will outline procedures pertaining to the destruction of damaged equipment. Usually, the platoon leader must obtain the battery commander's approval before destroying any equipment.

Section IV. Personnel Service Support

PSS consists of the following functions: personnel services (strength accounting, casualty reporting, replacement operations, awards, promotions, et cetera), administrative services (correspondence preparation, files or records management, reports and forms control, et cetera), health service support, finance support, postal services, chaplain activities, legal service support, morale and welfare support activities, and public affairs. This support is divided into two general categories — combat critical and sustainment. The combat critical category is made up of personnel services (the three subfunctions of strength accounting, casualty reporting, and replacement operations) and health service support. All remaining PSS functions are classified as sustainment.

PERSONNEL SERVICES

The platoon normally receives sustainment oriented support as a matter of course (such as mail delivery) or as the result of the company's coordination with a given unit or agency (such as finance support). On the other hand, the combat critical functions require the active participation of the platoon. With regard to personnel service, this participation generally consists of forwarding information to the unit first sergeant and receiving replacement personnel.

BATTLE ROSTER

The platoon sergeant or platoon leader maintains a platoon battle roster. The battery first sergeant receives a copy of the platoon battle roster. The platoon battle rosters provide the information for the battery battle roster.

CASUALTIES

When casualties occur or a soldier is missing, the individual who witnesses the event fills out DA Forms 1155 and 1156 by hand. He then forwards them through the platoon sergeant to the first sergeant.

REPLACEMENTS

The platoon must make replacement personnel feel welcome, and must integrate them into the platoon as quickly as possible. The reception a replacement receives has an impact on unit cohesion. It affects the time it takes to make the replacement an integral part of the platoon.

HEALTH SERVICE SUPPORT

Health service support also requires platoon participation and the participation usually falls into one of two areas — prevention and treatment. Prevention deals largely with personal hygiene and actions taken to limit the effects of weather. Treatment entails care of the sick as well as care of casualties (both dead and wounded).

STANDARDS

Leaders must emphasize high standards of personal hygiene. To ensure a proper seal on his protective mask, each man must shave daily. Regular bathing and clothes changing are necessary to prevent disease. Each man should carry shaving equipment, soap, a towel and face cloth, and a change of clothing in a waterproof bag inside his field pack or duffle bag. Hands and feet must be checked regularly during cold weather to avoid trench foot, frostbite, or immersion foot. Wind chill causes effects on exposed skin equal to those of much lower temperatures than the thermometer shows. A moving vehicle produces wind chill even if the air is calm.

CASUALTIES

A crew member must administer first aid to a wounded soldier and notify his first line supervisor. If a wounded soldier requires evacuation, the first line supervisor will request assistance through normal SOPs. The squad or section leader is responsible for recovering the casualty's weapon and other personal effects. The platoon will handle those items in accordance with the unit's SOP.

REMAINS

The battery commander will designate a collection point for soldiers KIA. The personal effects of KIAs are treated the same as those of the wounded. The remains of soldiers KIA must be evacuated separately from soldiers wounded in action. Your unit's SOP will outline procedures pertaining to tagging and reporting KIAs. If GRREG assets have not yet arrived in the theater, KIAs may have to be buried by the unit and marked for later recovery by GRREG assets.

Section V. Prisoners of War and Civilians

EPWs are valuable sources of intelligence and must be processed and evacuated to the rear quickly. When prisoners are taken, notify the XO or first sergeant. The commander will designate an EPW collection point in his OPORD. EPWs are taken to the collection point as soon as possible by the commander's designated representatives. EPWs are then evacuated to the rear, normally under the control of the first sergeant.

HANDLING PRISONERS OF WAR

An enemy soldier may have a hidden weapon, he may be booby-trapped, or he may be luring you into an ambush. If he indicates he wants to surrender, gesture for him to come forward. Never approach him. With a thermal sight, scan the area around the EPW, if feasible, for possible ambushes. When you search an EPW

always have another friendly soldier cover him with a weapon. Do not get between the EPW and the soldier covering him. Remember, never underestimate the power of the enemy.

The United States has agreed to observe the rights of EPWs established by international law. Once an enemy soldier shows he wants to surrender, we must treat him humanely. It is a crime to physically or mentally harm or mistreat an EPW.

The senior officer or NCO is legally responsible for the care of EPWs. The unit must provide a prisoner with food, water, and medical treatment if it cannot evacuate him within a reasonable time. Mistreated EPWs or those who receive special favors are not good interrogation subjects. EPWs should not be given comfort items (cigarettes, candy, and so forth) before their first interrogation.

Before evacuating the EPW, the team attaches a tag to him. Tags may be preprinted or made of material available on the battlefield. Your unit SOP will outline specific procedures for tag ging EPWs.

Captured enemy documents (maps, orders, records, and photographs) and equipment are excellent sources of intelligence. If captured items are not handled properly, the information may be lost or delayed. The platoon should tag each item. Rapidly evacuate captured documents and equipment to the next level of command.

In handling EPWs, use the following five basic principles (the 5Ss).

SEARCH

Remove and tag all weapons and documents. Return to the EPW personal items of no military value. Allow the EPW his clothing, helmet, and protective mask.

SEGREGATE

Break the chain of command; separate EPWs by rank, sex, and other suitable categories. Keep a captured fighter away from those who surrender willingly.

SILENCE

Prevent EPWs from giving orders, planning escapes, or developing false cover stories. EPWs must be kept under close observation at all times.

SPEED

Speed EPWs to the rear to obtain and use their information. Information obtained from EPWs can play an important part in planning missions.

SAFEGUARD

Prevent EPW escape and harm. Protect all EPWs from violence, insults, curiosity, and reprisals. All EPWs become the responsibility of the holder and international laws must be respected.

HANDLING CIVILIANS

Captured civilians are treated the same as EPWs. Civilians are processed by civil affairs officers who make the final decisions as to how the civilians are controlled.

Section VI. Combat Service Support When Attached to a Maneuver Force

Support of a maneuver brigade will pose special logistical problems for the ADA platoon. This situation is compounded when the platoon, as part of the maneuver brigade, is attached to a TF or maneuver unit. The ADA platoon leader must make sure the appropriate maneuver unit officer and NCO are aware of all logistical support requirements.

SUPPLY

ADA weapon system ammunition resupply, personnel feeding, and vehicle refueling are usually the primary concerns when a platoon or section is attached to a TF. Normally your parent battery will resupply and rearm your platoon. However, as the ADA platoon leader you must ensure that resupply is readily available through all channels regardless of your platoon's support role.

MAINTENANCE

Trained mechanics are part of a good maintenance program. This program includes mechanics from your unit and mechanics from units you support. As the platoon leader, you must ensure that the right maintenance personnel are informed of

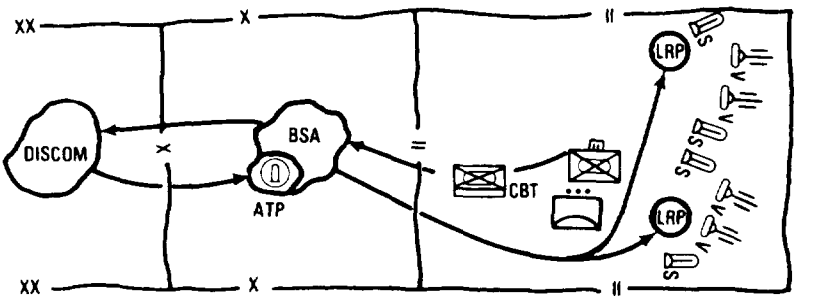
maintenance problems and evacuation or recovery requirements. You must ensure that on-site repairs are performed properly and in time to fulfill mission requirements. It is imperative that an ADA platoon supporting a maneuver element have a maintenance team from the parent battery to repair the air defense systems. These maintenance teams receive a share of the battery POL required to support platoon vehicles, and then ride with the platoon leader or platoon sergeant.

Maneuver forces will provide the maintenance support for common equipment (radio, tracked and wheeled vehicles) but, if the force is very large, it may require maintenance teams from the parent battery for communications and vehicle main tenance. All maintenance teams originating from the parent battery should be attached to the ADA platoon to preclude their being concentrated on non-ADA systems.

AMMUNITION DELIVERY

The ADA platoon receives Class V (ammunition) supplies by coordinating with the supported force S4. The S4 communicates with the battalion field trains. If the battalion field trains do not have the requested ammunition, the S4 coordinates with the BSA. If the requested ammunition is on hand at the BSA, the platoon ammunition vehicle can pick up the ammunition at the brigade ATP (see the Ammunition Delivery by LOGPAC illustration) and return it to the battalion with the LOGPAC. The platoon sergeant may have to go to the division ASP to pick up ADA-peculiar ammunition such as missile rounds. The returning LOGPAC delivers supplies to each battery team area LRP. The squads or crews then pick up their ammunition at the LRP.

AMMUNITION DELIVERY BY LOGPAC



Appendix A

OPERATIONS IN SPECIAL ENVIRONMENTS

In support of operations, the basic principles and guidelines for the employment of Chaparral, Vulcan, and Stinger units do not change. They must, however, be adapted to conform with the methods of operation of the supported force. This appendix addresses the peculiarities associated with the tactical employment of ADA units in support of military operations in urban terrain and river crossing, airborne, and air assault operations.

AIRBORNE OPERATIONS

Airborne units are characterized by their ability to deploy within 18 hours anywhere in the world by parachute or air-land operations. Because of their unique mission, the units of an airborne division are designed to be tailored to meet the requirements of any mission.

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ORGANIZATION AND EQUIPMENT

An airborne air defense artillery battery is organized under the L-series TO&E with a headquarters element, three Vulcan gun platoons — each platoon has three guns — and a Stinger platoon with 20 crews organized into four sections of five crews each. The air defense artillery battalion has three firing batteries and one headquarters battery which has a FAAR platoon comprised of four radar systems.

OPERATIONS

Airborne operations are normally conducted in two phases: the assault phase and the follow-on phase. In the assault phase, combat and combat support elements from a battalion TF conduct parachute or air-land operations and seize assault objectives to develop the airhead for possible follow-on forces.

Air defense platoons and sections normally conduct very decentralized operations. Platoons and sections are normally attached to infantry battalion TF for deployment and the initial assault phase. Platoons remain attached until their parent unit arrives into the area of operations and establishes command and control.

AIR DEFENSE OF AIRBORNE OPERATIONS

Normally one Vulcan platoon and one Stinger section are attached to each task force initially. The Vulcan platoon leader exercises the ADO duties for the TF. He must analyze the mission, determine the priorities, and make recommendations to the battalion TF commander on how best to deploy, cross load, assemble, and employ his air defense systems. The platoon leader must thoroughly understand the commander's concept of the operation and his intent. He must further ascertain what is the most critical asset to be protected —the assault forces, assault objectives, or the actual airhead, including the airfield.

The decision to protect an asset is driven by the concept of the operation. If the airhead is to be expanded for follow-on forces, more air defense coverage may be given to the airhead. If the mission is to conduct a quick strike and be extracted, then more coverage may be given to the assault force and the assault objectives. The final decision rests with the platoon leader and his understanding of the commander's intent.

When the parent ADA unit arrives in the objective area, command and control will normally re to the battery commander.

EARLY WARNING

In the initial phases of an airborne operation, early warning for autonomously operating platoons and sections from organic assets is non-existent. Platoon and section leaders must actively search out any means available from TF assets to gain early warning information. A good source of early warning at TF level may be USAF TACPs and ALOs or Army aviation liaison officers at brigade level. In the case of brigade liaison officers, the air defense coordination team at the maneuver brigade may be able to coordinate these efforts and, at a minimum, alert the platoon leader to friendly aviation activities.

AIR ASSAULT OPERATIONS

Air assault operations refer to those operations by which forces maneuver on the battlefield using helicopters and air assault trained soldiers to engage and destroy enemy forces. Air assault techniques apply to combat, combat support, and combat service support forces using firepower, mobility, and total integration of helicopter assets in their ground and air roles. All other operations in which Army airlift assets are used to move troops and or equipment are referred to as "air movement."

ORGANIZATION AND EQUIPMENT

An air assault air defense artillery battery is organized under the J-series TO&E identical to the airborne air defense battalion. It has the same number of platoons and weapon systems.

OPERATIONS

Air assault operations are the primary method of combat used by the air assault division. This division is comprised of enough organic aircraft to support a large scale or several small scale operations simultaneously. As the air assault division is characterized by its ability to swiftly move about the battlefield, an air assault operation usually is made up of a battalion size TF known as the AATF. The AATF will conduct an air assault that will transport it from a PZ to a LZ which places it in the vicinity of the objective. Once the AATF has completed the air assault, it masses combat power to attack the objective.

AIR DEFENSE OF AN AIR ASSAULT OPERATION

During air assault operations, the air defense units protect those priorities which are the most critical to the ground force commander. Typical priorities include: aviation assets, forward arming and refueling points, aviation maintenance and support facilities, aviation laager area, forward operational base (during cross FLOT operations), and assault landing zones.

To best support the AATF's operation, the air defense platoon leader must understand the supported commander's mission and concept of the operation. The air defense platoon leader then recommends to the ground force commander air defense priorities and designs the defense.

The size of the ADA force in support of the AATF may consist of either a section of Stingers, a platoon of Vulcans, or a platoon of Vulcans with an attached Stinger section.

Close coordination must be made with the AATF S3 Air (PZ control officer) by the ADA platoon leader. The platoon leader must incorporate his ADA elements into the air assault lifts, keeping in mind that the ADA elements should be among the first lifts to quickly provide air defense coverage for the LZ.

Stinger crews are normally deployed first because they need little or no preparation for air assault operations and because of their ability to quickly become operational once they are on the ground. After the Stingers have been deployed, the Vulcans should be airlifted as soon as possible to provide a mix and mass of ADA resources at the LZ.

After the air assault has been completed, the ADA platoon leader will consolidate his air defense forces to support the scheme of maneuver and concept of the operation to seize the objectives.

Extraction of air assault forces also requires close coordination with the AATF. Normally Vulcans will be extracted first, followed by MANPAD crews.

EARLY WARNING

As is the case with airborne forces, the air assault air defense forces may not have organic FAAR radars available to receive early warning. Platoon and section leaders should actively search out any means available from TF assets to gain early ning information. Some early ning assets include TACPSs ALOs, and the ADCT at brigade.

OTHER CONSIDERATIONS

In any type of defense (even those involving air assault operations) a gun and missile mix is always desirable but may not be practical due to restraints which are commonly associated with air assault operations in the defense, offense, or delay. Leaders, when planning the air defense support of such operations, must consider a variety of factors.

Mobility

When ADA assets are expected to air assault, the assets that can be airlifted must be considered in light of available airframes and lift capability. When limitations are necessary, a tradeoff between weapons and prime movers and their respective numbers may occur. For example, MANPAD teams are lighter than Vulcan squads particularly in relationship to its prime mover; if ADA assets are expected to maneuver once air assaulted, sufficient prime movers will be necessary.

Reaction Time

MANPAD teams have a faster crew drill and rigging reaction time than towed Vulcan which makes them ideal as the first type of air defense air assaulted onto an objective area and the last out. However, additional consideration is necessary if ADA assets are required to travel moderate distances from an LZ to their air defense positions.

Security

Security at both the LZ and PZ or objective area is important. If enemy air attack is a threat at the PZ an ADA commander may have to provide for its air defense, appropriately breaking the defense down by echelon in order to air assault with his supported unit. Equipment (where possible) should then be rigged under concealment and moved to the PZ just prior to airframe arrival. Equipment to be left on a PZ for extensive periods should be camouflaged by natural means. At the LZ or objective area, air defense elements may have to setup temporary, close in positions until the appropriate areas can be secured that will enable the ADA weapons to be deployed farther from the asset. Careful supervision must be undertaken during such expanded deployment to ensure ADA assets do not go beyond outermost friendly positions. Likewise, well planned evacuation routes will facilitate rapid removal of assets if necessary. Placement of any ADA elements must be thoroughly coordinated with the supported commander.

RIVER CROSSING OPERATIONS

In most areas of the world where operations are conducted, ADA units will be required to support river crossing operations.

River crossing operations are either hasty or deliberate operations. In either case, considerations are common to providing air defense of a choke point because our forces are massed in a small area, thus providing the enemy a target-rich environment. Factors of METT-T must be continuously monitored to determine whether the crossing will be opposed or unopposed. Planning and continuous coordination is critical to successfully providing adequate air defense coverage for the force.

PLANNING CONSIDERATIONS

In addition to normal troop-leading procedures and an analysis of METT-T, the following must occur as the platoon leader prepares his systems to defend and negotiate a water obstacle:

- Know where local security is positioned.
- Conduct a thorough reconnaissance.
- Decide on the most suitable method to cross the river (use of an AVLB or swim and or ford the obstacle).
- Prepare for the crossing (vehicles, personnel, equipment, entrance and exit points, locations to best support the operation from the near and far banks).
- Plan for continuing the mission once the crossing has been completed.
- Consider the effects smoke will have on the gunners' visual acquisition and identification of targets. As a minimum, ask the following questions:
  - What are the primary and alternate crossing sites?
  - Where are primary and deceptive smoke sites?
  - How large is each area to be smoked?
  - What are the times smoke will be used?
  - What are the wind and weather effects on the smoke and its direction of drift.?

Ensure the long axis of the river is protected, as it is an excellent avenue of approach for attacking aircraft. Also, look for likely terrain features on the far side that enemy helicopters may use for hide and fire positions.

EXECUTION OF A HASTY OR DELIBERATE CROSSING

The platoon leader supporting a maneuver force is obligated to provide air defense of the force at the crossing sites. To accomplish this, he must take inventory of all the air defense assets available to the force and plan to protect the force from the near bank

assembly areas, as they cross the river, at the exit points on the far bank, and as the force continues its combat operations.

Normally a mix of missiles and guns should be afforded the TF. Stinger and Chaparral should support the operation initially from the near bank because of their long range. Guns cross the river to the far bank with the assault forces because of their inherent ability to provide self-defense ground fires if enemy contact is made. When the guns have established air defense coverage on the far bank, some of the missile systems are "leapfrogged" across the river. Once missile systems are on both sides of the river, guns can then continue, moving with the lead elements TF. When the entire force has crossed the river, an integrated gun and missile defense can be designed for the TF.

HOW TO CROSS THE RIVERS

Weapon systems that are capable of swimming or fording water obstacles are usually expetted to do so rather than use the bridge site. Using the bridge site for systems that cannot swim must be coordinated with the maneuver commander.

MILITARY OPERATIONS IN URBANIZED TERRAIN

Many areas of the world, especially Western Europe, have experienced massive growth in built-up areas and man-made changes to the natural landscape. These changes significantly affect potential future battlefields. Avoidance of built-up areas is no longer possible. Rather, military operations in built-up areas are an integral part of military operations.

The defender has certain advantages in the use of built-up areas. He has superior protection, which is readily available, as well as concealment and cover routes of movement within the area. On the other hand, the attacker can isolate and bypass some built-up areas but will be required to attack others. Both attacking and defending forces will take advantage of the cover and concealment offered by built-up areas to locate command posts, stock of supplies, and combat service support units.

MOUT CHARACTERISTICS

Urban combat is normally characterized by the following:

- Reduced mobility.
- Instant fortified positions.
- Restricted observation.
- Reduced range or lethality of weapons.
- Reduced range of radars.

Ž Increased problems of civilian control.

Ž Reduced effectiveness of reconnaissance and surveillance sensors.

Ž Complicated command and control procedure.

Ž Reduced range of FM radio communications.

AIR DEFENSE CONSIDERATIONS

Platoon leaders must thoroughly understand the commander's concept of the operation for attacking or defending an urban area.

In the offense, likely air avenues of approach into the urban area can be covered by employing Vulcan or Chaparral on the outskirts of the city on key terrain features along likely air avenues of approach.

In defensive operations of a built-up area, MANPAD crews can be employed from rooftops or key terrain. Vulcan and Chaparral can be employed on the outskirts of the city or in open areas such as parks, fields, and rail yards.

Appendix B

OPERATIONS PLANNING AND PLATOON OPERATION ORDER

Certain types of ADA operations may require specific coordination not listed herein. The planning examples and coordination checklists presented in this appendix may be used as basic guidelines for support coordination. They should not be construed as being all inclusive.

AIR DEFENSE ARTILLERY PLANNING STEPS (TROOP LEADING PROCEDURES)

Planning an operation is extremely crucial at platoon level. The best executed plan that was doomed to failure from the start cannot possibly secure victory for our forces. Some missions will require extensive planning, while for others only a minimum amount of planning will be necessary. In either case a well thought out course of action, coupled with efficient use of time, gives the platoon a decided advantage in which to execute actions to win on the air-land battlefield.

The following steps provide a guide. ADA leaders should follow this guide to effectively plan a mission.

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Planning Sequence Example	B-5
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STEP ONE – RECEIVE THE MISSION

Think through your mission to be certain that you understand what is to be done. Your most critical resource when you have a new mission is time. Analyze mission type: convoy, stationary asset, maneuver force, and the NDP.

Plan use of available time. Backward plan from the mission effective time. Ensure that you have a "buffer time" built in to your planning for unexpected delays. Examples of the various times you should plan for are:

Ž In position and ready for action.

Ž Emplacement time.

Ž Movement time from RP to positions.

Ž Convoy time.

Ž SP time.

Ž Time required to brief squad leaders and crew chiefs on OPORD.

Ž Ammunition, POL, and rations resupply time.

- Meal time.
- Maintenance time.
- Time necessary to set up a hasty defense.

Ž Movement time to rallying point or SP (based on farthest squad).

Ž March order time.

Ž Ground reconnaissance time (if possible), including primary route to area and alternate route back.

Ž Time required to pass warning order to squads and crew.

Ž Time of receipt of new mission.

STEP TWO – ISSUE A WARNING ORDER

Issue a warning order immediately upon receipt of a warning order from higher headquarters. Tell your men what the mission is, when it is to take place, what initial preparations they should make, and when you intend to issue a detailed plan.

You may only have time to issue the warning order to your next in command. In this case he should ensure all the men in the platoon understand the mission, critical times, and required preparatory actions.

STEP THREE – MAKE A TENTATIVE PLAN

In making a tentative plan the following items must be considered and included. Study the use of terrain and analyze the terrain from a map, sketch, or aerial photograph for:

Ž Critical terrain features.

• Observation and fields of fire.

• Cover and concealment.

• Obstacles.

Ž Avenues of approach: air (helicopter) and ground (armor and dismounted infantry).

Ž Trafficability and accessibility.

Determine the best location for the platoon CP by considering the following:

• Centrally located with respect to the platoon or collocated with the unit you are supporting.

• Sufficient area for dispersion.

Ž Alternate entrance and multiple exit routes.

Ž Defendable against ground attack.

Ž Communications with higher, lower, and adjacent units.

Weapons squad and crew positions are determined by considering:

Ž Maximum observation and fields of fire on high ground over probable avenues of approach for aircraft.

• Mutual support and overlapping fires provide maximum coverage of other squads and crews if possible.

Ž Defense in depth.

Ž Good communications with platoon CP, adjacent squads and crews, and FAARs.

• Good access and exit routes.

• Defendable against ground attack.

FAAR positions should be selected based on their ability to effectively provide EW to the unit. FM 44-6 details the positioning requirements for FAAR.

NDPs must be planned and coordinated. A decision must be made whether the platoon will NDP with a supported unit, the battery, or independently.

Rallying points should be designated along the route of march. These rallying points will serve to centrally locate all squads to issue orders and conduct follow-on operations.

Analyze the enemy's strengths. Also analyze his locations, dispositions, and capabilities when this information is available.

Certain items must be taken into consideration when planning. You must arrange for movement of the unit (when, where, how), reconnaissance (select route, time schedule, persons to take along, use of subordinates), and issuing the order (notify subordinate leaders of time and place for final order and other instructions).

When coordinating with adjacent and supporting units, consider:

• Mission of higher unit.

Ž Routes of march.

Ž Attachments.

- CEOI.
- Artillery (FA and ADA).
- Ž Evacuation of casualties.
- Handling of POWs.
- Obstacles.
- Ž Guides.
- Ž Manual SHORAD control system, EW net.

Battery and platoon leaders must coordinate among themselves concerning fire unit and FAAR positions. Each must know the other's locations at all times.

STEP FOUR – INITIATE NECESSARY MOVEMENT

Rather than let the squads sit around waiting for the OPORD or FRAGO, the squad march orders (if tactically feasible) and moves to a rally point from which they can join the platoon convoy easily. By this action considerable time can be saved.

STEP FIVE – MAKE A RECONNAISSANCE

To be able to design the best defense, you must see and evaluate the terrain on which you will fight. There will be times when you can only make a map reconnaissance. However, if any time at all is available and you have the first four steps in hand, get out on the terrain. It is during this reconnaissance that you confirm your tentative plan or modify it as necessary to ensure a good defense.

STEP SIX – COMPLETE THE PLAN

Based on your reconnaissance you may or may not alter the tentative plan, but you will certainly add detail. Receive recommendations from your subordinates, complete your estimate, change the preliminary plan as needed, and prepare the OPORD.

STEP SEVEN – ISSUE THE OPERATION ORDER

When issuing orders, make sure that each man knows how you expect to accomplish the platoon's mission and how he fits into the plan. You should also tell him what to do if you lose contact during the air battle. Include orientation on terrain if possible.

STEP EIGHT – EXECUTE AND SUPERVISE

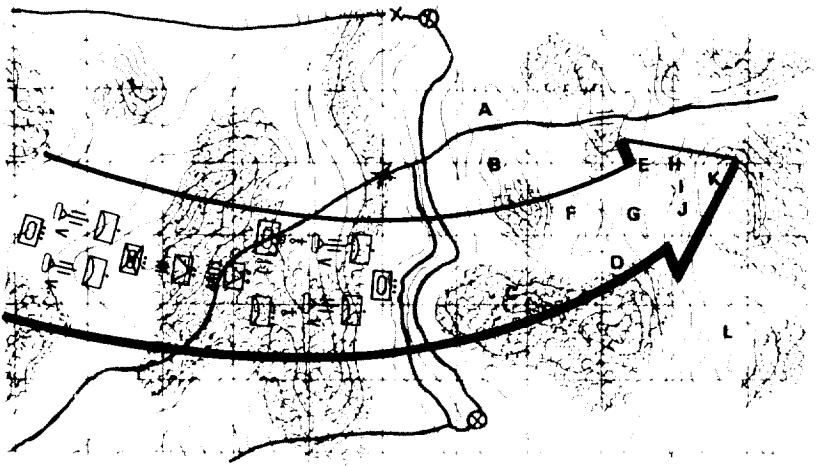
Check and double-check your squads. Adjust the coverage as necessary to support the operation and keep the battery commander informed of your platoon's status at all times.

PLANNING SEQUENCE EXAMPLE

The 54th Mechanized Infantry Division has lost contact with the enemy and has the mission of reestablishing contact. Battery B (Vulcan) is assigned in direct support of the second brigade. After coordinating with the supported brigade commander, the Bravo battery commander assigns LT Wise's Vulcan platoon a direct support mission of a company-size tank-mechanized infantry team that will spearhead the brigade's movement to contact the enemy.

The team's initial mission is to lead the brigade until contact is made and to challenge the enemy to determine his strength at the point of contact. The team will then deploy to defend against a counterattack and await instructions. If no contact is made, the team will occupy objective Kilo and await orders as shown in the Vulcan Platoon with the Company Team illustration.

VULCAN PLATOON WITH THE COMPANY TEAM



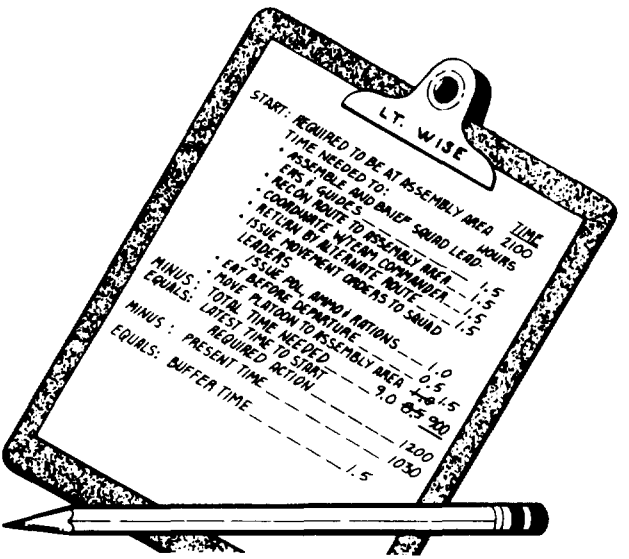
After receiving the verbal OPORD from his battery commander, LT Wise goes to his platoon's location to plan the operation. On the way he begins analyzing the mission and the time he has available. He makes some notes to himself to assist his planning.

PLANNING

The first thing LT Wise did was determine that the mission was the defense of a maneuver force. He then did his backward planning of time as shown in the Backward Planning illustration.

LT Wise has to move his platoon under cover of darkness to avoid being detected. He must arrive by 2100 that night. Looking at his map, he estimates the distance from his platoon's present location to the assembly area as approximately 16 kilometers, which he converts to 10 miles because the speedometer in his APC reads in miles per hour. He knows from experience that 10 miles per hour is the maximum speed his platoon can move under blackout conditions.

BACKWARD PLANNING



Because the squads are deployed, LT Wise can conduct his map reconnaissance and prepare his warning order while the squad leaders and guides are being brought in. He can give the OPORD to his squad leaders during the time allotted for issue of POL, ammunition, and rations. The buffer time (not always available) should be used in areas where the allotted time may not be enough. LT Wise decides to allow an extra half-hour to move the platoon and use the remaining 1.5 hours as needed during the ground reconnaissance. He changes his planning table accordingly.

When LT Wise arrives back at the platoon area, he notifies his squad leaders to assemble for a briefing. While they are coming, he conducts his map reconnaissance. He selects a primary and an alternate route to the assembly area considering concealment from enemy observation, conditions of the route, and any danger areas that the platoon might have to go through, such as road junctions, towns, and bridges. Road junctions may become tied up if there is a lot of traffic. They may also be targeted by enemy artillery. Vehicles may have to bunch up in towns, creating lucrative targets for artillery or air attacks. Bridges marked on a map may have been destroyed or may not have a weight capacity to support a Vulcan crossing it. During his ground reconnaissance, LT Wise will check the routes for these trouble areas to ensure that his platoon can arrive safely at the assembly area. The squad leaders arrive and LT Wise issues the warning order to them.

Because he has enough time to conduct a ground reconnaissance, LT Wise next plans the reconnaissance party. Keeping the number to a minimum, he decides to take himself, his driver, and one man from each squad to act as a guide. The guides will direct the Vulcans from the RP point at the assembly area to the positions chosen during the reconnaissance.

PLATOON BRIEFING

When the squad leaders arrive, LT Wise briefs them on the new operation. The division is continuing its offensive operations. The ADW will be Red. Weapons control is Weapons Tight. Hind helicopters with Spiral antitank guided missiles and CAS from Fitter and Frogfoot aircraft make up the expected enemy air threat. Enemy ground forces consist of T-64 and T-72 tanks, 152-millimeter artillery, antitank guns, Spigot and Swatter antitank guided missiles, rockets, and mortars.

The platoon will be part of a TF operation to reestablish contact with the enemy. The platoon's mission is to provide air defense for the TF while keying on team A during movement and for positioning force.

The platoon will move to an assembly area already occupied by the team. LT Wise points out the primary and alternate routes on a map giving expected departure and arrival times. Because enough time is available, he will return from the assembly area and control the movement to the new location. Departure time for the platoon move will be 1930. He also directs the squad leaders to perform thorough maintenance on their vehicles prior to departure. The platoon sergeant is directed to arrange for distribution of ammunitions and rations, and refueling. A limited resupply of Vulcan ammunition will be carried on the APC. POL resupply has been coordinated with the battery and will arrive at 1730. LT Wise instructs that listening silence will be maintained on the radios after they leave their present location. He also informs the squad leaders to arrive at the pla toon rally point at 1800 to rearm, refuel, and receive the final OPORD.

Before departing for the ground reconnaissance, the platoon leader briefs the guides. He briefs them on where they are going and what actions they will take while they are there.

Upon arrival at the company team assembly area, LT Wise meets with the company team commander to coordinate air defense for the team. LT Wise recommends to the team commander how best to employ the air defense assets in the team's scheme of maneuver. Armored tactics are very flexible, and LT Wise must position the Vulcans where they can provide the best air defense of the team without interfering with the team mission. The Vulcans will be positioned initially to provide mutual support. They will be weighted toward the ends of the long axis of the team because the long axis presents the best target to enemy aircraft. They should provide air defense coverage well in front of the leading element.

LT Wise recommends that his APC be located with the team commander. This way he can be more responsive to the team commander, can keep him informed of the air defense situation, and can best control the Vulcan platoon.

After completing his reconnaissance and coordination with the company team commander, LT Wise heads back to the platoon CP via the alternate route. Once back at the CP he completes his plan, prepares the OPORD, and supervises the platoon.

At 1800 squads commence refueling and rearming. LT Wise issues his OPORD and the pla toon departs the area in plenty of time to link up with the company

team at its assembly area before 2100. The OPORD LT Wise gave to his platoon can be found on page B-11 following the discussion of an OPORD.

AIR DEFENSE ARTILLERY OPERATION ORDER

To execute the plan, the platoon leader must be able to articulate his thoughts, conveying them in a concise and informative manner. The Army's OPORD format standardizes the content and organization of information essential to clarity and execution of the plan.

Leaders at all levels must practice writing and presenting OPORDs. Initially you may feel awkward giving the platoon an OPORD. However, with a little practice, the time consumed writing and giving the order will be significantly reduced.

The five paragraph OPORD tailored for an ADA platoon should minimally contain the following information:

- Situation.
- Mission.
- Execution.
- Service support.
- Command and signal.

OPERATION ORDER FORMAT

1. Situation. Information of the overall situation essential to subordinate commander's understanding of the current situation.

a. Enemy forces (weather, terrain, identification, location, activity, and strength).

(1) Ground forces.

(2) Air forces.

(a) Identification, type of aircraft, and markings.

(b) Locations of known and suspected airfields and estimated loiter and turn around times.

(c) Strength of enemy air forces including number of aircraft sorties available per day by type aircraft.

b. Friendly forces (mission 01 next higher headquarters. locations and planned actions of units on left. right, front, and rear, fire support available, and the mission of any complimentary air defense, if applicable).

(1) ADA forces.

(2) Supported forces.

c. Attachments and detachments (units attached to or detached from your unit by higher headquarters and effective time).

OPERATION ORDER FORMAT (Continued)

d. Weather and terrain

(1) BMNT time.

(2) EENT time.

(3) Moon rise and moon set time.

(4) Percent illumination.

(5) Weather forecast for next 48-72 hours including the daily highs, lows, and chance of precipitation.

(6) Terrain information concerning vegetation, type of terrain features, trafficability of roads, cross-country movement, and local water features.

2. Mission. The mission includes who, what, when, why, and where. Include the command and support relationship and priority.

3. Execution. This paragraph contains the commander's visualization of the execution of an operation from start to completion.

a. Concept of operation (support of maneuver forces, stationary asset, convoy, or NDP). This should include the over all plan and missions of the platoon.

(1) Scheme of maneuver relevant to the supported force.

(2) Fire support (weighted or balanced coverage. PTLs and or sectors).

(3) Coordinates of priority asset if applicable.

b. Subunit missions (m succeeding subparagraphs assign mission to each organic and attached unit to include priority of protection for each unit).

c. Coordinating instructions.

(1) Time of leader's reconnaissance — departure and return.

(2) WCS and ADW for planning.

(3) Rallying points and actions at rallying points.

(4) NDP and effective time of occupation.

(5) MSCS grid reference point.

(6) ActIons at supported unit's objective or upon enemy contact.

(7) Any information concerning two or more units not covered by SOP.

(8) Rehearsals, debriefings, and inspections.

(9) Formations to be used by the platoon and or supported unit.

(10) Sleep plan.

OPERATION ORDER FORMAT (Continued)

4. Service support. This paragraph contains CSS instructions supporting the operation.

   a. Rations, POL, and water.

   b Ammunition control — ASP location — resupply plan.

   c. Maintenance: motors, ADA systems, and communications (contact learns).

   d. Uniform and equipment.

   e Method of handling sick, wounded, and POWs.

5. Command signal This paragraph contains instructions relative to command and to the operation of CE.

   a Signal:

      (1) Supported unit frequency.

      (2) Convoy frequency (if applicable).

      (3) Challenge, password. signals, and codewords.

      (4) Early warning frequency, IFF Mode 4 code book number.

      (5) Listening silence instructions.

      (6) Artillery or FIST element frequency.

      (7) Radar frequency assignments.

   b. Command.

      (1) Chain of command and locations.

      (2) Locations of headquarters CPs and alternate CPs (battalion, battery, platoon, and supported unit headquarters).

Notes:

1. Poor to the briefing. orient personnel with maps. Provide personnel with strip maps and graphic overlays, if and as appropriate.

2. Conduct a short quiz at the end to see if personnel understand the OPORD.

PLATOON OPERATION ORDER DETAILS (EXAMPLE)

At 1800 LT Wise gave his platoon OPORD verbally to the squad leaders. This is what he said:

"OK men, have you all finished putting the maneuver graphics on your maps? Great, let's get started. My map is oriented to the north so you can all get a sense of direction. We will do two things.

First, we will conduct a road movement behind our own lines

to the assembly area of Company A, 3-25 Armor. Second, we are going to provide air defense for TF 3-25 while they execute a movement to contact. I will give you the OPORD for the movement to contact and will issue a separate order for our movement from here to a company's assembly area."

SITUATION

"OPORD #7. Movement to contact. Situation: Enemy forces have been conducting a hasty withdrawal to the east. The division lost contact with the 39th Guards Motorized Rifle Division. The enemy ground elements in our sector are from the 55th Tank Regiment of the 22d MRD. The enemy is at about 50% strength. The enemy air force in our area has Su-7 Fitters, Su-25 Frogfoots, Mi-24 Hinds, and Mi-8 Hips. Expect enemy attack helicopters and CAS aircraft immediately after the first artillery barrage stops. On past missions, the TF S2 said the helicopters have been attacking from the flanks while the enemy aircraft fly straight down their movement formations.

"Friendly forces are our elements of the 54th Mechanized Infantry Division, specifically B Battery, 3-441 ADA, which is in direct support of the Second Brigade. Our platoon will be in direct support of TF 3-25 Armor as it conducts a movement to contact to reestablish contact with the enemy.

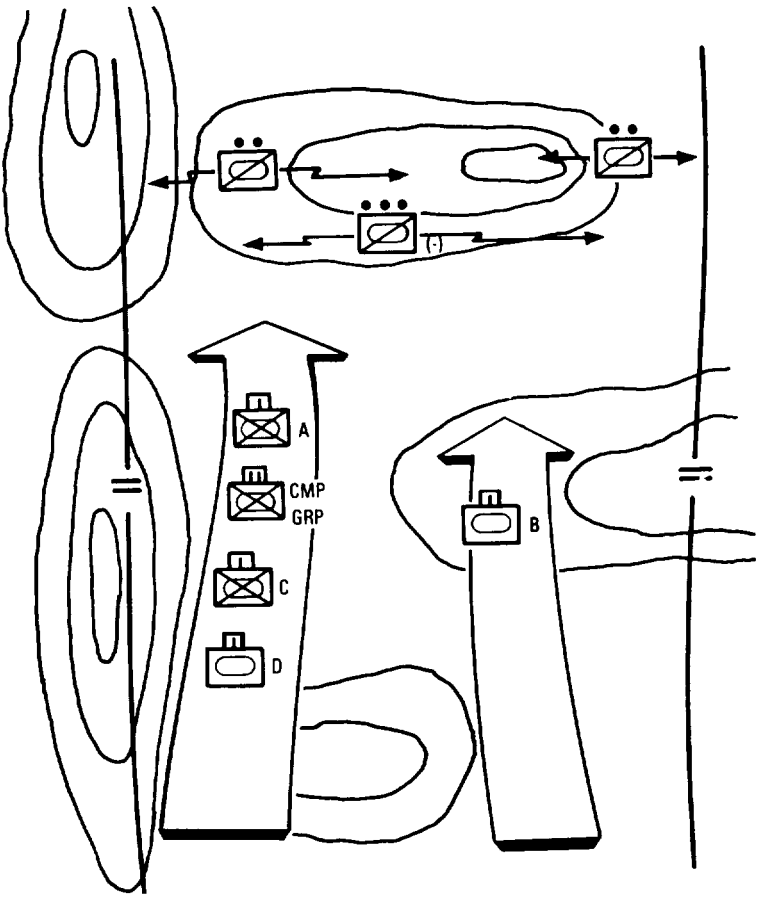
"We have no attachments or detachments. The weather forecast for the next four days is clear skies and less than a 20% chance of rain. The daily highs should be around 65°F and the lows at night around 32° F. BMNT ***0500,*** EENT ***1820,*** sun rise **0530,** sun set ***1800,*** moon rise ***0430,*** moon set ***1300,*** percent illumination ***02%.*** Since the percent of illumination is so low, air attacks will most likely begin around BMNT. We will be moving in an easterly direction so expect aircraft to take advantage of the sun in our eyes. The terrain we will be operating on is rolling hills with wooded areas interspersed in the low elevations. The high ground has scrub oaks and pine trees. We will be traveling down a long wide valley for about 20 kilometers. The most notable terrain feature will be this long ridge line to the left of our movement. Unfortunately this ridge line gives enemy helicopters the best cover and concealed positions in our sector. Therefore, expect enemy helicopters' flanking fire to come from our left."

MISSION

"Our mission is to move to Alpha Company Team's assembly area tonight. We must arrive NLT 2100 and be prepared to

provide air defense of Alpha Company Team which is spearheading TF 3-25's movement to contact. Mission time tomorrow is 0400. Alpha Company Team crosses LD/LC at 0405. Our platoon will be in DS of TF 3-25 with priority of fire to Alpha Team." (See the Providing Air Defense for Alpha Company Team illustration.)

PROVIDING AIR DEFENSE FOR ALPHA COMPANY TEAM



EXECUTION

LT Wise continued to explain the elements of execution. In his explanation, LT Wise explains the concept of operation, subunit missions, coordination required, and service support.

Concept of Operation

"Now take a good look at the TF's overlay for tomorrow's mission. TF 3-25 is made up of 4 company teams: 2 tank and 2 mechanized. These company teams will be traveling on two axes of advance conducting a movement to contact. Alpha Team will lead the left axis of advance (axis green), followed by the command group, then Charlie Team, and finally Delta Company. Bravo Team will travel on the right axis by itself. As you can see, these columns are not on line – Alpha team is well forward with Bravo roughly abreast of the command group. The TF commander wants to use Alpha Team and the left axis as the main effort, while having the flexibility to bypass any enemy resistance with the right axis. Since Alpha Team is spearheading the main effort, our platoon will give priority protection to Alpha Team. Be prepared for an on-order mission to support another team if Alpha Team becomes fixed by the enemy and the TF commander decides to bypass the enemy and continue the forward movement with another lead team. My intent is to enhance protection for the force at its most vulnerable flank, the left. This is where I see the greatest threat to the force's security."

Subunit Missions

"Alpha Team is made up of 2 mechanized platoons and 1 tank platoon. The teams will initially be traveling in column formation — platoons in wedge formations. As we move across the LD, I want 1st Section (1st Squad and 2d Squad) to trail the team's HQ element. I will be located with the team HQ element. I want 2d Section (3d Squad and 4th Squad) to trail the 3d tank platoon. 1st Squad, your PTL will be 12 o'clock — direction of movement. 2d Squad, your PTL will be 9 o'clock; 3d squad, your PTL will be 3 o'clock; and 4th Squad, you will cover the rear with a PTL of 7 o'clock. Those are our initial positions and PTLs as we move across the LD. I will cover a possible formation change in more detail in coordinating instructions."

Coordinating Instructions

"At 0330 Alpha Team will move out of their NDP configuration and begin moving into a linear formation to cross the LD. I want both sections integrated into Alpha's formation no later than 0345. This means 1st Section coordinate with the team's HQ element and 2d Section coordinate with 3d Platoon to ensure you are at their location when

they begin forming up. For planning purposes the WCS and ADW will initially be Yellow and Tight. At BMNT they will change to Red and Tight. The MSCS grid reference point is MF 1070."

Formations. "I have already gone over our initial positions in the team's linear formation as we cross the LD. However, Alpha Team commander said he might move out of a linear formation and begin traveling in a vee formation. When Alpha Team moves into a vee formation 1st Section will move forward behind the lead platoon on the left side. 2d Section will stay behind with the trail platoon. Squad PTLs will stay the same. This will not only give us coverage forward, but also weight the left side of the formation where we most expect enemy helicopter flanking fires."

Actions upon enemy contact. Actions to be taken by the ADA platoon, if applicable, are below.

Obstacles. "The lead team and the engineers will have a critical mission at first. The lead team and engineers will be responsible for clearing the way for the rest of the TF, so we will initially overwatch their work. While they are breaching the obstacles I will attempt to get permission to execute our on order mission. Since Alpha will be stalled at the obstacle, we will most likely follow the first company through the obstacle so we can resume overmatching the lead element. Remember the tendency is for units to bunch up waiting for the obstacle to be breached. Expect the obstacle to be covered by enemy direct and indirect fire. If we bunch up we will be killed. As soon as we see the obstacle, look for the best positions to overwatch the breaching team and be prepared to move in sections through the cleared lines."

Meeting engagements. "If Alpha Team makes contact with the enemy, I want both sections to immediately look for the best locations to overwatch the tank platoons as they fire and maneuver. Your overmatching positions should provide forward coverage of the maneuvering platoons as well as allow you flexibility to move out of that team's area of operation without flanking yourself to the enemy. At any time during a meeting engagement, the TF commander may maneuver the rest of the TF past the lead company and want the Vulcans to join and support this maneuvering element."

Air attack. "This is when we go into action! I want spotted aircraft broadcasted over our platoon net immediately so all squads can react as quickly as possible. I will rebroadcast your spot reports higher so the company team can react. The

company team will react to an air attack in two different ways depending on the situation. If an air attack occurs and the Alpha Team is not in contact with the enemy ground forces, then they will do an air attack battle drill. However, if under air attack and ground attack, they will continue to fire and maneuver. We will stop and engage aircraft in both situations, but bound forward in pairs if the company team moves out of our coverage. "

Artillery attack. "If we are attacked with artillery, button up and disperse. Be prepared to mask instantly. Remember air attacks most likely come after artillery attacks because the enemy expects us to be degraded. Be prepared!"

Action on objective. "Initially we will overwatch the TF as it fires and maneuvers. Once the objective has been taken we will consolidate on the objective and help prevent any air counterattack by the enemy."

Inspections. "I expect your people to thoroughly know this mission. I will hold an inspection at 0300 around my APC in Team Alpha's NDP. I will ask a few members of your squads to back brief me on the movement to contact and I'll also inspect all maintenance after action checks."

SERVICE SUPPORT ELEMENTS

"Each squad should have a two-day supply of rations on their vehicles. I want your fuel tanks, extra fuel cans, and water cans filled prior to leaving this location.

"We do not have our full basic load of ammunition, so redistribution and resupply of ammunition will be critical throughout this operation. After engagements, I want extra ammunition redistributed within sections at every change. I have an extra 1,000 rounds of 20-millimeter in my APC. Our ammunition truck will be in the TF combat trains with the remaining 5,000 rounds.

"We will receive system support from our battery contact team. The TF will support all our other maintenance needs. Quickly report any problems to me, and I will coordinate with the platoon sergeant to get you necessary assistance.

"The standard field uniform and equipment will be worn. We will be in MOPP 2 as we cross the LD.

"Both sick and wounded will be taken to the TF aid station as quickly as possible. If possible, I will have our platoon sergeant come forward and pick up those personnel. Casualty feeder reports must be completed before the wounded personnel are evacuated to the rear. "

COMMAND AND SIGNAL

Command and signal elements are shown here. Elements of the TF must be aware of the commands and signals that are to be used throughout the operation.

COMMAND AND SIGNAL ELEMENTS

SIGNALS
(AUTHENTICATION TABLE: DAY #1)

UNIT	CALL SIGN	FREQUENCY	ALTERNATE FREQUENCY
TF 3-25	MIC	32 05	
TM A	V7D	45 10	35 60
B Btry 3-441 ADA	Y6Y	32 05	60 20
3d Plt 3-441 ADA	J6Z	62 10	45 65
2d Brigade LNO	R9V	50 75	40 10
	CO 75	FDO 45	70 25
	NCS 56	1 Sq 46	
	PL 13	2 Sq 47	
	PSG 25	3 Sq 64	
	RTO K	4 Sq 87	

"Challenge and password: daylight and snapper. Nightime distant challenge and answer: 2 short, 1 long flashes and 2 long, 1 short flashes.

"Early warning frequency is 48.50.

"TF will be in radio listening silence from 0200-0400 tomorrow."

Command

"Chain of command. I am first, followed by the 1st Squad leader, 3d Squad leader, 2d Squad leader, and finally the 4th Squad leader. Make sure you have assigned a chain of command within your squads. Since the platoon sergeant will be located in the combat trains, he will take charge as soon as he can come forward.

"Locations. B/3-441 CP located at _____ .3-441 TOC located _____ .TF 3-25 TOC located at _____

"Following an engagement, platoon leaders will immediately assess any losses and take action for required supplies and replacement."

Appendix C

RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION

Since the mission of most ADA systems can be performed only when they are in a static firing position, movement from one position to the other is conducted swiftly. These RSOP procedures have been developed to facilitate the rapid, orderly, and safe movement of ADA systems on the battlefield.

ADA units displace frequently, whether deployed in forward or rear areas. They move to support the maneuver plan in response to a change in mission and to enhance survivability. The RSOP must be part of a unit's SOP, be clearly understood, and be practiced repeatedly by all members of the unit. In this appendix the RSOP requirements and their applications are discussed.

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Section I. Methods of Reconnaissance

Reconnaissance is the examination of terrain to determine its suitability for accomplishment of the platoon mission. The three methods of reconnoitering are: from a map, from the air, and on the ground.

MAP RECONNAISSANCE

Study and analyze a map to get an appreciation of the terrain, to determine where to go, and to determine how to get there. A map reconnaissance—

- Precedes all other methods. A map should always be available for the area to be occupied.
- Allows quick examination of large areas. (This is the fastest method.)
- Cannot determine current conditions of the areas. (This is the most inaccurate method).
- Ensures the most security.

AERIAL RECONNAISSANCE

Use an aircraft to actually get out to see the terrain. An aerial reconnaissance—

- Provides the fastest way to see the terrain.
- Is limited by aircraft availability, weather, and light conditions.
- Is still inaccurate. Fields of fire, ground conditions, and local threat cannot be determined unless the aircraft lands.
- Is less secure. Aircraft activity in an area exposes personnel to threat activity and also reveals our interest.

GROUND RECONNAISSANCE

Go to the locations to be examined. A ground reconnaissance—

- Is the most accurate method. The route can be evaluated for trafficability, obstacles, and danger areas. Firing positions can be finalized.

Ž Is time consuming. Covering the distances over potential routes and checking alternate positions takes time. This is the slowest method of reconnaissance.

Ž Is dangerous. The small reconnaissance party might be subjected to threat activity en route to or from the objective area.

If ground or aerial reconnaissance cannot be performed, engineer terrain teams may be able to provide necessary information. Plans can be made for the reconnaissance to include routes, RPs, assemby points, and assembly times for the reconnaissance party. If time is limited to the extent that the unit must move up before the reconnaissance party returns, road guard positions are selected and the necessary personnel for these jobs are included in the party.

Actual inspection of the chosen routes and positions on the ground is desirable to confirm selections made from the map or to make necessary changes in plans.

Section II. Reconnaissance, Selection, and Occupation of Position Sequence

Since ADA units are most often employed as platoons, the RSOP will normally be accomplished by the platoon leader. The RSOP procedures discussed here may not be fully applicable to Chaparral, Vulcan, and Stinger supporting maneuver elements in contact with or moving to contact the enemy. Rather, they apply to platoons and MANPAD sections engaged in the defense of other assets.

However, the sequence of events and the basic procedures discussed herein will remain essentially the same for any RSOP. The basic sequence of actions for conducting RSOP is as follows:

Ž Receive the order.

Ž Issue movement warning order.

Ž Make a map reconnaissance.

Ž Plan the reconnaissance.

Ž Brief next in command — issue orders.

Ž Conduct reconnaissance and select positions.

Ž Plan the occupation and prepare positions for occupation.

Ž Move the unit to the selected positions.

Ž occupy, organize, and improve positions.

RECEIVE THE ORDER

The commander meets with his key personnel and briefs them on the new mission and the requirement to move. His briefing includes information on the purpose of the operation, routes, road clearance times, start and RP locations, and when to be operational in the new area. Each platoon leader reviews his briefing notes and then initiates the reverse planning sequence.

ISSUE MOVEMENT WARNING ORDER

The platoon leader returns to his area and briefs his key personnel on the new mission and the requirement to move. He tells the platoon sergeant to form the reconnaissance party as indicated in the unit's SOP.

The movement warning order can be—

Ž Written or verbal.

Ž Passed in person.

Ž Passed over tactical communications.

It must include (as a minimum)—

Ž The new mission.

Ž The location of the new area.

Ž Time of release for march order, crossing the SP and RP, and assuming operational status at the new area.

MAKE A MAP RECONNAISSANCE

This is the fastest way to conduct a reconnaissance, and will always precede any other type of reconnaissance. The positions of

weapons are plotted on a map and represent the beet locations for defense, considering the employment guidelines of a system and the nature of the terrain insofar as can be determined from the map. Also check the map for alternate positions. After the weapon positions have been plotted on a map, positions for CPs and primary and alternate routes are selected and plotted. The platoon leader determines the reconnaissance route by conducting a map reconnaissance to the proposed area. Positions must be examined by additional reconnaissance if possible and may change within narrow limits from positions selected by map reconnaissance.

PLAN THE RECONNAISSANCE

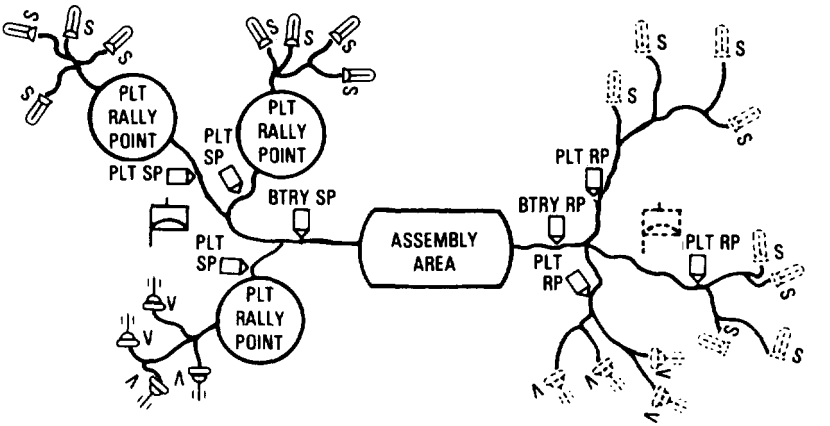
Reconnaissance is performed to select the best fire unit positions, march routes, SPs and RPs, CPs, ground air observer posts, and communications sites. Prior to or concurrent with reconnaissance, the ADA platoon leader should coordinate with the maneuver commander and or S3 to determine what areas maneuver units plan to occupy. Mutual agreement must be established to make the best use of the available terrain.

The platoon leader selects personnel and equipment to accompany him on the reconnaissance and assigns tasks to the reconnaissance party personnel. The unit SOP will establish the normal composition and responsibilities of the party. The reconnaissance party personnel for the ADA platoon should consist of at least the platoon leader and one representative from each squad to act as a ground guide and security force.

BRIEF NEXT IN COMMAND – ISSUE ORDERS

After the platoon leader finalizes and coordinates the plan, he briefs his personnel covering all elements of a five-paragraph field order (situation, mission, execution, service support, and command and signal) and indicates when the RSOP party will depart the present position. He identifies, as a minimum, the SP and the RP. His briefing and issuing of orders should include instructions on continued operations in the absence of key leaders (see the Sample Reconnaissance, Selection, and Occupation of Position Route Details Illustration on the following page).

SAMPLE RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION ROUTE DETAILS



CONDUCT RECONNAISSANCE AND SELECT POSITIONS

As soon as RSOP preparations are complete, the platoon leader departs with the reconnaissance party. He ensures that the selected primary route meets equipment (height, weight, width) requirements, is passable, and avoids built-up areas (possible ambush locations are minimized). He positions road guides as required. He may keep the platoon main party posted on his progress by referencing checkpoints. As the RSOP party approaches the new field location, a check of the area is made. It must be ascertained if the tentative map-selected locations will allow immediate occupation for accomplishment of the mission. Ground reconnaissance verifies whether the terrain provides good natural concealment, has access roads into the position (for primary and alternate routes), provides good observation and fields of fire, and has firm ground that will support the weight of the equipment.

NBC detection, monitoring, and survey teams and mine detection teams check the immediate area to ensure it is free of contamination and mines. A total security plan is then placed in effect. This includes positioning automatic weapons overlooking the main avenue of approach and alternate routes into the position, and siting other security positions around the area to preclude gaps in the perimeter. A PTL and a sector of fire are assigned to each weapon squad or crew, and communications are established with all the positions. Initial

positions plotted during the map reconnaissance should be adhered to as closely as possible. Squad representatives reconnoiter the positions assigned to their weapons, select tentative sites for the weapons and OPs, and confirm them with the platoon leader. The platoon leader reconnoiters the platoon area and selects the site for the platoon CP. He visits each proposed weapon site and supervises and assists the squad representative, After approving the weapons sites, the platoon leader informs the battery commander or battalion S3 and supported unit, as appropriate, of the weapon and platoon CP sites.

Positions selected must be the best available for fields of fire, communications, accessibility, and survival. The following specific characteristics must be considered in selecting sites for CPs and weapons:

Ž Centrally located with respect to battery and platoon units.

Ž cover and concealment available.

Ž Sufficient area for dispersion.

Ž Alternate entrance and exit routes.

Ž Defendable against ground attack.

Ž Communications with higher, lower, and defended units.

The following are characteristics which must be considered in selecting sites for weapon squads:

Ž Primary and secondary fields of fire and observation must be clear.

Ž Communications with platoon CP, other squads in the platoon, and with EW sources, if possible.

Ž Good access and exit routes.

Ž Security against ground attack.

Ž Must be within stated distance (SOP) of plotted positions in original defense design (that is, 100 meters for Vulcan; 300 to 400 meters for Stinger).

Ž Maximum use of available cover and concealment to facilitate survivability.

The firing signature of ADA weapons can be expected to disclose the squad's and crew's positions during each engagement; therefore, frequent shifting of position is required. Primary, alternate, and supplementary positions are selected during the ground reconnaissance. Routes into and out of these positions must be selected and prepared as necessary.

The following positions are normally selected by ground reconnaissance:

Ž Primary position. A position from which the fire unit leader

intends to accomplish his tactical mission.

Ž Alternate position. A position to which the fire unit moves when the primary position becomes untenable or unsuitable for carrying out the assigned task. The alternate position must meet all the requirements of the primary position. The alternate position must be far enough away to prevent its being rendered untenable by the same action that affects the primary position.

Ž Supplementary Position. A temporary position to which a fire unit may move to accomplish a specific mission, such as to attack targets that cannot be fired on from the primary or alternate position or to deceive the enemy as to the location of the primary position.

PLAN THE OCCUPATION AND PREPARE POSITIONS FOR OCCUPATION

After the platoon leader has selected the equipment sites, he ensures the ground guides know exactly where he wants all the vehicles and equipment placed. Preparation should always inelude marking the location of each major piece of equipment. Everyone at the new position is notified of the current challenge and password, any known enemy activity in the area, and the approximate time, location, and order of vehicles for the main party.

MOVE THE UNIT TO THE SELECTED POSITIONS

The platoon sergeant organizes the vehicles as ordered by the platoon leader. Platoons move out with vehicle interval to provide air defense coverage en route and to complement the ground defense plans. The platoon leader displaces the unit and road marches it to the new location according to procedures that are outlined in local SOPs.

OCCUPY, ORGANIZE, AND IMPROVE THE POSITION

The occupation of position should be coordinated with the supported unit to avoid mutual interference. When the platoon arrives at the position area, all vehicles are moved off the road into the position area without halting and without closing the interval between vehicles. A ground guide leads each vehicle

to its predetermined location and equipment is unloaded quietly and in an orderly manner.

The displacement and occupation should be accomplished as rapidly as possible to minimize the time that weapons are out of action. When occupying platoon positions, first priority should be given to emplacing weapons and bringing them to a ready-for-action condition. First priority for the platoon CP is the establishment of communications.

After careful consideration of the aircraft, ordnance, and tactics likely to be employed against a defended asset, leaders will select general positions and assign appropriate sectors of fire and observation to each fire unit thereby attempting to obtain overlap ping coverage or mutual support if feasible. Squad and crew leaders, upon arrival at their assigned locations, must then select exact positions which will maximize the effectiveness of their weapon systems in their sector in terms of terrain and system characteristics.

Avoid placing positions near terrain features that are easily recognizable from the air. Once spotted near an object, positions are more easily found and destroyed.

Squads and crews are responsible for covering their assigned sector of fire and observation and are not expected to maintain 360° coverage unless that is specifically assigned. If the assigned sectors can be covered and it is possible to increase them without endangering survivability, then leaders should do so.

When all weapon squads have reported that they are ready, the platoon leader will report the platoon ready for action.

Squad leaders establish certain priorities for the improvement of positions. The normal sequence is as follows:

Ž Natural camouflage is supplemented, where possible, using artificial materials such as camouflage nets.

Ž Prone positions are prepared at the earliest possible opportunity and replaced by individual fighting positions.

Ž ADA weapon systems are protected from blast, fragmentation, and small arms by digging in or constructing revetments. Engineer support may be required in some situations and should be requested through the battalion S3. Care must be taken to ensure that revetments do not impede full employment of the weapons.

Ž Ammunition must be protected by being dug in or revetted and protected by overhead cover.

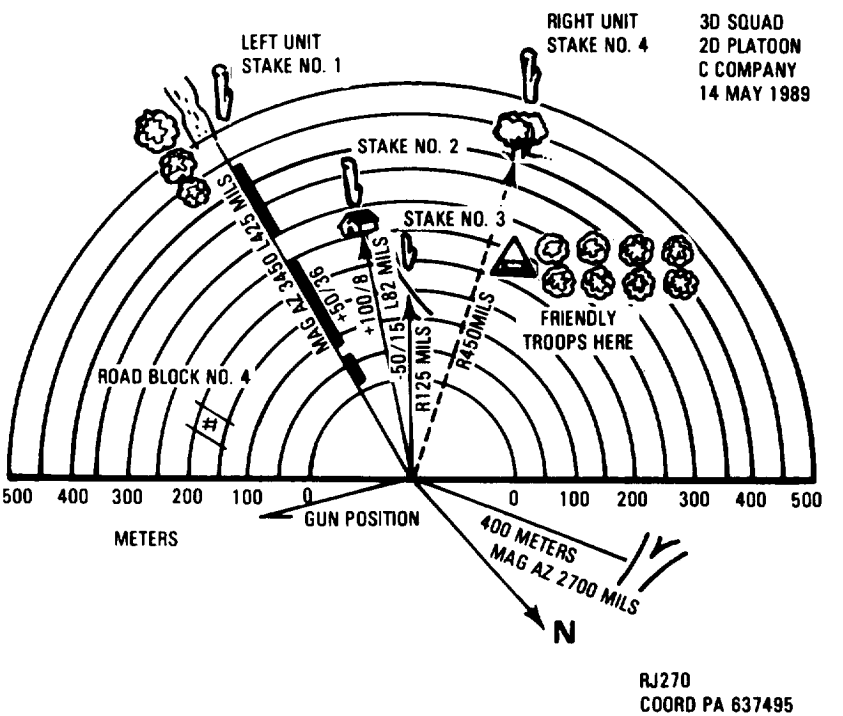
Ž Work on alternate and supplementary positions is initiated as early as possible to expedite displacement in the event the primary position becomes untenable.

Upon occupying a position, the platoon leader must provide for

continuous local security. Obstacles, such as a hasty protective minefield, provide security which blocks, disrupts, or canalizes enemy attacks, Other measures taken should also be integrated, if possible, with the ground defense plan of the supported unit. If time permits, range cards should be constructed for each crew-served weapon that can be used in ground defense. These cards (see the Sample Vulcan Range Card illustration) should indicate ranges to critical points on all likely avenues of approach, dead spaces not covered by direct fire, and limits of the gunner's responsibility.

Radar clutter and coverage diagrams must be prepared as required by the battalion sensor management plan. The RSOP checklist is found in Appendix G.

SAMPLE VULCAN RANGE CARD



Appendix D

OPERATIONS IN A NUCLEAR, BIOLOGICAL, AND CHEMICAL ENVIRONMENT

NBC weapons produce casualties and disrupt operations. Platoons must be prepared to operate in an NBC environment during any operation. This appendix addresses nuclear, biological, and chemical defense; mission-oriented protective postures; and detection, monitoring, and unmasking procedures.

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Section I. Nuclear, Biological, and Chemical Defense Fundamentals

To defend against NBC weapons, soldiers must apply the three fundamentals of NBC defense — contamination avoidance, protection, and decontamination. See FM 3-100 for a general discussion of avoidance measures and FM 3-3 for a detailed discussion.

CONTAMINATION AVOIDANCE

The first fundamental of defense against NBC weapons is contamination avoidance. If soldiers can avoid contamination, they decrease the need for protection. Therefore, they must—

Ž Take passive measures. Use concealment, so the enemy can not find you, or disperse so you

make a poor target. You can also harden your position by improving its cover.

Ž Detect and identify hazards. Monitor for contamination; reconnoiter and survey specific areas to determine contamination status. Correct identification of the type of agent will give intelligence information as to enemy intentions. Also, it gives the platoon an idea of what type of decontamination support is required. As an example, if a Vulcan platoon finds itself attacked by a nonpersistent agent such as GB, the platoon can expect that the enemy will follow up the chemical attack with a conventional ground or air attack in the near future. If the agent is identified as a nonpersistent agent, the harmful effects of the agent will weather to non-threat levels in minutes to hours. There is no need to request decontamination from decontamination units if attacked by nonpersistent agents. The correct action would be a hasty spray down of gross amounts of contamination with on board M-11s, weathering of the agents, and periodical checking to see if any agent is present in threat level concentrations. This checking is done with M256 kits and confirmed by unit unmasking procedures. In a nonpersistent agent attack the unit may only have to remain in MOPP 4 for 30 minutes or less.

Ž Use the NBC warning and reporting system. When a hazard is detected, pass the alarm locally. Mark the contamination and warn others by using the standard NATO warning and reporting system.

Ž Limit contamination spread. Cover equipment vital to mission accomplishment, using readily available material. Restrict personnel movement in the contaminated area.

Ž Move from the contaminated area when the mission allows. This reduces the overall contamination hazard; however, carefully avoid spreading contamination during movement.

PROTECTION

The second fundamental of defense against NBC weapons is protection. It is required when contamination cannot be avoided. Protection is available for personnel and selected equipment. See FM 3-4 for further details.

DECONTAMINATION

The third fundamental of defense against NBC weapons is decontamination. It is the reduction of the contamination hazard by removal or neutralization of hazardous levels of NBC contamination on personnel and material. The extensive time and logistical support needed to perform detailed decontamination mandates avoiding contamination, if possible. Further details on decontamination are found in FM 3-5.

Section II. Nuclear Defense

The nuclear weapon, although tremendously powerful, is not a weapon against which there is no defense. The more you know about nuclear weapons, the more effective you will be on the battlefield. More importantly, the more you know, the greater will be your chances for survival.

DEFENSIVE ACTIONS BEFORE A NUCLEAR ATTACK

Cover is the beet protection against a nuclear attack. Foxholes, armored vehicles, heavy (for example, concrete, stone, brick) structures, caves, and other underground areas provide excellent protection. Light-skinned and wheeled vehicles offer very little protection. Weapons, individual equipment, clothing, supplies, ammunition, explosives, POL, and other flammables should be protected as much as possible. These items should be secured in one of the protected areas listed above.

Nuclear defense levels for possible, likely, and imminent conditions are described in the Nuclear Defense Levels illustration on page D-4.

When operating in or crossing radiologically contaminated areas, vehicles should be buttoned up and cargo should be covered. If the mission permits, personnel, equipment, and cargo should be closely monitored to ensure compliance with operational exposure guides. Radiation exposure status should be updated.

NUCLEAR DEFENSE LEVELS

NUCLEAR DEFENSE LEVELS	PERSONNEL	RADIOS	EQUIPMENT
A (Possible)	OFFENSE: • Inform personnel and continue mission.	OFFENSE: • Turn off all non-essential radios. • Disconnect antennas and matching unit cables of unused radios.	OFFENSE: • Secure all loose equipment. • Close and latch all hatches not required to be open.
	DEFENSE: • Inform personnel. • Prepare fighting positions with minimum of 18 inches of dirt overhead cover. • Remain in fighting positions or armored vehicles.	DEFENSE: • Same as offense. • Use wire or messenger whenever possible.	DEFENSE: • Same as offense.
B (Likely)	OFFENSE: • Inform personnel. • Restrict movement away from vehicle or position.	OFFENSE: • Use one radio per squad. • Remove antennas and leads of all unused radios.	OFFENSE: • Secure all loose equipment. • Close and latch all hatches not needed open. • Turn off all electrical equipment when not in use.
	DEFENSE: • Inform personnel. • Complete fighting positions with 18 inches of dirt overhead cover. • Initiate periodic radiac meter monitoring. • Remain in fighting positions or armored vehicles.	DEFENSE: • Same as offense. • Use one radio per platoon if possible.	DEFENSE: • Same as offense.
C (Imminent)	OFFENSE: • Inform personnel. • All personnel in armored vehicles.	OFFENSE: • Use visual signals to control movement, as feasible. • Use one radio per squad. • Remove unused antennas and leads.	OFFENSE: • Secure all loose equipment. • Close and latch all hatches not needed open. • Turn off all electrical equipment when not in use.
	DEFENSE: • Inform personnel. • All personnel in fighting positions or armored vehicles.	DEFENSE: • Turn off all radios. • Use wire communications. • If reacting to strike warning, remove and stow all antennas.	DEFENSE • Same as offense.

DEFENSIVE ACTIONS DURING A NUCLEAR ATTACK

Immediately get down and protect face until blast waves have passed and debris has stopped falling. Close and shield your eyes, button up, and close sight shields until the blast wave has passed and debris has stopped falling. Stay calm, check for injuries, check weapons and equipment for damage, and prepare to continue the mission.

DEFENSIVE ACTIONS AFTER A NUCLEAR ATTACK

Once the attack has ended, forward an NBC-1 nuclear report. Consolidate and reorganize the air defense positions, improve protection against possible fallout by seeking overhead cover for vehicles, and begin continuous monitoring. If the radiation dose rate reaches a hazardous level, request permission to move.

NUCLEAR FIRST AID

Various injuries may result from nuclear attacks. You must be prepared to administer first aid as described in the following paragraphs.

BLAST INJURIES

Damage can range from minor cuts and broken bones to severe lacerations and critical damage to vital organs. In all cases, first-aid treatment will be the same as that used for conventional combat casualties suffering similar injuries.

THERMAL RADIATION INJURIES

The intense heat generated by a nuclear detonation burns skin, clothes, and equipment. Injuries can be caused by direct exposure, reflected exposure (from clouds, ground, et cetera), and from secondary sources, such as burning clothing. These burns are categorized as first, second, and third degree. First-degree burns should heal without special treatment and there will be no scar formation. Second-degree burns, which resemble a severe sunburn with blistering, should be treated as a burn casualty to prevent infection. In third-degree burns, the full thickness of the skin is destroyed; the victim should be treated as a burn casualty and evacuated.

EYE INJURIES

Thermal radiation effects on the eyes fall into two categories: temporary blindness (called "dazzle") and permanent blindness. No matter what the degree of blindness, no first-aid treatment is necessary. Individuals suffering permanent damage can only be made as comfortable as possible and evacuated. Individuals who are temporarily blinded will recover unaided with the passage of time, but will require assistance in taking care of themselves until their sight returns.

RADIATION

Individuals may react differently to a given dose of radiation, but, generally, a group of individuals can be expected to react to certain dose ranges as shown in the Radiation Doses illustration.

RADIATION DOSES

Dose In Centigray (cGy)	Time to Onset of Symptoms and Percent of Personnel Affected	Fatalities
0 to 70	Within 24 hours, 5 percent.	None
150	Within 6 hours, 5 percent.	None
650	Within 2 hours, 100 percent. (latent lethality dose [IL]).	More than half in approximately 16 days.
2,000 to 3,000	Within 5 minutes, 100 percent.	More than half in approximately 7 days.
6,000	Within 5 minutes, 100 percent.	All in 1-2 days
18,000	Immediately, 100 percent.	All within 24 hours.

Symptoms include vomiting, diarrhea, dry heaving, nausea, lethargy, depression, and mental disorientation. At lower dose levels, incapacitation, a slowing down of the rate of performance due to a loss of physical mobility or mental disorientation, may occur. At high-dose levels, shock and coma may be the early symptoms.

Mechanical injuries (broken bones, internal injuries, et cetera)

and burns are much more serious when the victim has also received even minor doses of radiation. Every effort should be made to identify casualties who have received a dose of radiation and the amount of radiation, if known.

RADIOLOGICAL CONTAMINATION

Platoons exposed to radiation must identify the dose rate using IM93 dosimeters and send dosimetry (exposure) reports to the commander. Commanders identify units that exceed the operational exposure guidance. They decide whether to withdraw these units and conduct decontamination operations or continue with the mission.

Crew members contaminated by radioactive dust or debris perform partial decontamination by brushing, wiping, and shaking their bodies and gear. They can further reduce radiation exposure by remaining inside their vehicles as much as possible.

Contaminated vehicles are partially decontaminated by brushing or washing. This procedure limits the spread of contamination to other areas and reduces radiation hazard. Early decontamination is necessary to cut down on the cumulative effects of radiation. Without quick decontamination, small but frequent exposure to radiation may significantly reduce combat power.

The AN/PDR-75 radiac set, consisting of the PT 236 expendable dosimeter and the CP 696 dosimeter reader, will replace the IM93 in the near future.

Section III. Chemical Defense

Chemical agents are used to kill, injure, or incapacitate personnel. The effects produced by these agents are dose-dependent. This means that increased doses produce a corresponding increase in severity of effects. Through the use of various delivery systems, threat forces can initiate and sustain large-scale chemical warfare operations.

DEFENSIVE ACTIONS BEFORE A CHEMICAL ATTACK

Make sure all personnel have their protective mask available and that it fits and functions properly. All personnel should be wearing protective clothing in accordance with the MOPP level designated by the commander.

Protect all equipment and supplies from liquid chemical contamination. This can be done by keeping it covered. Place the automatic alarm into operation.

DEFENSIVE ACTIONS DURING A CHEMICAL ATTACK

Mask and give the alarm. Have all unmasked soldiers put on their protective mask and other MOPP gear.

Use chemical agent detector to determine type of agent and forward an NBC-1 chemical report. Continue the mission.

DEFENSIVE ACTIONS AFTER A CHEMICAL ATTACK

Certain defensive actions must be taken following a chemical attack. Treat casualties, perform emergency decontamination as required, then perform basic skills.

Section IV. Biological Defense

Biological agents consist of microorganisms and toxins. Microorganisms are germs that cause diseases. Toxins are poisons produced by plants, animals, or microorganisms. Biological agents, including toxins, can cause death and disease among personnel, animals, and plants and deteriorate material. It is not necessary for biological agents to kill to be effective. Their purpose may only be to reduce the ability of enemy forces to fight. This can be done by killing or incapacitating troops and by causing food or supply shortages.

DETECTION

Biological attacks are difficult to recognize. However, they can be detected by alert troops and the intelligence sources of major commands. Since sunlight reduces the effects of conventional biological agents (microorganisms), the most likely time for a

conventional biological attack is in the evening and early morning hours. Some toxins are not sensitive to sunlight, heat, or other factors and could be employed in almost any type of environment. Cloudy and foggy days are also ideal for launching biological attacks.

BIOLOGICAL DEFENSIVE ACTIONS

The best defense is to observe preventive measures such as keeping immunizations up to date, maintaining personal hygiene, eating and resting regularly, and providing rodent and insect control. Prevent agent ingestion by keeping your body clean. Keep small cuts or scratches covered and germ free by using soap, water, and first aid. As insects carry biological agents, prevent insect bites by keeping clothes buttoned and covering skin.

After an attack, you must assume all surfaces have been exposed. Only eat rations that have remained sealed. Wash the outside of food and water containers before opening. Boil all water for at least 15 minutes (this does not apply to water exposed to toxins or spore-forming microorganisms) or use water purification tablets.

Section V. Mission-Oriented Protective Posture

Protective actions against biological and chemical agents depend on the threat, mission, situation, and weather. As with nuclear protective actions, chemical and biological protective actions fall into three categories: actions before the attack, during the attack, and after the attack.

MOPP LEVELS

MOPP levels are established by the commander depending on the risk of NBC attacks. Leaders and or commanders must use the nine MOPP analysis questions to determine appropriate MOPP levels based on the current situation.

Standardized MOPP levels, as shown in the Standardized MOPP Levels illustration on page D-10, allow commanders to easily increase or decrease levels of protection. Soldiers first don the elements of MOPP gear that take the longest to put on and

that degrade mission performance the least. They put on last the MOPP gear elements that can be put on quickly and degrade performance of individual tasks the most. Commanders can raise or lower the amount of protection through five levels of MOPP — MOPP Zero through MOPP 4. Commanders may not implement MOPP levels lower than that set by higher headquarters. In addition, commanders have a mask-only option. Protection increases with progression from MOPP zero to MOPP 4, but efficiency decreases correspondingly.

The SHORAD platoon leader and squad and section leaders must understand and apply MOPP levels, when required, for the protection and survival of their personnel and themselves.

STANDARDIZED MOPP LEVELS



MOPP ZERO

Mask	Carried
Overgarment	Readily Available
Overboots	Readily Available
Gloves	Readily Available



MOPP 1

Overgarment	Worn*
Overboots	Carried
Mask/Hood	Carried
Gloves	Carried



MOPP 2

Overgarment	Worn*
Overboots	Worn
Mask/Hood	Carried
Gloves	Carried



MOPP 3

Overgarment	Worn*
Overboots	Worn
Mask/Hood	Worn*
Gloves	Carried



MOPP 4

Overgarment	Worn
Overboots	Worn
Mask/Hood	Worn
Gloves	Worn

* In hot weather the jacket or hood can be left open for ventilation.

MOPP ZERO

Soldiers carry the protective mask with their LCE, having the MOPP gear readily available (that is, within the work area, vehicle, fighting position, or the like). MOPP zero is appropriate when the enemy has as NBC employment capability but chemical warfare has not begun or when troops are first deployed outside the theater of operation. MOPP zero allows soldiers to be free of the burden of wearing the overgarment and mask and yet have them readily available when needed. The battledress overgarment should remain sealed in the vapor-barrier bag until needed. Soldiers carry their M258A1 decontamination kit, M8/M9 detector paper, and Mark I Nerve-Agent Antidote Kit.

MOPP 1

Soldiers in MOPP 1 wear the battledress overgarment. In hot weather, they can wear it directly over their underwear and may leave the jacket open for ventilation, but they must keep the trousers closed. They attach the M9 paper to the overgarment and wear the protective helmet cover. For soldiers in MOPP 1, the reaction time needed to adopt MOPP 4 protection against an attack is cut in half — from eight minutes to four.

MOPP 2

Soldiers in MOPP 2 add their chemical-protective overboots. The overboots take about three to four minutes to put on, so, once troops are in MOPP 2, they can go to the higher MOPP levels in a matter of seconds. In hot weather, soldiers can leave the overgarment jacket open for ventilation but must keep the trousers closed.

MOPP 3

Soldiers wear the protective mask and hood in MOPP 3, making protection almost complete, but interference with work becomes significant. The mask and hood restrict vision, heat stress becomes a major factor, and a greater risk of heat exhaustion exists. In hot weather, soldiers may open the overgarment jacket and roll the protective mask and hood for ventilation, but must leave their trousers closed.

MOPP 4

At MOPP 4, soldiers protect their hands with a pair of NBC rubber gloves with cotton liners. They close the overgarment and

pull down and adjust the hood, making protection complete. MOPP 4 has the most negative impact on individual efficiency and effectiveness.

MASK-ONLY POSTURE

In a contaminated environment, soldiers do not need to wear protective overgarments or rubber gloves as long as they are protected from direct skin exposure to liquid or solid contamination (transfer hazards). Tanks, some vans, and some buildings are examples of this kind of partial shelter from contamination. Inside these shelters, soldiers may be exposed to vapor hazards but not to transfer hazards. A teletype operator inside a sealed communications van, for example, can work safely and far more efficiently in mask-only posture.

Commanders must balance the value of increased efficiency that mask-only posture gives against the increased risk it imposes. If the shelter is penetrated by weapons fire or accident, soldiers inside might be exposed to a transfer hazard. In case of shelter penetration, ordinary clothing provides protection against transfer hazards except against blister hazards.

Soldiers in mask-only posture must assume the appropriate MOPP level before exiting their shelter. To maintain mask-only posture, returning soldiers must carefully avoid bringing liquid contamination into the shelter. The following situations are appropriate for the Mask-Only command:

- Troops outside are at MOPP 3 or MOPP 4, and a chemical attack has not occurred.
- Troops outside are at MOPP 4, and the unit is in a downwind vapor hazard area only.
- An attack has occurred, and the only hazard has been determined to be a nonpersistent vapor.

Ultimately, the decision to go to mask-only for personnel protected from liquid agent contact rests with the commander. Mask-Only is not an appropriate command when blister agent hazards exist.

WARNING

Do not use mask-only when a blister agent is present.

Responsibility for MOPP level rests with higher levels of command as explained in FM 3-4. Variations to MOPP levels and actors which affect these levels are also fully explained in FM 3-4.

PROCEDURES BEFORE ATTACK

The Individual and or Unit Actions illustration describes individual and unit actions that must be completed at different MOPP levels prior to an attack.

Specific postures are subject to modification by commanders in order to permit mission accomplishment.

INDIVIDUAL AND OR UNIT ACTIONS

MOPP LEVEL	INDIVIDUAL ACTION	UNIT ACTIONS (all actions "mission permitting")
0	• Mask/hood carried. • Overgarment, overboots, and gloves readily available.	• Equipment available.
1	• Wear overgarment.* • Carry mask/hood, gloves, and overboots. • Place M8 or M9 detector paper on overgarments. • Remain under cover whenever possible. • Sleep or rest only in pup tents, shelters, and vehicles. • Sleep only in fully protected posture.	• Initiate monitoring with M8 alarms (service every 12 hours). • Place M8 detector paper on external surface of vehicle, equipment, and prestock. • Cover all grounded equipment, ammunition, and POL products. • Close all unused hatches, windows, ramps, and access plates. • Cover all food and water supplies. • Construct shelter over open hatches; when stationary, construct overhead cover for all foxholes. • Designate site for prestock clothing and decontaminates (DTD).
2	• Wear overgarment and overboots. • Carry mask/hood and gloves.	• Continue actions described under Level 1.
3	• Wear overgarment*, overboots, and mask/hood (open or closed). • Carry gloves.	• Continue actions described under Level 1.
4	• Wear overgarments, gloves, overboots, and mask (fully closed and sealed).	• Continue actions described under Level 1.

*In hot weather, the jacket or hood can be left open for ventilation.

Note: Raingear should be worn over the overgarment during inclement weather or vehicle washing and or decontamination.

SUPERVISION OF MOPP

Leaders must check their soldiers for proper fit and seal on the protective mask and proper fit of protective clothing. Require the soldiers to assume stressed positions (such as bending, twisting, and stretching) to check fit. Compliance with the MOPP level should be checked regularly.

Stress and fatigue can be reduced by rotating heavy work requirements, allowing more frequent rest periods, making maximum use of mechanical aids, providing adequate water supply, and reducing the work rate.

Section VI. Detection, Monitoring, and Unmasking Procedures

Every soldier needs to know about several items of NBC defense detection equipment that are considered team or unit equipment rather than individual equipment. The items include the M256/M256A1 chemical agent detector kit and IM93/UD dosimeter.

CHEMICAL AGENT DETECTOR KIT (M256/M256A1)

The M256/M256A1 kit is issued at squad, crew, or section level. It provides a squad level ability to detect and identify field concentrations of nerve, blister, or blood agent vapors. It differentiates between classes of agents and helps determine when unmasking may be safe after a chemical attack. The kit consists of 12 individually packaged samplers and detectors, a set of instruction cards, and a packet of ABC-M8 VGH chemical agent detector papers. These components come packed in a small, compact, plastic case. Each sampler and detector detects harmful vapor concentrations of nerve, blister, and blood agents. It changes color upon contact with chemical agents at concentrations hazardous to an unmasked person. See TM 3-6665-307-10 for further information.

DOSIMETER (IM93/UD)

The Army standard tactical instrument for reading total radiation dose is the IM93/UD. It is a tubular device, about the size of a fountain pen. It allows the user to read the accumulated gamma total dose simply by looking through the lens while pointing the instrument toward the sun or another bright light source. One end has a dust cap to keep dirt from the charging contacts.

This dosimeter requires a charging unit — the P1578A/PD radiac-detector charger. This charger is a small, electrostatic-charge generator. It is designed to zero all United States and certain NATO tactical combat dosimeters. The charger has its own NATO adapter stored within the case. The major operating features of the charger are the charging knob, charging pedestal, and window. Reading the unit requires direct sunlight or another bright light source, such as vehicle headlights or a flashlight. Because of its size, the IM93/UD could be easily misplaced or otherwise lost. Care must be taken to ensure that this valuable instrument used for measuring radiation is readily available when needed.

SUPERVISE RADIOLOGICAL MONITORING AND SURVEY

Designate a point where readings will be taken within your area. Note the grid coordinates of that point.

Check the operator to make sure he takes readings at least once each hour (periodic type). The appropriate TM will indicate when and how often the meter needs zeroing or calibration.

Make sure the operator immediately reports to you all readings indicating radiation and the time of these readings. Use this information to prepare an NBC-4 report.

Have the operator monitor continuously using the IM 174 (rad per hour) or AN/PDR-27 (O to 500 millirads) if any of the following conditions occur:

- A reading of one centigray per hour (rad per hour) or more is received.
- A fallout warning is received.
- A nuclear burst is seen, heard, or reported.
- An order to do so is received.
- The unit begins to move.

Continue these operations until directed to stop, or less than one centigray per hour (rad per hour) is detected.

INITIATE UNMASKING PROCEDURES

The unit commander decides when to initiate unmasking procedures. The platoon leader is not authorized to make this decision. If a platoon leader cannot make contact with his higher element, then he should remain masked and take actions to regain contact.

After receiving permission from a commander and with the aid of a chemical agent detector kit, perform the following steps to initiate unmasking procedures

Ž Use a chemical agent detector kit to check for the presence of chemical agents.

Ž If the kit does not detect agents, have two soldiers unmask for five minutes and then remask.

Ž Monitor for ten minutes the condition of the soldiers that unmasked.

When no symptoms of chemical agents appear in the two soldiers, it is safe to unmask.

If a chemical agent detector kit is not available, perform the following steps to initiate unmasking procedures:

Ž Have two soldiers break the seal on their masks for 15 seconds. Soldiers should keep their eyes open and they should hold their breath.

Ž Soldiers should reseal their masks and monitor their condition for ten minutes.

Ž If no chemical agent symptoms appear, have the same two soldiers rebreak their seal, take three or four breaths and then reseal.

Ž Repeat the monitoring process.

Ž If no chemical agent symptoms appear, have the same two soldiers unmask for a five minute period then remask.

Ž Repeat the monitoring process.

When no chemical agent symptoms appear, it is safe to unmask.

SUPERVISE TACTICAL DOSIMETRY OPERATIONS

Check all dosimeters to make sure they read 0. If any dosimeter does not, recharge it. If a charger is not available, note the readings.

Select personnel to wear the dosimeter. These individuals should be performing duties within the unit's area. Make sure they accurately read the dosimeters when submitting daily reports to you.

Average these readings, round to the nearest ten, and report this average to your commander.

Section VII. Decontamination

Decontamination is essential to prevent casualties and combat degradation in a fallout or chemically contaminated environment. In the past, when a unit was hit with chemicals, it pulled out of the battle, found a chemical unit, and went through an 18-hour ordeal to remove all traces of chemical contamination. Tactically, this approach is not feasible, and logistically, it is unsupportable. If a unit still has combat power, it must continue its mission.

METHODS OF DECONTAMINATION

When a force is attacked with NBC weapons, its combat power drops. An important reason for this is the drop in performance caused by operating in high levels of MOPP. Various methods of decontamination allow units to lessen the adverse impact of an NBC attack. Three types of decontamination allow units to lessen the impact of an NBC attack on combat power. These types are basic skills, hasty decontamination operations, and deliberate decontamination operations. The following paragraphs discuss the three types.

BASIC SKILLS

The basic skills type of decontamination includes the simple skills basic to soldier survival. Survival decontamination (done within one minute of contamination determination) is conducted using supplies and equipment carried by each individual or unit vehicle (Ml 1 decontamination apparatus, M258A1 decontamination kit). The soldier's Manual of Common Tasks (see STP 21-1 -SMCT) provides further information on basic skills decontamination.

HASTY DECONTAMINATION

Hasty decontamination operations are the actions of teams or squads using equipment found within battalion-size units. Hasty decontamination reduces the spread of contamination on people or equipment and allows possible temporary relief from MOPP 4. By speeding the process of weathering for chemical and biological contamination, it makes deliberate decontamination easier. This makes its hazards only a negligible risk to

unprotected soldiers. Also, hasty decontamination requires little preplanning. This method, also called unit-sustainment, consists of two techniques: MOPP gear exchange and vehicle washdown which should be done within six hours.

DELIBERATE DECONTAMINATION

Deliberate decontamination operations require detailed preplaning. More manpower and resources are needed than in hasty decontamination. Detailed troop decontamination is internally done by the unit and detailed equipment decontamination requires external support.

TECHNIQUES OF DECONTAMINATION

Seven decontamination techniques are used to support the three types of decontamination. These seven techniques are fully explained in FM 3-5, Chapters 4 through 6.

Appendix E

ARMORED VEHICLE RECOGNITION

Because the majority of Chaparral, Vulcan, and Stinger units, at times, are providing ADA protection to forward maneuver units, their proximity to enemy ground troops and equipment necessitates that their personnel be familiar with some of the enemy materiel. Vulcan and Stinger elements will more than likely be exposed to enemy ground fires and, in fluid situations, may encounter advance elements of enemy ground units.

Unless we understand the capabilities of threat weapon systems, their patterns of employment, and their doctrine, we cannot counter their moves effectively.

This appendix presents threat ground vehicles and problems of recognition. It also presents the principal armored vehicles which are most likely to be encountered by forward area ADA platoon personnel.

The scope of this appendix limits the amount of ground threat materiel which can be discussed; however, a complete unclassified discussion of threat operations, tactics, and equipment is found in FMs 100-2-1, 100-2-2, and 100-2-3.

RECOGNITION OF ARMORED VEHICLES

Recognition training is an important part of the overall training program in ADA units. All soldiers who are likely to be in forward areas should be able to recognize, in addition to aircraft,

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	Page
Recognition of Armored Vehicles	E-1
Light Armored Vehicles	E-7
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Antiaircraft Armored Vehicles	E-14

MBTs, armored cars, and APCs of NATO and Warsaw Pact countries.

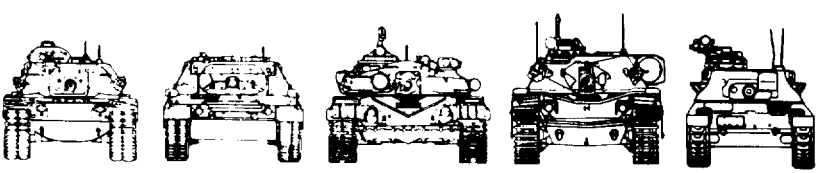
For most soldiers, recognition of ground equipment is not a serious problem as they are usually told what threat equipment is in their location and should be told when to fire at them. There will be occasions when unexpected vehicles appear and when the soldier must himself make the decision as to whether it is hostile or friendly.

Soldiers in the forward area must be able to detect and identify equipment which may be camouflaged and is often at ranges out to 3,000 meters.

While recognition training methods and techniques are beyond the scope of this appendix, several aids are mentioned here. Among those aids are film clips, video tapes, slides, and viewgraphs. While photographs, posters, and slides continue to be used, consideration should be given to developing skills in the recognition of moving vehicles. Scale models of vehicles can also be used for this training. Such minor details as caliber of the main armament and the subcaliber machine gun, number of crew members, and cruising range should not be emphasized. When one looks at an actual vehicle at 2,000 meters from a full side view, how many details can be seen? Is the caliber of the main armament a key recognition feature? The instructor should have realistic slides of equipment — side view, oblique, and head-on — at ranges from 500 to 3,000 meters. The instructor should determine what the key recognition features are. For instance, older US tanks viewed head-on at 300 meters look as tall as they are broad. These tanks are instantly distinguishable from modern Russian tanks because of this feature. This aspect ratio could be a key recognition feature. Head-on comparisons of five MBTs (see the Main Battle Tanks Comparisons illustration) show overall aspect ratio and it can be readily seen that the shape of the turret is one of the key recognition features.

Note: The illustrations in this appendix are not drawn to scale.

MAIN BATTLE TANKS COMPARISONS

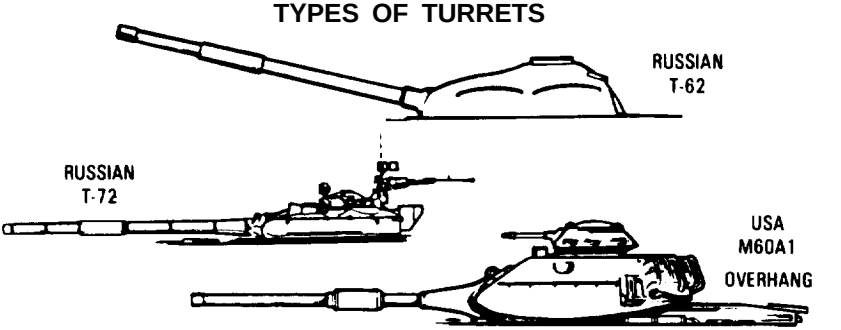


M60 LEOPARD T-72 CHIEFTAIN AMX-30

TURRETS

Turrets are streamlined, elongated, and usually well sloped. Turret overhangs and bulges are common. Some representative turrets are shown in the Types of Turrets illustration.

TYPES OF TURRETS

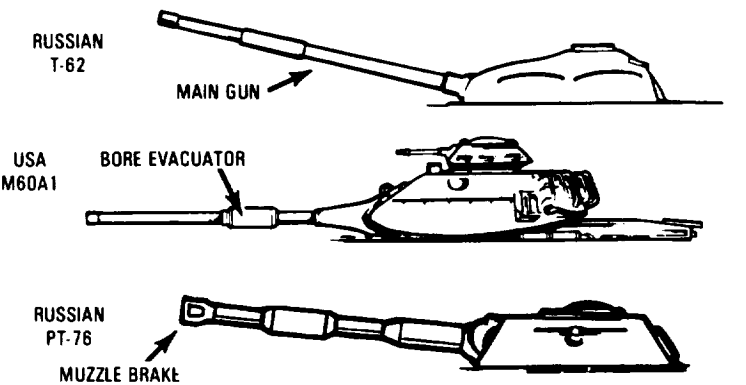


ARMAMENT

The armament of armored vehicles ranges from machine guns up to large cannons. The armament of tanks usually consists of a main gun, coaxial machine gun, and an antiaircraft machine gun.

Two recognition features of the main gun, as shown in the Main Gun Features illustration, are muzzle brakes and bore evacuators.

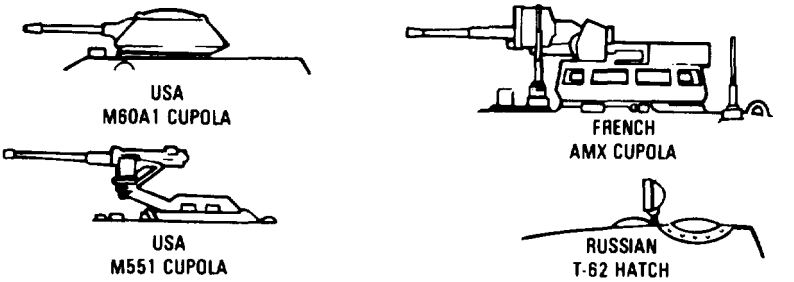
MAIN GUN FEATURES



HATCHES AND CUPOLAS

The type of hatch or cupola on top of the turret, as shown in the Types of Hatches and Cupolas illustration, is another good recognition feature. Warsaw Pact vehicle hatches are located differently from most allied vehicles.

TYPES OF HATCHES AND CUPOLAS

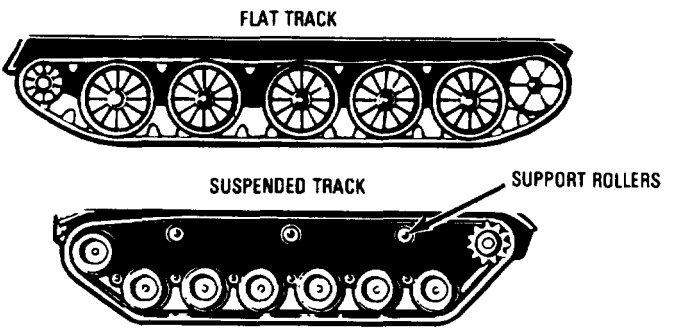


The hatches of Warsaw Pact vehicles open toward the front. The hatches on the majority of allied vehicles open toward the back.

TRACK AND SUSPENSION SYSTEMS

Many vehicles may be recognized by their track and suspension systems. Recognition of these features may be difficult, however, due to obscuration by brush or defiladed terrain. The Tracks illustration contains examples of suspension systems.

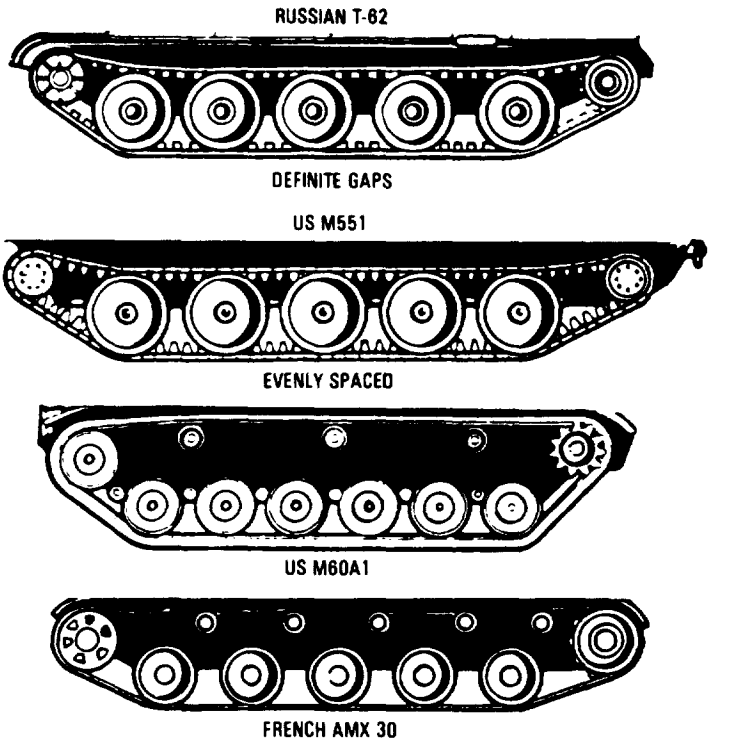
TRACKS



ROAD WHEELS

The flat track is utilized on such vehicles as the Russian T-62, the American M551, and the American Ml 13 (see the Suspension Systems illustration). On this type of suspension system, the track returns along the top of the road wheels. The suspended track with support rollers for track return is utilized on such vehicles as the American M60A1, British Centurian, and the Russian T-72. Another recognition feature of suspension systems is the spacing between road wheels. The majority of Warsaw Pact vehicles have definite gaps between road wheels, whereas the majority of allied vehicles have evenly spaced road wheels. The Suspension Systems illustration contains some representative examples of different suspension systems.

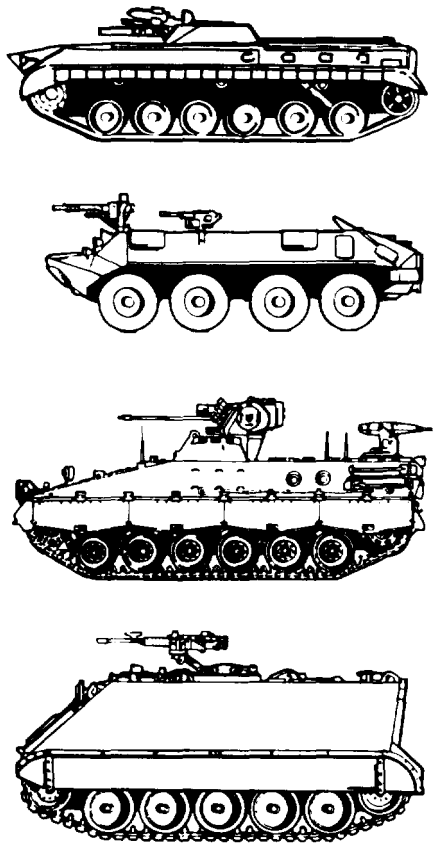
SUSPENSION SYSTEMS



ARMORED PERSONNEL CARRIERS AND OR RECONNAISSANCE VEHICLES

The major recognition features of these vehicles (see the Armored Personnel Carriers Recognition Features illustration) are the shape of the hull, suspension (wheeled or tracked), and the cupola or turret. Many allied vehicles are characterized by a boxy or square-shaped hull. Most Warsaw Pact vehicles are characterized by a low, angular, or boat-shaped hull.

ARMORED PERSONNEL CARRIERS RECOGNITION FEATURES



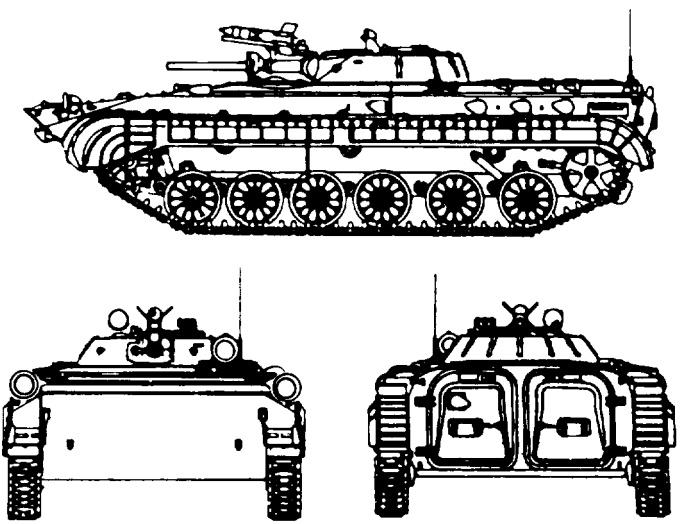
LIGHT ARMORED VEHICLES

The principal threat armored vehicles most likely to be encountered by SHORAD Units are described in the following paragraphs. Principal physical characteristics, which aid visual recognition, are also described to facilitate engagement by SHORAD units.

ARMORED INFANTRY COMBAT VEHICLE, BMP

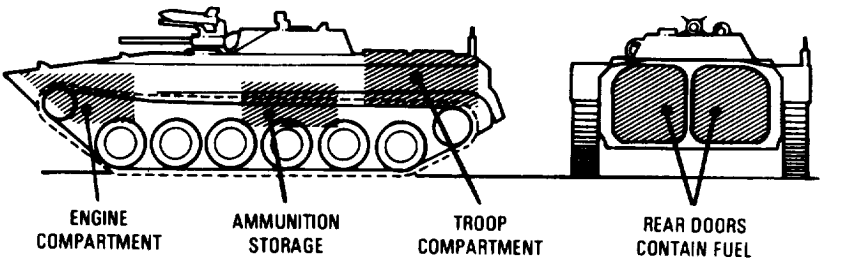
Because of its relatively large numbers on the battlefield and its firepower and mobility capabilities, the BMP (see the BMP illustration) is probably the most dangerous ground weapon system to SHORAD gun survivability besides tanks.

BMP



Due to the compactness of the BMP, critical components (see the Areas of Vulnerability illustration on page E-8) such as ammunition, fuel, and personnel are located in such a manner that penetration anywhere on the vehicle will normally result in a mobility or personnel kill. Fire should therefore be concentrated on the vehicle's areas of vulnerability.

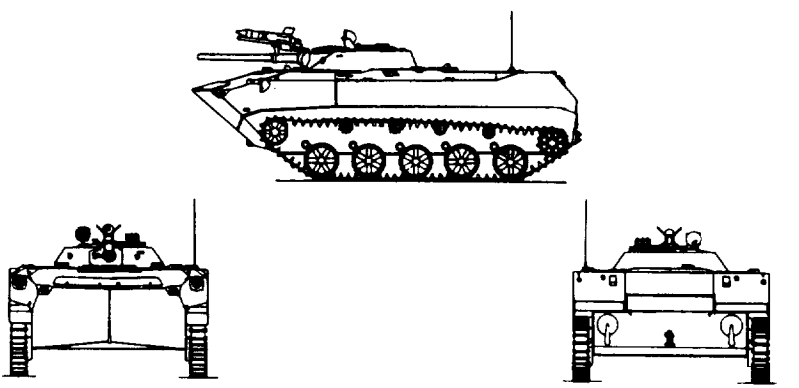
AREAS OF VULNERABILITY



AMPHIBIOUS COMBAT VEHICLE, BMD

The BMD (see the BMD illustration) is found in threat airborne divisions. BMD armament is the same as the BMP except for two low-mounted 7.62-millimeter machine guns. The vehicle has a combat weight of only 7.5 metric tons and can attain a speed of 60 kilometers per hour.

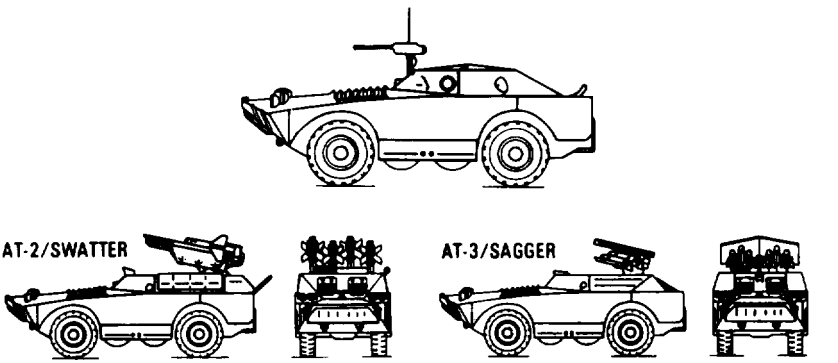
BMD



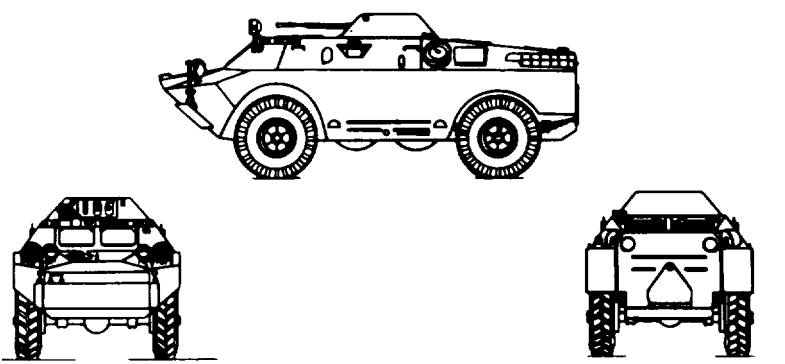
AMPHIBIOUS SCOUT CAR, BRDM

The BRDM armored reconnaisance car weighs about 5.6 metric tons and can attain a speed of 80 kilometers per hour (see the BRDM illustration, this page). The BRDM-2 weighs 7.0 metric tons and can attain a speed of 100 kilometers per hour (see the BRDM-2 illustration, this page and the BRDM-2 Antitank Guided Missile Carrier illustration, page E-10).

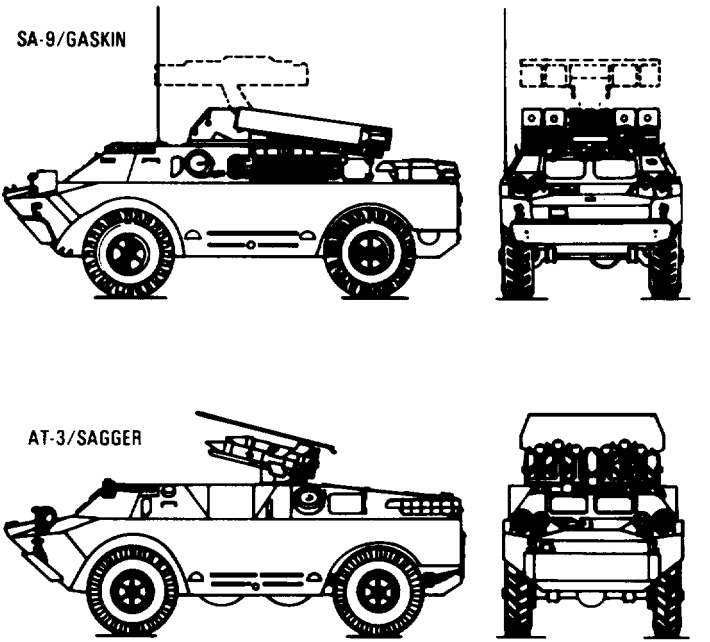
BRDM



BRDM-2



BRDM-2 ANTITANK GUIDED MISSILE CARRIER



BRDM CHARACTERISTICS

LIMITATIONS

Maximum armor 10-millimeter (BRDM) and 14-millimeter (BRDM-2).
(Penetrable by artillery fragments and 50-caliber machine gun fire),
Tires vulnerable to small arms.
Missile leaves highly visible signature when fired.

14.5-MILLIMETER ANTIAIRCRAFT MACHINEGUN

Has maximum ballistic capability of 350 meters, with effective range of 1,000 meters and armor penetration of 8 millimeters at 0° at 500 meters.
Rate of fire: 200 to 250 rounds par minute (practical).

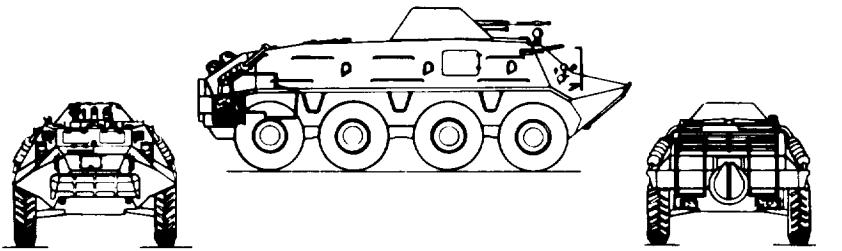
AMPHIBIOUS ARMORED PERSONNEL CARRIER, BTR

The BTR series of armored personnel carriers are described in the following paragraphs.

BTR-60PB

This vehicle (see the BTR-60PB Example illustration) is the standard APC in motorized rifle units. It performs well cross-country in conditions that favor wheels. The boat-shaped hull with sloped sides provides good swimming capability and helps deflect hostile fires.

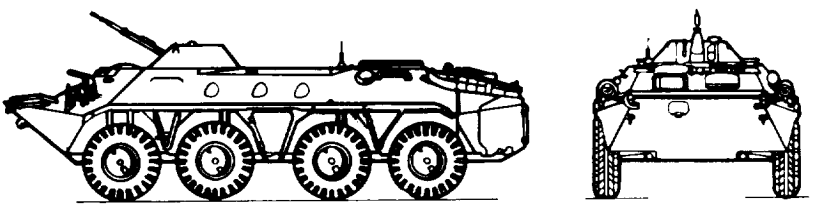
BTR-60PB EXAMPLE



BTR-70

This vehicle (see the BTR-70 Example illustration) is a successor to the BTR-60PB. Both vehicles have the same turret armament. Like the BTR-60PB, the BTR-70 has good cross-country capability, high road speed, and large troop-carrying capacity. Its versatility and amphibious capability are also advantages.

BTR-70 EXAMPLE



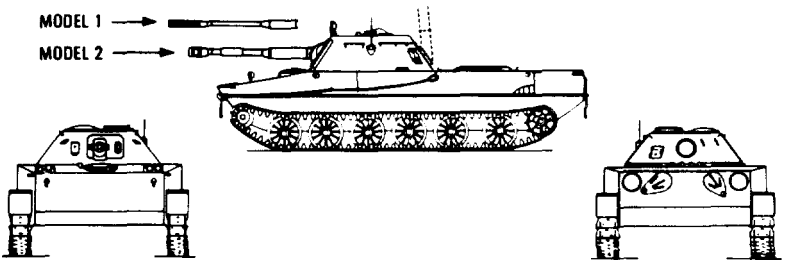
TANKS

Tank recognition is of primary importance to SHORAD personnel. It is too late if a SHORAD crew mistakenly identifies hostiles as friendlies. Recognition features and characteristics of threat tanks are shown in the following illustrations.

RECONNAISSANCE TANK, PT-76

Formerly the standard reconnaissance tank, the PT-76 is being replaced by BMP reconnaissance vehicles. See the PT-76 Tank illustration.

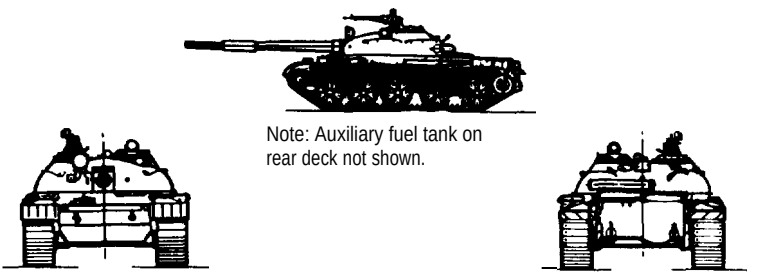
PT-76 TANK



MEDIUM TANK, T-62

The medium tank T-62 is found in some motorized rifle and tank units. See the T-62 Tank illustration.

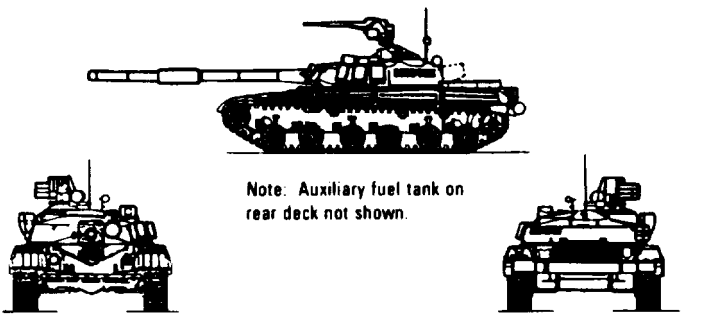
T-62 TANK



MAIN BATTLE TANK, T-64

The T-64 (see the T-64 Tank illustration) is a successor to the T-54/55/62 series battle tanks. The T-64 is being deployed in GSFG and Western Military Districts in the Soviet Union. It has not appeared outside of Soviet units.

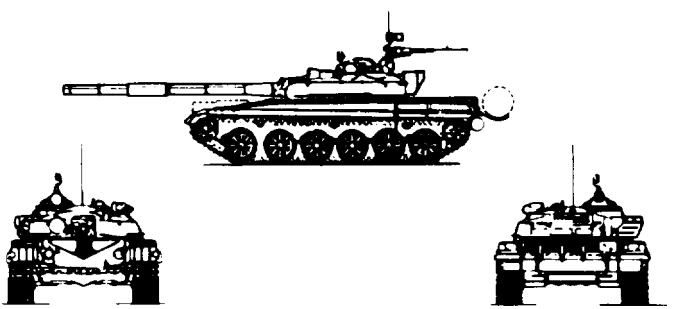
T-64 TANK



MAIN BATTLE TANK, T-72

The T-72 is a successor to the T-54/55/62 series battle tanks. The T-72 (see the T-72 Tank illustration) is employed in the Soviet Union and has been introduced in Warsaw Pact countries and some Middle East countries. It employs armament, ammunition, and fire control similar to the T-64.

T-72 TANK



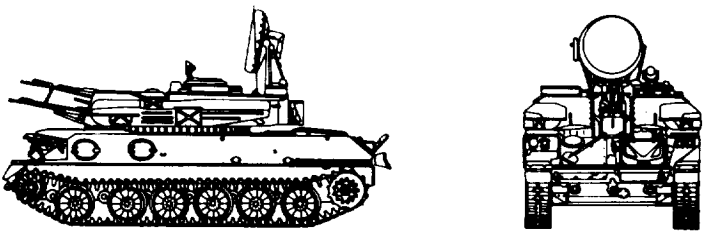
ANTIAIRCRAFT ARMORED VEHICLES

Tracked and wheeled antiaircraft vehicles which provide close-in protection for threat maneuver formations are deployed well forward and may conceivably be encountered by our SHORAD units.

TRACKED ANTIAIRCRAFT WEAPON, ZSU-23-4

This self-propelled weapon is replacing the ZSU-57-2 in some units. The ZSU-23-4 (seethe ZSU-23-4 illustration) is employed in the air defense battery of motorized and tank regiments as well as for security for SA-4 (GANEF) and SA-6 (GAINFUL) SAM units. Its secondary mission is engagement of ground-type targets.

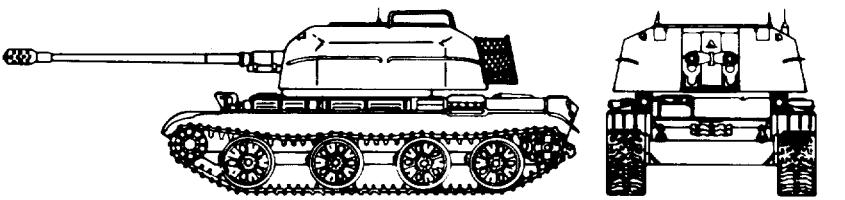
ZSU-23-4



TRACKED ANTIAIRCRAFT GUN, ZSU-57-2

This self-propelled weapon (see the ZSU-57-2 illustration) is used by the Soviet Union and Warsaw Pact armies. It is found in air defense regiments of tank and motorized rifle divisions.

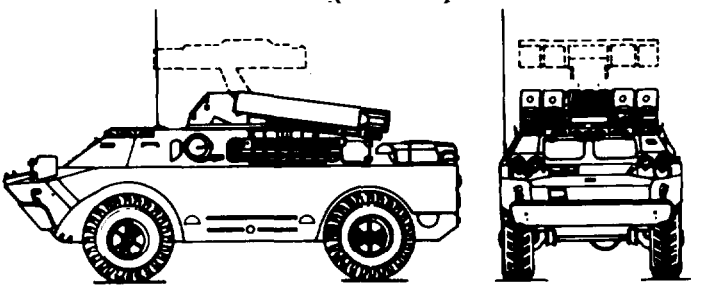
ZSU-57-2



SHORT-RANGE AIR DEFENSE SYSTEM, SA-9

The low-altitude air defense system SA-9 (GASKIN) is found in the antiaircraft battery of motorized rifle and tank regiments. See the SA-9 (GASKIN) illustration.

SA-9 (GASKIN)



Short-range, low-altitude air defense system found in the antiaircraft battery of motorized rifle and tank regiments.

Modified BRDM — 2 chassis.
Four missile canisters carried on rotatable launcher turret.

Missile: infrared seeker.
high-explosive warhead.
Slant range: 7 kilometers.
Kill zone: 65-15,500 feet.
Crew: 4
Amphibious.

Note: The SA-9 can be utilized to complement the ZSU-23-4.

Appendix F

ATGM, ASM, AND ARM COUNTERMEASURES

This appendix will outline some basic procedures for reacting to ATGMs, ASMs, and ARMs that may be encountered on the battlefield. A basic understanding of the capabilities of Soviet ATGM and ARM systems, the type of units employing them, and the tactics used in their employment are crucial to survival.

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Section I. Antitank Guided Missiles

The Soviet ATGM systems currently in use have been proven combat effective. All systems are optically sighted and, with the exception of RPG and antitank cannon fires, are operator guided to impact. You must be seen to be hit. All measures taken by a squad to fight from concealed positions will increase survivability. In an active defensive role, sudden changes in the speed and direction of travel increase the ATGM gunner's probability for error. This technique was proven highly effective by Israeli tank commanders in the 1973 Yom Kippur War. The ability to return suppressive fire can also add to distracting the ATGM gunner. Although most ATGM positions can be well camouflaged, the weapons themselves normally leave a signature. That signature can be used to sight and return suppressive fire. Suppressive fire, in combination with evasive maneuvering, is the best way to actively defend against an ATGM launch.

AT-3 SAGGER

The Sagger is a wire-guided missile and, in this respect, similar to the TOW and DRAGON systems. However, the gunner must track the target and the missile simultaneously and fly the missile to the target. The effective range lies between 500 and 3,000 meters with a maximum flight time of 27 seconds at 3,000 meters. The Sagger can be fired from the BRDM-2 or BRDM reconnaissance vehicles, the BMD and BMP APCs, or from ground-mounted platforms which resemble suitcases.

EMPLOYMENT

When firing from a BRDM-series vehicle, the operatror can position himself up to 80 meters away from the vehicle and operate the launcher via a remote cable, as shown in the Firing from a BRDM illustration on page F-2. The vehicle-mounted version can

fire from a defilade position, leaving an area of one to four feet exposed. The ground-mounted version can be remotely operated up to 15 meters away from the launcher. When ground-deployed, a third member of the team is usually deployed up to 1,000 meters in front of the Sagger with an RPG ready to use if the Sagger fails. The RPG can also engage targets within the 500-meter - dead space of the weapon.

FIRING FROM A BRDM



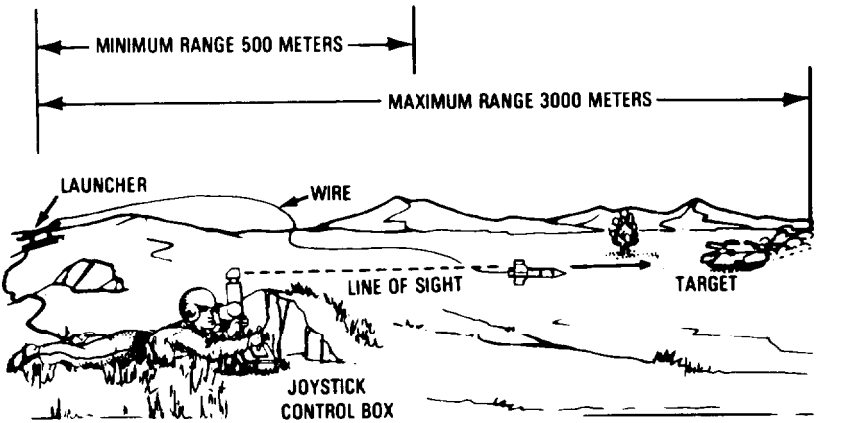
DEPLOYMENT

Vehicle-mounted Saggers are found in the antitank units of motorized rifle and tank divisions and the antitank regiment of artillery divisions. BRDM - equipped airborne regiments also have the vehicle-mounted Sagger. Man-packed Saggers are also found in the units previously described and in virtually all airborne units.

The general method of operation of both the ground- and vehicle-launched systems is similar except that, for vehicle systems, the gunner can operate either inside the vehicle or from a remote location. One difference is that the vehicle system allows the gunner remote operation to a maximum distance of 80 meters, whereas the suitcase Sagger has only a 15-meter connecting cable.

It is important to know the Sagger gunner's location with respect to the launcher (see the Sagger Gunner Location illustration on page F-3) so that countermeasures will more effective.

SAGGER GUNNER LOCATION



Note: Look for a Sagger gunner to be up to 15 meters from a suitcase Sagger launcher. The Sagger gunner may also be up to 80 meters from a BRDM launcher.

The main problem of controlling the Sagger is to "capture" it and bring it onto the line of sight after launching it from a remote position. Depending on the skill of the gunner and the distance he is remoted from the launcher, the missile can be captured at ranges of 500 to 800 meters from the launch site. However, under combat conditions, most gunners will probably be able to successfully engage targets only between 1,000 to 3,000 meters.

Normally, "suitcase" Saggers are employed by a three-man firing team and are deployed in groups of four missiles per team. One man is the senior gunner and he fires the missiles. The second man is the junior gunner. He assists in the system checkout procedures and deploys nearby to protect the gunner; he can also fire missiles. The third man moves well forward of the firing position with an RPG-7 to engage the target if the Sagger fails to hit.

COUNTERMEASURES

The Sagger can be defeated in the ways previously discussed — varied speed and direction coupled with suppressive fires and smoke obscuration.

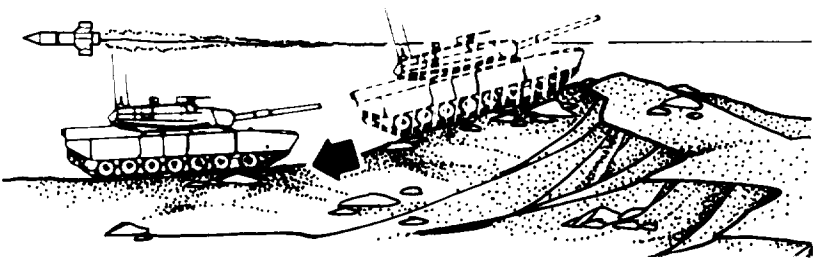
Various type dodges can be used successfully to counter the ATGM. The most effective type dodges are to —

Ž Move immediately to natural cover (see the Move to Natural Cover illustration). This includes simply backing down from a hull defilade firing position to a complete hull down position.

Ž Make a violent turn to the right or left (see the Making a Violent Turn illustration) at the last few seconds of missile flight, since it is then hard for the Sagger gunner to correct for sudden, sharp moves by his target.

• Follow an erratic path (see the Gunner Overcorrects illustration). This is designed to cause the gunner to overcorrect and thus lose control of the missile.

MOVE TO NATURAL COVER



If you are facing a strong antitank defense, you must counter the enemy through the use of one or more of the following general methods to be able to move against him:

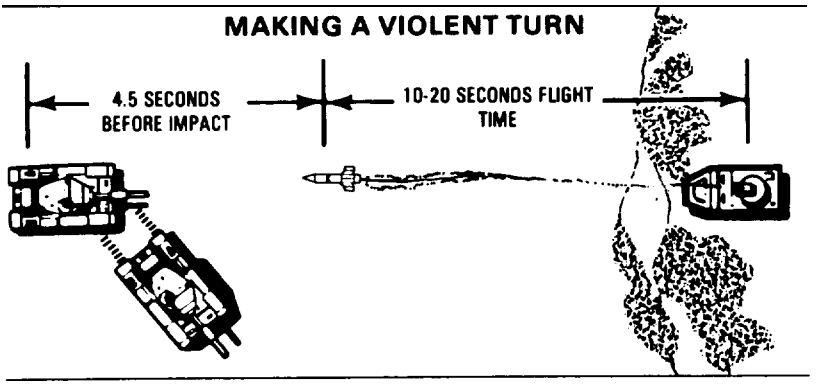
• Maximize the cover afforded by the terrain.

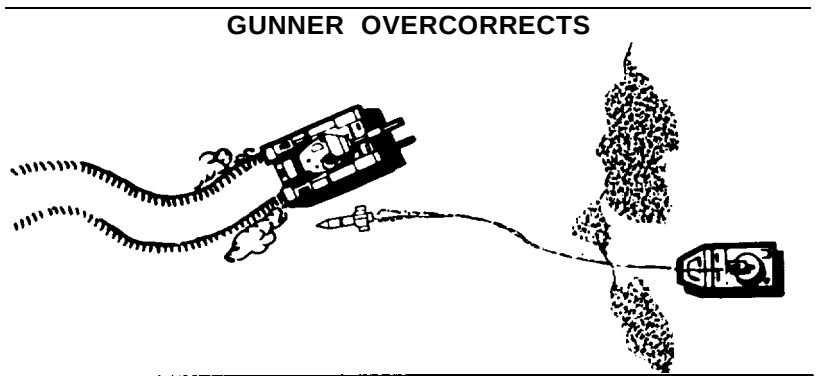
Ž Destroy the antitank weapon(s).

• Suppress the enemy so he will not be able to effectively fire at you.

• Obscure the enemy's vision by employing smoke.

Ž Move during periods of reduced visibility such as fog or night.





AT-2 SWATTER

Although piloted much like the Sagger, the Swatter is radio-signal guided instead of wire-guided. The Swatter gunner must track the missile and the target simultaneously. The effective range is between 500 and 4,000 meters, with a maximum flight time (at maximum range) of 27 seconds. Swatters are launched from BRDM or BRDM-2 scout vehicles and either the Mi-8 Hip or Mi-24 Hind helicopters. A recent improvement in the Swatter missile has been the addition of a SACLOS guidance system with terminal IR homing. This should increase the probability of kill on a target.

DEPLOYMENT

Vehicle-mounted Swatters are normally found in the antitank company of a motorized rifle regiment. The Swatter is widely used on helicopters but is being phased out slowly by the AT-6 Spiral.

COUNTERMEASURES

In addition to the previously discussed countermeasures, the performance of an IR-terminal homing device is seriously diminished when smoke is used or, if the capability exists, by discharging flares to mislead the missile's IR seeker.

AT-4 SPIGOT

The Spigot is the Soviet version of the US TOW missile, and is viewed as the replacement for all Sagger systems. Spigot is tube launched and SACLOS guided. Most likely it will be seen in a ground-mounted version only, as it has not been seen mounted on the BRDM or BMP. Spigot is a HAW with an effective range of 70 to 2,000 meters with a maximum time of flight of 11 seconds.

DEPLOYMENT

Current deployment of this system has been only to the antitank platoon of the motorized rifle battalion. In numbers, this equates to four per battalion. As the system is man-portable, it is possible that this weapon will be deployed with airborne or air assault units in the future.

COUNTERMEASURES

Because the gunner must track the missile and his tracking console is next to the launch tube, his position is easier to target than the Sagger. The range of the weapon is 2,000 meters; therefore, Vulcan gun systems can use suppressive fires on the ATGM gunner's position and maneuver rapidly to counter the ATGM. The reduced dead space of Spigot versus Sagger (70 meters versus 500) means that RPG-7s are not likely to be deployed forward of the Spigot.

AT-5 SPANDREL

Designed to be the replacement of the vehicle-mounted AT-2 Swatter and AT-3 Sagger, the Spandrel's operating characteristics are practically the same as the AT-4 Spigot's. The main difference between the two is the effective range of 100 to 4,000 meters with a flight time of 20 seconds at maximum range.

DEPLOYMENT

The AT-5 Spandrel is currently mounted on the BRDM-2 scout vehicles. The AT-5 Spandrel is being fielded in GSFC units.

EMPLOYMENT

Spandrel fire units may be expected to be in defilade or well-overgrown positions so as not to expose themselves .The top of the mount (periscope and missiles) will have to remain exposed during any engagement, creating an opportunity to initiate suppressive fires provided the Spandrel is in range.

AT-6 SPIRAL

Replacing the AT-2 Swatter as the primary helicopter-launched ATGM is the AT-6 Spiral. Operating much like its predecessor, the Spiral is a SACLOS system with IR missile tracking and radio guidance. Larger than previous ATGMs, the Spiral is estimated to be able to hit targets from 500 to 5,000 meters and to be able to travel 5,000 meters in 11 seconds.

DEPLOYMENT

Spiral is now being deployed to GSFC. It is mounted on Hind-D and Hip-E attack helicopters.

COUNTERMEASURES

Due to the higher speed of the Spiral as opposed to the Swatter, maneuvering is an efective countermeasure in addition to measures previously discussed; however, the reaction by the fire unit must be instantaneous.

Section II. Air-to-Surface Missiles and Antiradiation Missiles

ASMs and ARMs present a definite threat to ADA systems on the battlefield in addition to the ATGMs previously discussed. ASMs and ARMs generally expected to be encountered in the MBA can be launched from a variety of CAS aircraft and the

Mi-24 Hind and Mi-8 Hip helicopters at ranges normally out to 10 kilometers. The munitions themselves range from radar-command or laser-guided to passive radar-homing rounds.

COUNTERMEASURES IN GENERAL

All ASMs have common characteristics. Missile tracking relies on the pilot's or gunner's visually acquiring the target and directing the missile to target intercept. As discussed previously with ATGMs, ASMs can be defeated through evasive maneuvering, employment of smoke, and placing suppressive fire on the launch platform. ARMs can be degraded by ceasing radar and or radio transmissions. However, it is extremely difficult to determine if a missile being launched from an aircraft is an ATGM, ARM, or ASM. It is therefore recommended that all aircraft-launched missiles be treated as ARMs and that the additional measures of ceasing radiations and evasive maneuvering commence immediately upon detecting a launch. The best possible ASM countermeasures are those measures that will allow the fire unit to remain undetected by the attacking ASM platform. ADA weapon crews should employ all the principles of cover and concealment and emission control to keep their positions from being detected. In order for an aircraft crew to attack a ground site with an ASM the pilot or the weapons control officer must be able to identify the target at sufficient range to allow the ASM to arm itself and maneuver to the target. The more difficult the ADA weapon crew makes this for the crew of the attacking aircraft, the more likely the ADA weapon and crew are to survive the attack.

AS-7 KERRY

The AS-7 can be employed by a variety of CAS aircraft. The Kerry has a range of 10 kilometers and has a speed of approximately 360 meters per second. Guidance is by radio command, much the same as the Swatter. Thus, the attacking aircraft pilot must maintain line of sight to the target through the missile until impact.

The AS-7 is known to be carried on the following aircraft: SU-24 Fencer, SU-7B Fitter A, Su-17 Fitter C, and the Mig-27 Flogger-D. Normal launch altitude for the Kerry is 300 to 3,000 meters, making the launch platform an excellent target for most ADA systems.

AS-9

The AS-9 carries a large conventional warhead and is guided by radiation homing. This makes the AS-9 a threat to ADA systems. It is carried by the Su-24 and other frontal aviation aircraft. The maximum low-altitude range of the AS-9 is 80 kilometers, although the launch envelope is considerably larger if it is launched from high altitude at high airspeed.

As stated previously, an ARM can be degraded by immediately ceasing all radar and radio transmissions and taking evasive maneuvers, if possible. Time of flight for a missile launched from maximum range at low altitude is probably less than two minutes.

AS-10

The AS-10 possesses many of the characteristics of the AS-7 Kerry. The AS-10 uses semiactive laser homing, much as the AT-6 Spiral does. The range, speed, and launch platforms are much the same as the AS-7 Kerry. A future antiradiation homing variant of the AS-10 is highly possible.

To counter the AS-10, smoke generation and maneuvering in combination are best, because both the pilot's vision and the laser designator's vision are obscured.

Section III. Specific Weapon System Actions

When selecting firing positions, consideration should be given to prepared positions that provide systems with hull defilade (see the Defilade Positions illustration on page F-10). If a prepared position is not available, a position on the reverse slope of a hill, along a woodline, in a fold or ripple, or behind a building offers good protection. In the attack or on the move, positioning must incorporate being able to cover the bounding fire unit while remaining partially concealed to avoid detection. Use of the terrain and man-made objects as discussed previously greatly enhances survivability.

DEFILADE POSITIONS



A Vulcan is hull-down when the muzzle of the cannon is the lowest portion of the vehicle exposed to the front. Use hull-down protection while engaging targets with direct fire.



A Vulcan is turret-down when the vehicle is behind cover, but the Vulcan commander still can observe to the front from the cupola. Use turret defilade for protection while observing.

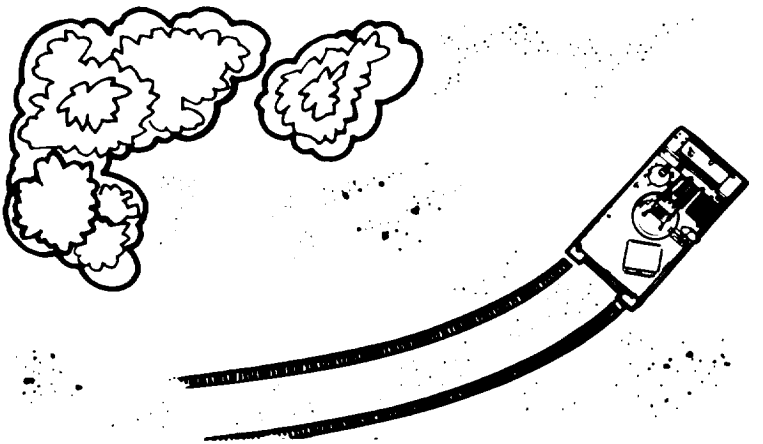
VULCAN (SELF-PROPELLED)

The Vulcan presents a low radar emission threat. The range-only-radar does present a small ARM target when it radiates. An aircraft in the Vulcan's range is unlikely to attack the fire unit with an ARM. However, if the gunner detects a missile being fired from an in-range target he is radiating, he should fire a burst immediately as suppressive fire. The fire unit should move immediately after a suppressive burst is fired. This same basic procedure applies to ATGMs the fire unit detects.

Vulcan squad leaders must make sure when selecting a position that the slope is not so steep that the gun cannot be depressed enough to engage targets, and the position does not have excessive cant. It is important to avoid landmarks because they attract enemy attention (see the Avoid Landmarks illustration). Threat artillery and antitank weapons will probably be directed toward them. Trees and brush are useful for concealment, but they should not dictate occupying a position on the forward slope of a hill.

Positioning and maneuvering guidelines should be followed as mentioned in the opening paragraph of this section.

AVOID LANDMARKS



VULCAN (TOWED), CHAPARRAL, AND FORWARD AREA ALERTING RADAR

Due to the relative immobility of these systems, extreme care must be exercised to keep them out of ground-based ATGM range. By following the positioning guidelines as discussed in the introduction to this section, survivability against ASMs should be enhanced. In addition, fire units should move after each engagement or as the situation allows, and FAARs should move as often as possible to avoid being targeted.

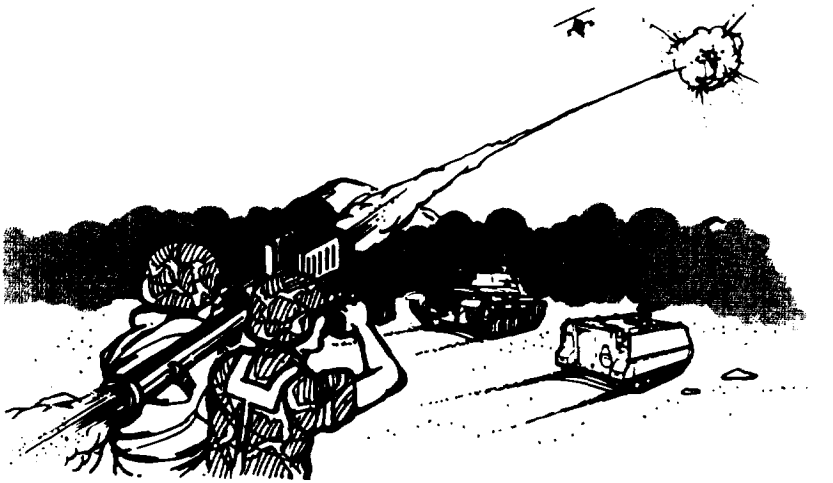
STINGER

The Stinger team should count heavily on concealment and mobility for survivability. The crew vehicle should always remain concealed when in position, with the gunner coming out only to engage an aircraft. The crew should move after every engagement to avoid targeting.

Friendly forces may use self-defense smoke screens to protect themselves against threat ATGM helicopter attack. The smoke screen forces the helicopters to fly at higher altitudes, which makes them vulnerable to ADA weapons. Helicopter crewmen, like antitank gunners, must

see the target in order to hit it. When helicopters fly above the smoke to engage their targets (see the Stinger Team Using Protective Smoke Screen illustration), Stinger and other ADA weapons engage them.

STINGER TEAM USING PROTECTIVE SMOKE SCREEN



Appendix G

HEAVY DIVISION AIR DEFENSE ARTILLERY PLATOON CHECKLISTS

Checklists in this appendix are recommended for use by the heavy division small unit ADA leader. They are not all inclusive; however, they are useful in most combat situations. Make additions to these checklists where required. If your unit SOP calls for different or more detailed procedures, follow the local SOP.

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Platoon Leader's Planning Checklist	G-7
Squad Leader's Briefing Checklist	G-8
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Coordination Checklist	G-11
Defense of Static Asset Checklist	G-12
Defense of Convoy Checklist	G-13
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Platoon Command Post Checklist	G-15
Reconnaissance, Selection, and Occupation of Position Checklist	G-18

PRECOMBAT INSPECTION

The precombat inspection checklist is outlined as shown. Use the Remarks column to indicate the status of the individual item being checked.

PRECOMBAT CHECKLIST

Remarks

Individual Soldier Readiness:

1. TA-50 inventory. _____
2. Weapon clean and zeroed. _____
3. Received briefings on:
   a. Safety. _____
   b. Cold weather and or hot weather injury. _____
   c. Mission. _____
   d. SOFA. _____
   e. SMLM (Europe). _____
4. LBE.
   a. First aid kit. _____
   b. Canteen with water. _____
   c. Ammunition pouches and or magazines. _____
   d. M258A1/A2 kit. _____
   e. Protective mask (M171A1/A2 or XM40). _____
5. ID card, dog tags, SF 46. _____

Equipment Readiness:

1. Publications for vehicles. _____
2. Logbooks and or dispatches. _____
3. Wheeled vehicles.
   a. Engine oil level. _____
   b. Coolant to -20 degrees. _____

PRECOMBAT CHECKLIST (continued)

Remarks

c. Battery fluid level correct. _____

d. Air filter clean. _____

e. Chains present and serviceable. _____

4. Tracked vehicles.

a. Fuel filter drained. _____

b. Fire extinguishers updated and sealed. _____

c. Engine oil level. _____

d. Transmission oil level. _____

e. Transfer case oil level. _____

f. Final drive oil level. _____

g. Fantower gear box oil level. _____

h. Drain plug in. _____

5. General.

a. Required package products. _____

b. Fuel filters drained. _____

c. Check oil leaks. _____

d. Fire extinguishers. _____

e. Transmission oil level. _____

f. Transfer case oil level. _____

g. Coolant level. _____

h. Final drive oil level. _____

i. Battery fluid level and terminals secure. _____

j. Air filter clean. _____

k. Track tensions correct. _____

l. Tires serviceable and pressure correct. _____

m. All lights operational. _____

n. Cold start system operational. _____

o. No exhaust leaks. _____

p. All access plates installed. _____

PRECOMBAT CHECKLIST (continued)

Remarks

q. Hull and cab clean of debris. _____

r. All gauges functional. _____

6. Safety and other.

a. OVM present and serviceable. _____

b. Jack applicable for vehicles properly calibrated. _____

c. First aid kit. _____

d. Water cans filled. _____

e. Gas cans filled. _____

f. Life vest serviceable. _____

7. Communications equipment.

a. Radio and intercom operational. _____

b. All connectors and receptacles clean. _____

c. Grounding straps secure. _____

d. Antennas and matching units complete and serviceable. _____

e. TA-312 and or TA-1 present and serviceable. _____

f. Applicable batteries on hand. _____

g. PRC-77 complete and operational. _____

h. AN/GRC-39 complete and operational. _____

i. AN/ GRC-106 complete and operational. _____

j. AN/VRC-46, -47, -48, -49 complete and operational. _____

k. TSEC KY57 operational. _____

8. Fire control system.

a. Firing circuits operational. _____

b. Optics clean and operational. _____

(1) Vu'can sights. _____

PRECOMBAT CHECKLIST (continued)

Remarks

(2) Chaparral gunner sights. _____

(3) Binoculars. _____

(4) Night observation devices. _____

(5) Gunner's quadrant. _____

9. Weapons.

a. All weapons clean. _____

b. All machine guns have spare barrels, spare bolts, and cartridge extractor. _____

c. 50-caliber machine gun correctly head-spaced and timed. Timing head-space gauge available and serviceable. _____

d. Weapons cleaning equipment on hand. _____

Operational Readiness:

1. Platoon alert plan current and functional. _____

2. Platoon alert roster current. _____

3. Platoon leader and or platoon sergeant ensure —

a. Vehicles are loaded in accordance with load plans. _____

b. Vehicles have dispatches and or logbooks. _____

c. Current PMCS on DA Form 2404. _____

d. All drivers have valid operators' licenses. _____

e. CEOIs are current and have dummy cords attached. _____

f. MRE rations properly distributed. _____

g. Vehicles topped off. _____

h. Squads have maps of A/O. _____

PRECOMBAT CHECKLIST (continued)

	Remarks
i. Key personnel have binoculars, compasses, and watches.	
j. Vinsons and or secure devices loaded with appropriate codes.	
k. Warning order issued to squad leaders.	
l. Spot checks of personnel, equipment, and individual knowledge conducted.	
m. Rehearsals conducted as appropriate.	

PLATOON LEADER'S EQUIPMENT CHECKLIST

The platoon leader's equipment checklist is outlined as shown. Use the Remarks column to indicate the status of the individual item being checked.

EQUIPMENT CHECKLIST

	Remarks
Manuals:	
FM 44-1.	
FM 44-3.	
FM 44-4, 44-5.	
FM 44-18.	
FM 100-5.	
FM 101-5-1.	
Map and overlays in map case.	
Flashlight with extra BA-30s.	
Grease pencils and acetate.	
CEOI with dummy cord.	

EQUIPMENT CHECKLIST (continued)

Remarks

Watch. _____

TSOPs:

1. Division. _____
2. Supported brigade. _____
3. Battalion. _____
4. Battery and team. _____

GTAs. _____

KYK-13 to key vinson. _____

PLATOON LEADER'S PLANNING CHECKLIST

The platoon leader's planning checklist is outlined as shown. Use the Remarks column to indicate the status of the individual item being checked.

PLANNING CHECKLIST

Remarks

Analyze mission:

1. Convoy. _____
2. Fixed asset. _____
3. Maneuver force.
   a. Deliberate attack. _____
   b. Hasty attack. _____
   c. Meeting engagement. _____
   d. Movement to contact. _____
   e. Passage of lines. _____
   f. River crossing. _____
   g. Delay. _____
   h. Withdrawal. _____
   i. Retirement. _____
4. NDP. _____

PLANNING CHECKLIST (continued)

Remarks

Backward Planning:

1. Equipment emplacement time (in minutes). _____
2. Movement time from RP to position. _____
3. Convoy time. _____
4. SP time. _____
5. Brief time to squad leaders. _____
6. Ammunition, POL, and ration resupply time. _____
7. Meal time. _____
8. Maintenance time. _____
9. Time necessary to set hasty defense. _____
10. Movement time to rally point (based on farthest squad). _____
11. March order time. _____
12. Reconnaissance time:
    a. Primary route. _____
    b. Alternate route. _____
13. Time required to pass warning order. _____
14. Receipt of new mission. _____

SQUAD LEADER'S BRIEFING CHECKLIST

The squad leader's Briefing Checklist is shown on page G-9. This checklist contains the minimum information the squad leader must receive from the platoon leader to accomplish his mission.

BRIEFING CHECKLIST

	Remarks
Mission.	
Fire unit location and alternate.	
PTL.	
Sector of fire.	
Route and alternate route.	
ADW.	
WCS.	
Hostile criteria.	
Platoon rally point.	
RP.	
Friendly troops in A/O.	

NIGHT DEFENSIVE POSITION CHECKLIST

Defense of perimeters, NDPs, and rally points is best when conducted with the supported unit, but the following checklists is focused around doing it as a platoon. The same principles apply in both situations.

POSITION CHECKLIST

	Remarks
Does the area have the following features?	
1. Sufficient area for dispersion.	
2. Alternate exit and entrance routes.	
3. Easily defended against ground attack.	
4. Easily recognizable and known to all squads.	
5. Good communications with higher, lower, and supported units. Internal wire linked.	
6. Good observation.	

POSITION CHECKLIST (continued)

	Remarks
Reconnaissance prior to occupation.	
Coordinate with adjacent units prior to occupation.	
Secure area prior to occupation and establish LP and OP at main entrance.	
NBC detection and monitoring and survey teams check the area prior to occupation.	
Ensure all units occupy the NDP.	
Establish vehicle dismount point with ground guides.	
Establish NBC alarms.	
Unit moves in after EENT.	
Unit moves out and emplaces prior to BMNT.	
Position Vulcans for the best fields of fire and most likely avenues of approach.	
Fill gaps in the perimeter with fighting positions (.50-caliber M2, M60, M203).	
Ensure each gun position coordinates with gun positions on left and right.	
Ensure each position has clear fields of fire and observation.	
Establish final protective fires and principle direction of fire for the crew-served weapons.	
Cover likely armor approaches with LAWs.	
Ensure each position has range card.	
Put Chaparrals inside the perimeter.	

POSITION CHECKLIST (continued)

	Remarks
Ensure the LP and OP positions have the following:	
1. Cover and concealment.	
2. Communications to perimeter.	
3. Range card.	
4. Sufficient distance from perimeter to provide early warning.	
Camouflage positions and vehicles (always).	
Establish a reserve force.	
Plan and conduct the following as necessary:	
1. Ammunition resupply.	
2. POL resupply.	
3. Water resupply.	
4. Ration resupply and feeding.	
5. Maintenance support.	
Submit requested reports in accordance with SOP.	
Enforce light, noise, and litter discipline.	
Brief everyone on:	
1. Tactical situation.	
2. Mission.	
3. Challenge and password.	

COORDINATION CHECKLIST

The platoon leader's checklist for coordination at the supported unit TOC is contained in the Checklist for Coordination illustration. It is outlined on page G-12.

CHECKLIST FOR COORDINATION

	Remarks
Visit all staff sections and exchange information. Also pass the information gathered to ADA HQs.	
1. S3:	
a. Front line trace.	_____
b. Friendly air and or ground situation.	_____
2. S2:	
a. Current enemy situation.	_____
b. PIR and or other intelligence requirements.	_____
3. NBC officer:	
a. NBC situation.	_____
b. Location of deliberate and or hasty decontamination points.	_____
4. CE officer:	
a. Current CEOI requirements and changes.	_____
b. EW activity.	_____
Platoon leader should attend all supported unit briefings.	_____
Coordinate the FAAR locations in the supported unit sector.	_____
Keep the supported unit informed on air defense engagements and fire unit status.	_____
Keep the supported unit informed of ADWs, hostile criteria, and WCS.	_____

DEFENSE OF STATIC ASSET CHECKLIST

The static asset defense checklist is outlined below. Each item on the list should be checked.

STATIC ASSET DEFENSE CHECKLIST

	Remarks
Conduct map reconnaissance for primary and alternate positions.	
Select PTLs.	
Select fields of fire and or sectors of fire with right and left limits.	
Ensure there is mutual support between fire units.	
Ensure weapons are employed in accordance with battalion TSOP:	
1. Vulcans positioned on or near asset and or area.	
2. Chaparrals positioned away from asset and or area for early engagements.	
Ensure there is accessibility to all fire units.	
Ensure firing positions can be occupied within 15 minutes.	
Ensure alternate positions are at least 500 meters from primary position.	
Ensure CP locations can establish communications with all elements.	
Ensure Vulcans do not deploy between enemy forces and maneuver forces.	
Ensure FAAR coverage provides adequate radar coverage.	

DEFENSE OF CONVOY CHECKLIST

The convoy defense checklist is outlined below. Each item on the list should be checked.

CONVOY DEFENSE CHECKLIST

	Remarks
Evenly space Vulcans throughout the convoy: have one Vulcan fourth from the front and one Vulcan fourth from the rear vehicle.	
Deploy Vulcans to provide mutual support.	
Deploy Chaparrals along the route to provide coverage and mutual support.	
Ensure CP is located to provide communications with Chaparral, Vulcan, and FAAR squads.	
Ensure FAAR is located to provide radar coverage for Chaparral platoon.	

OFFENSIVE OPERATIONS CHECKLIST

While there are many common requirements for providing air defense protection to maneuver forces (shown in the following checklist), the ADA platoon leader must know the differences. Use the guidance contained in the Operations in the Offense Checklist in planning.

OPERATIONS IN THE OFFENSE CHECKLIST

Movement to contact. Place the Vulcans as far forward as possible. Preposition Vulcan and Chaparral when possible. Platoon will operate in decentralized mode.

Meeting engagement. Same as movement to contact.

Deliberate attack. Similar to above except the mode of control will likely be centralized at battalion, with the battalion commander or S3 involved in the fire unit positioning.

Pursuit. Ensuring squads are updated on WCS, ADW, and hostile criteria will be critical due to the rapidly changing missions of the supported unit (especially army air). The ground forces will conduct encirclement and

OPERATIONS IN THE OFFENSE CHECKLIST (continued)

penetration maneuvers. Both will require air defense protection. Ensure priority of air defense protection goes to the most critical maneuver forces of the battle. An important factor for the ADA platoon is rest. This will be a fast, continuous, and possibly long-duration battle.

Exploitation. Initiative by the ADA platoon leader is imperative. Air defense support will be continuous while infantry and armor units will rotate in and out. Once again, planned rest while conducting continuous operations is critical. Rapidly changing missions will occur, as in pursuit.

Passage of lines. Pre-positioning Chaparrals at passage points and Vulcans positioned with the passing unit. Pre-positioning of Stinger with airmobile infantry squads is a key selling point for the platoon leader. To have the capability to engage the Hind and Hip early, Stinger will have to be pre-positioned well forward. Stinger crews should be on the first or second load flown in.

Offensive operations. The common requirements in offensive operations that the platoon leader must consider include the following:

	Remarks
1. Ensure Vulcans have the capability of providing mutual support.	
2. Ensure Vulcans provide air defense forward of maneuver forces.	
3. Ensure Vulcans provide air defense along axis of maneuver force.	
4. Ensure Vulcans do not interfere with maneuver force. Position Vulcans inside tank and or infantry formations for survivability so tanks and or infantry can return fire.	
5. Maintain communications with supported unit and squads.	
6. Position FAAR to provide adequate coverage for fire units.	
7. Ensure avenues of movement do not skyline the fire unit or lead to a hindrance of movement.	

PLATOON COMMAND POST CHECKLIST

The platoon CP checklist is outlined on the following pages. Each item on the list should be checked.

CHECKLIST FOR PLATOON COMMAND POST

Remarks

Centrally locate the platoon CP to ensure good communications with —

1. Battery CP. _____
2. Squads. _____
3. FAARs. _____
4. Supported unit. _____

Have the CP location checked by the NBC detection teams for NBC hazards prior to occupation. _____

Properly disperse all vehicles and tents. _____

Use proper camouflage procedures (nets correct color out, not touching camouflaged item, and all the way to the ground). _____

Use terrain features to help blend into the position. _____

Once the position is occupied, establish OPs and LPs. Ensure they have the following as a minimum:

1. Binoculars. _____
2. Radio or wire communications. _____
3. Range cards. _____
4. Challenge and password. _____

Establish communications with battery CP, squads, and FAAR upon arrival at location (if listening silence is not imposed). _____

Observe COMSEC and ECCM procedures:

1. Enter net in accordance with CEOI and unit procedures. _____
2. Operate on your assigned net. _____
3. Establish platoon net. _____
4. Enforce net discipline. _____

CHECKLIST FOR PLATOON COMMAND POST (continued)

Remarks

Submit all required reports in a timely manner. _____

Follow established maintenance procedures to ensure quick response to squad leaders. _____

Follow and or execute all aspects of the OPORD and ensure that your squads do the same. _____

Request resupply of all classes of supply (as necessary). _____

Ensure the CP personnel set the headspace and timing on the .50-caliber machine gun. _____

Know the following and exchange with levels (higher, adjacent, and supported unit):

1. Front line trace. _____
2. Friendly air and or ground situation. _____
3. Enemy air, ground, NBC, and EW situation. _____
4. Location of decontamination points. _____
5. CEOI requirements and changes. _____
6. Bridging, route, and obstacles information. _____
7. EEI and or PIR.

Pass all urgent information to higher, lower, adjacent, and supported units.

Have the current CEOI and authentication tables tagged and displayed for the appropriate day. _____

Know and display on map the current location of all squads. _____

Ensure platoon sergeant is briefed on plans and operations so he can take over in your absence. _____

CHECKLIST FOR PLATOON COMMAND POST (continued)

	Remarks
Take corrective action on down equipment.	
Make coordination with adjacent units.	
Ensure squads with nonoperational equipment still observe cover and concealment. Camouflage a broken-down vehicle.	
Ensure squads with problems continue to provide air defense coverage to the greatest extent possible. A broken-down track can still shoot.	
Ensure your platoon performs before, during, and after operations maintenance on all equipment.	
Ensure adequate security measures are taken for classified documents and other sensitive items.	
Ensure platoon members are clean shaven and perform personal hygiene every day.	

RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION CHECKLIST

A reconnaissance is made to determine routes and locations of tactical positions. Numbers of vehicles and personnel utilized in the reconnaissance should be kept to a minimum. The checklist for RSOP is outlined as shown.

CHECKLIST FOR RSOP

	Remarks
The RSOP party should consist of the following personnel as a minimum:	
1. Platoon leader or platoon sergeant.	
2. Driver RTO.	
3. One man per squad to serve as ground guide.	

CHECKLIST FOR RSOP (continued)

Remarks

The minimum equipment needed for the RSOP includes —

1. Platoon leader APC with communications. APC should be topped off. _____
2. NBC equipment (M8 alarm, MOPP suits, protective masks, IM-174, M256A1 kits, IM-93, and PDR-27). _____
3. Two M203 grenade launchers. _____
4. .50-caliber machine gun. _____
5. Compass. _____
6. Binoculars. _____
7. CEOI with dummy cord. _____
8. Maps and overlays. _____
9. Rations and water.

Know the following about the enemy situation:

1. Location of units. _____
2. Expected weather. _____
3. Expected air activity.
4. Numbers, sorties, and or formations of enemy aircraft. _____
5. Likely avenues of approach. _____
6. Air defense status. _____

Know the following about the friendly situation:

1. Location of battery CP.
2. Locations of other platoons.

Know the following about the mission:

1. Location of the defended asset. _____
2. Understand the platoon mission; if you do not, ask. _____
3. Primary and secondary target lines of each squad. _____
4. Sector of search and fire for each squad. _____

CHECKLIST FOR RSOP (continued)

Remarks

Mission execution:

1. State time of departure. _____
2. State march order. _____
3. Convoy interval. _____
4. SP. _____
5. Convoy speed. _____
6. Primary and alternate routes. _____
7. Control points. _____
8. Checkpoints. _____
9. Actions to be taken at danger areas. _____
10. RPs. _____
11. Actions to be taken at new location. _____

Service support requirements:

1. Coordinate ration support. (Are you DS or GS?) _____
2. Coordinate ammunition resupply for squads in need. _____
3. Coordinate POL resupply as necessary. _____
4. Stipulate uniform for mission (that is, MOPP). _____

Command and signal requirements:

1. State signals to be used (hand, pyrotechnics, radio, ground markers). _____
2. State any special codes that maybe in effect. _____
3. State what frequency will be used. _____
4. State call signs. _____
5. Give the exact current time. _____

Appendix H

LIGHT DIVISION AIR DEFENSE ARTILLERY PLATOON GUIDELINES

This appendix consists of a series of important guidelines and critical questions intended for use by the ADA platoon of the light division. They are not all inclusive, but could apply to most combat situations. They include a mix of conditions, tactical situations, and operational techniques. These guide lines are designed to stimulate thought and may be used to develop checklists or SOPs.

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PLANNING

The guidelines for planning are outlined as shown. Each item on the list should be checked.

PLANNING GUIDELINES

What is your support relationship (DS, GS, GSR, or R)?

1. GSR: These are not likely missions for you.
2. GS: Normally, if the platoon is GS, it will be defending brigade or division rear area assets. Your battery CP will command and control you directly.
3. DS: The ADA platoon supports directly a maneuver battalion and receives ADA C^2 information from its battery CP or through the division EW net. The platoon receives classes of supply through its battery or as coordinated with the maneuver battalion.
4. R: The ADA platoon will receive priorities from the reinforced ADA unit.

What is your command relationship?

1. Operational control: Supported commander is responsible for your tactical employment. He is not, by definition, responsible for administration and logistics.
2. Attached: The supported commander is totally responsible for your employment and support, less promotions and transfers.

Given the main entries immediately above, what does it mean to you in terms of support? What does your battery and or battalion SOP say about this (it may not say anything)?

1. Who will provide rations? (Think about how far you will be from your parent battery.)
2. At what point in time does ration support become effective? How will your unit be deployed on the battlefield at that time?
3. How will your ammunition resupply be handled? Does your request go through the ADA battery and or battalion to the division ammunition officer or through the support battalion and or brigade to the division ammunition officer?
4. Who will provide fuel support? If assigned an STM, will your supported unit supply you? Find out in advance. Normally this is done by the supported unit without much difficulty, but be sure you ask in advance, if possible.

PLANNING GUIDELINES (continued)

5. Who will provide maintenance support? Your weapon systems are unique; therefore, system maintenance probably will be provided by your parent unit and battalion DS ordnance detachment. Conventional maintenance (trucks, communications, et cetera) and Class IX (repair parts) may be obtained through your supported unit if they have like carriers and prime movers. However, in the light division your platoon will probably have more rolling equipment than the battalion you will support. In this case, your requirements may exceed their capability to support you.
6. Will your battery commander attach system and or motor mechanics to your platoon or will contact teams be on call from the battery? The more self-sufficient you are the better.

What ADA systems will you be commanding?

1. A Vulcan platoon?
2. A Vulcan platoon and Stinger section (five teams with section HQ)?
3. A Vulcan platoon and Stinger section minus (less than five crews with section HQ)?
4. A Vulcan platoon and Stinger section minus (five crews without section HQ)?
5. A Vulcan platoon and Stinger section reinforced (six, seven, or more crews with section HQ)?

Where on the ground will your supported unit be operating? What does the terrain look like? How will varying weather conditions affect the terrain? This information may or may not be available during the early planning phase prior to linkup with the supported unit.

1. What is the condition of the road network in your supported unit's area of operations (wet, dry, et cetera)?
2. What is the topography (hilly, mountainous, plains, et cetera)?
3. Is vegetation dense forest, broken forest, grasslands, et cetera?
4. If you have Stinger and Vulcan and given the information above, how will each weapon be most effectively positioned? Will a mix of weapons be required to defend the area?
5. Which are the primary air avenues of approach into your sector for both rotary and fixed-wing aircraft?
6. What other ADA coverage is in, or overlaps, your sector (adjacent divisional ADA and or Hawk)?
7. What is the ground threat? What type of maneuver force will your supported unit be facing — motorized and or mechanized, armored, or light infantry?

PLANNING GUIDELINES (continued)

8. What is the air threat in your sector? Your battery commander should have some initial intelligence as to what type of aircraft to expect and in what quantity (sortie rate). You can get additional information from the supported unit S2 when you make face-to-face coordination.
9. What is the weather forecast? How will weather affect threat operations, your engagement capability, and your mobility?
10. Do your squads and crews have maps of the A/O? If not, check with your ADA battalion S2 or supported unit S2.

Note: After receiving your mission from the battery commander verify as much of the information as possible from the items listed previously. Arrange a face-to-face coordination meeting with the unit you will support as soon as possible. After arriving at the supported unit, use the following guidelines.

Verify all support relationships.

1. Is your supported battalion providing rations? If so, determine —
   a. Where, on the ground, do you get the rations?
   b. Who will be the point of contact?
   c. How will you transport rations and water to your personnel?
2. Will the supported unit provide fuel and, if so, what are their procedures?
3. If ammunition requests go through your supported battalion, what are the procedures?
4. Can the supported battalion provide maintenance and repair parts support? Who is the POC and where is he located?

Give the S1 a list of all your people by name, rank, SSN, and MOS.

Give the S4 a head count of people you will bring with you (for ration support) as well as a list of all major equipment items.

Note: If you take your platoon sergeant with you, he can do all the coordination listed above while you are talking with the S3, S2, and commander.

Visit the battalion S3 and tell him what assets you are bringing with you. Inform him of any shortages and or limitations that your platoon has. In addition, you need to get from the S3 —

1. A copy of the OPORD, if it is published.
2. His understanding of the commander's concept of the operation.
3. How the battalion will be organized for combat (which companies forward, which in reserve, et cetera).

PLANNING GUIDELINES (continued)

4. What units will be on the flanks (to determine flank ADA coverage).
5. A copy of the battalion's TSOP. This document should contain much of the information discussed in this appendix.
6. Coordinate to have your liaison element, if you have one, in the battalion CP. (This could be sticky, so be careful how you present the need for an LNO.)
7. If the air defense annex for the OPORD hasn't been written, offer to write it. If it has been written, review it and give any recommendations for changes in your talks with the battalion commander.
8. Exchange call signs and frequencies.

Visit the battalion S2. You should already have a general idea about the terrain from your map reconnaissance as well as information concerning the air and ground threat. The S2 may be able to give you more current or more detailed information. If you need additional maps of the A/O, the supported battalion S2 should be able to provide them. Pay particular attention to the S2's information concerning —

1. Major ground avenues of approach.
2. Updated weather forecast.
3. Terrain and or road trafficability.
4. PIR.
5. Air threat capabilities.

After having analyzed everything you've learned from his staff, talk to the battalion commander. If your platoon sergeant completed coordination with the S2 and S4, have him brief you prior to your talking with the commander.

1. Confirm that you have a clear understanding of the S3's concept of the operation.
2. Ensure that you understand the stated air defense priorities.
3. At this point you should recommend how you will organize your defense. Using the commander's priorities and the factors of criticality, vulnerability, recuperability, and anticipated threat, tell him how he can best utilize your weapons.
4. If the ADA annex is available make any recommended changes to it at this time.

Note: Leave this meeting with a clear understanding of how the commander expects you to employ your assets.

DEFENSE OF A MARCH COLUMN

Guidelines for defense of a march column are outlined as shown. Each guideline should be noted.

MARCH COLUMN DEFENSE GUIDELINES

For a review of convoy and or march column procedures, see FM 44-3, page 6-27, and FM 44-18, page 5-13.

Contact the convoy and or march column commander and get any of the following information not already obtained from the commander S3, and or OPORD:

1. Route of march (also alternate route).
2. SP, RP, and times for each.
3. Location of assembly area.
4. Any control measures (phase lines, checkpoints, et cetera).
5. Location and or time of planned halts (for possible pre-positioning of ADA weapons).
6. Makeup of the march column.
   a. Foot march.
   b. Convoy.
   c. Foot march with vehicles interspersed.

Identify critical points:

1. Choke points.
2. Planned halts.

Identify your options:

1. Integrate your fire units into the column (Note 1).
2. Pre-position your fire units along the route (Note 2).
3. Leapfrog your fire units as the column moves.

How will you control your elements during movement?

How will you communicate with the convoy commander?

How will you receive EW during movement?

How will the convoy receive EW?

Notes: 1. Pre-positioning is only a likely option if you have Stinger assets with you and the distance is relatively short.
2. You must maintain overlapping fires.

MOVEMENT TO CONTACT

The guidelines for movement to contact are outlined as shown. Each guideline should be noted.

MOVEMENT TO CONTACT GUIDELINES

What are your priorities?

What assets do you have available to accomplish your mission? Terrain may restrict the movement and or employment of your systems.

What is the route or axis of advance and the desired movement rate (one axis or more)?

What are the primary air avenues into the axis of advance (rotary and fixed-wing)?

What are the control measures to be used (attack positions, phase lines, checkpoints, axis of advance objective, et cetara)?

What is the width of the area to be covered?

What is the planned action upon reaching the objective or making contact?

1. Fix and suppress the enemy.
2. Bypass the enemy.
3. Conduct hasty attack.

Where in the formation should the bulk of your elements be placed?

1. Advance guard.
2. Main body.

Weigh the benefits of placing some of your assets with the scout platoon and or flank guard in terms of early engagement and weighted defense versus their increased vulnerability to ground attack.

Where will the commander be located?

How will you communicate with him?

1. Face-to-face.
2. FM radio.
3. Through liaison element via FM radio.

What is your means of obtaining EW during the operation?

MOVEMENT TO CONTACT GUIDELINES (continued)

Where will your maintenance assets (if you have any) be located during the movement to contact?

Where will your ammunition vehicle be located during the movement to contact? Is it fully loaded and where will it go? What route will it take to get there once it is empty? What control measures will you use to link up with it?

What are your fire support(FA, CAS, aviation) assets and what priority have you for a call for fire?

If there is a FAAR in your zone, does its location best support the operation and are the maneuver units aware of its location?

Notes: 1. Consider overmatching the lead element with Stinger and placing Vulcan with the second element.

2. Usually, intelligence is vague in a movement to contact.

HASTY ATTACK

Prior to a hasty attack your supported element will be oriented along the march objective in order to make contact with the smallest element possible. Once contact is made, the commander has several options available based on the information provided by the element in contact. These include —

- Bypassing the enemy.
- Fixing and suppressing the enemy.
- Conducting a hasty attack.

The guidelines for a hasty attack are outlined as shown.

HASTY ATTACK GUIDELINES

Make sure you are in close contact with the supported commander at the time enemy contact is made. How do you ensure this?

1. Listen and operate on the command or O/I net.
2. Ride with him or walk close to him.

What course of action has the commander chosen?

1. Fix.
2. Bypass.
3. Attack.

HASTY ATTACK GUIDELINES (continued)

His decision may require you to reposition your elements —

1. Along a different axis.
2. To cover a different leading element.
3. To bring forward any fire units covering rear assets in order to mass your firepower.

DELIBERATE ATTACK

More intelligence and planning is required with a deliberate attack than with the hasty attack. Fire support, combat support, and combat service support elements will be closely coordinated. You must consider the elements contained in the following illustration for a deliberate attack in order to properly support the operation.

DELIBERATE ATTACK GUIDELINES

What do the intelligence people tell you about the possibility of an air attack? Questions include the following:

1. What is the possible strength of the enemy air threat?
2. Is the threat fixed-wing, rotary wing, or both?

Based on your intelligence gathering, should you request more assets from your battery?

When and where will the OPORD be given?

What are the commander's air defense priorities? Which ones can you cover?

Do you understand the scheme of maneuver?

Does the plan call for one or more axis of advance?

1. Can you cover more than one axis?
2. Which axis has been designated as the main effort?

Based on the OPORD, which leaders do you need to coordinate with to answer the following questions:

1. What is their plan?
2. What control measures will they use?
3. How will you communicate with them? (Be sure you have their frequencies if communications will be by radio.)

DELIBERATE ATTACK GUIDELINES (continued)

If movement techniques are known, how will they affect the way you cover the force?

What are the planned actions on the objective? How will you cover the objective area? How will you link up with your subordinate elements on the objective?

How will you be able to react to changes in the plan (agility) once the attack is in progress?

1. Do you have good communications with the commander or have you established a liaison element in the CP?
2. Are you familiar with the plan for the supporting attack?

Have sufficient control measures been established to control the movement of your units?

PASSAGE OF LINES

Your mission while conducting a passage of lines will require special attention to the ADA coverage over the passage lanes. You should have —

Ž Contact points where the units will make initial contact.

• Passage lanes and or movement routes.

• Passage points within the passage lanes to increase control.

• RPs.

Ž Defensive positions.

• Security and control measures.

• Time schedule for the passage.

There are four different situations listed in the following guidelines for a passage of lines which you may have to support. Each will have a slightly different focus.

PASSAGE OF LINES GUIDELINES

You are supporting the element which is being passed through and will not assume defense of the force which is passing through. In this case you should provide coverage of the passage points as the forward moving element passes through.

1. Coordinate with the unit passing through and let them know that you will provide coverage of the passage point.

PASSAGE OF LINES GUIDELINES (continued)

2. Maintain contact with the guides from your supported unit so you will know when they have led all the passing elements through and the passage point is no longer a critical choke point.

You are supporting the element which is being passed through and you have been given a new mission to assume support of the element which is passing through. Here you will be required to provide ADA coverage of the passage points and almost simultaneously effect a link-up with the element passing through.

1. Make face-to-face coordination with the element which will pass through to determine what your mission will be in support of their element after the passage of line.
2. Maintain contact with the guides from the unit being passed through so that you will know when all the elements have passed through.
3. Once all the forward passing elements have passed through, remove your air defense coverage from the passage point and position those elements in support of the element passing through.

You are supporting the element passing through and the element being passed through has its own air defense coverage.

1. Make coordination with the ADA element supporting the element being passed through to ensure that sufficient assets are available to cover the passage points. If sufficient assets are not available you will need to supplement the coverage (R). In this situation, the unit's CFL data must be exchanged.
2. In a forward passage of lines, coverage of your supported unit as it passes through will be similar to what you would provide during a movement to contact.

You are supporting the element passing through and the element being passed through has no ADA coverage.

1. You must cover the passage points yourself.
2. Coordinate with the guides from the unit being passed through to determine when the last element has cleared the passage point, or coordinate with the trail elements of your supported unit to make this determination.

DEFENSIVE OPERATIONS

After you have made coordination with your supported unit and determined that you will be supporting a unit in the defense, the guidelines for defensive operations contains some things to consider in addition to those items mentioned in the Planning Guidelines portion of this appendix. Coverage of a unit in defense bears some resemblance to defense of a static asset, with notable exceptions, such as inability to provide all-around defense and limited early engagement. To get a better idea of how maneuver units conduct a defense, look at Chapter 5, FM 7-20 (The Infantry Battalion).

DEFENSIVE OPERATIONS GUIDELINES

What type of defense is being used?

1. Blocking positions.
2. Defense in sector.
3. Delay in sector.

What is your unit's deployment disposition? Will you be on line in a linear defense across a broad sector, or successive battle positions across a narrow sector in a defense in depth?

What are the control measures? These include boundaries, routes, phase lines, passage points, contact points, and FEBA.

What is the air threat you are facing?

What are the avenues of approach into your defended area?

Do you have EW of enemy air approach? How are the FAAR assets integrated into the defense?

Do you have mutual support, overlapping fires, and defense in depth?

Do you have primary and alternate positions to cover your elements in the event of friendly maneuver to mass and conduct the preplanned counterattack options?

DEFENSIVE OPERATIONS GUIDELINES (continued)

Do you have primary and alternate positions for preplanned fall-back and delay maneuvers?

Will the covering force elements conduct a rearward passage of lines in your sector?

Will you have an on-order mission to assist in movement control at the passage points and provide ADA coverage?

Will you assume control of the air defense elements operating with the covering force? If so, has coordinating instruction been issued for link up?

Have ADA items been incorporated in the S2's intelligence priorities? For example, what type and how many aircraft can we expect the enemy to use? When can we expect the enemy to use his air assets? Where are the staging areas for the enemy's helicopter assets?

Can you get priority on engineer assets to help prepare gun positions?

EXPLOITATION AND PURSUIT

The battalion TF operates in an exploitation the same as in a movement to contact—ready to conduct hasty attacks and destroy or capture enemy personnel and equipment. The momentum of the exploitation is directly dependent upon support and secure lines of communications. Generally, combat support and combat service support will move with the TF. However, the support and communications lines may become vulnerable and rise in priority; therefore, be prepared to assume this on-order mission. In a pursuit the attacking force focuses on the main enemy force. During the exploitation phase enemy units are avoided in order to destroy the enemy's command, control, and support systems. The air defense for both phases will be planned and executed the same way. You will need to know the information contained in the following guidelines for exploitation and pursuit.

EXPLOITATION AND PURSUIT GUIDELINES

What are your priorities and the size and location of those priorities?

What are the movement control measures (phase lines and or objectives)? Are these control measures time phased or on-order movements?

EXPLOITATION AND PURSUIT GUIDELINES (continued)

What are the maneuver forces' routes and direction of attack?

What is the limit of advance?

What are the planned and probable resupply and or support routes for an on-order mission?

How will terrain affect your movement and observation?

How will you maintain your communications? Will additional communications support be required?

Can you cover all of the ADA priorities?

What is your logistical situation?

1. Fuel on hand.
2. Ammunition on hand.
3. Repair capability.
4. Food and water.

How will you resupply?

NIGHT ATTACK

Surprise and stealth are the factors which will determine the success of the night attack. In order to get close enough to the enemy undetected, the attacker must use very strict movement control measures. To successfully conduct and control your movement and plan your defense of the mission area, you must know the guidelines contained in the following illustration.

NIGHT ATTACK GUIDELINES

It is highly unlikely that you will be needed with the forward forces during darkness; however, consider the following:

1. What are the enemy's capabilities to conduct night air strikes?
2. Will the attack continue during daylight?
3. Will your coverage be in place the moment it begins to get light?
4. Where is the best location for your elements in order to answer "yes" to (3.) above?
5. What is your plan to sustain continuous operations (rest, food, fuel, and maintenance)?

NIGHT ATTACK GUIDELINES (continued)

What are the commander's priorities?

Note: Direct support FA may assume a higher priority in this type of mission.

What mission information is critical to you?

1. Assembly area.
2. Attack position.
3. Line of departure.
4. RPs.
5. Contact points.
6. Axis of advance.
7. Objectives.
8. Limit of advance.
9. Movement methods (foot, ground, or helicopter).

What are the methods of identification of friendly leaders and troops (visual - armband, vocal - password, et cetera)?

What are the planned movement techniques?

What are the communications measures (wire, FM, hand and arm signals, et cetera)?

How will terrain restrict your movement and coverage?

Is the night attack illuminated or non-illuminated?

When will radio listening silence be broken?

CRITICAL ASSET DEFENSE

Defense of a critical asset normally allows you to position weapons out from the asset in all directions, thereby enhancing your early engagement and mutual support capabilities. It is recommended that your defense design employ a Vulcan and Stinger mix because of the Vulcan's limited early engagement capability. The following guidelines for defense of a critical asset will assist you in your design (see Chapter 6, FM 44-3, for detailed discussion).

DEFENSE OF A CRITICAL ASSET GUIDELINES

What is the area to be defended?

What are the vital assets within the defended area? Are they prioritized?

What are the likely air avenues of approach?

Where is the bomb release line for the type of threat expected to be used against your defended asset?

Are your Stingers deployed forward of your Vulcans for maximum early engagement?

Are your Vulcans positioned to cover attack approach lanes (especially critical in defense of an airfield)?

Do you have enough Stinger assets to position a crew inside your air defense perimeter?

Do you have a balanced configuration to cover an attack from any direction?

Do you have mutual support, early engagement, and defense in depth?

What is your command net (ADA battery and or supported unit)?

Do you have effective EW?

Is your defense designed so minimal shift is necessary if a weapon system becomes nonmission capable?

What is the status of adjacent ADA units in your area? Are they in a position to enhance your design?

Do you have any on-order missions? If so, can you chop those elements without totally having to redesign your defense?

What about troop rest and maintenance? Can specified elements be in a standby mode and still maintain your defense?

Are alternate and supplementary positions identified and prepared?

Is overhead cover provided at each position?

DELIBERATE RIVER CROSSING

A deliberate river crossing should be a well planned operation. The guidelines for a deliberate river crossing are outlined as shown on the following page.

DELIBERATE RIVER CROSSING GUIDELINES

Where is the crossing site located?

What are the commander's priorities?

1. Assaulting force.
2. Crossing site itself.

Who is the crossing site commander?

How will you communicate with the crossing site commander?

1. Should you collocate with him?
2. When is defense of the crossing site no longer necessary? (This is the key point).

Do you have sufficient assets to cover the site and assaulting force?

Can you effectively cover the crossing site from the near bank or does terrain dictate that you place fire units on the exit bank as soon as the assault force has crossed?

How will your assets be reconfigured after the water obstacle is crossed?

How does crossing the obstacle affect the commander's priorities?

Note: It is possible for your battery to be placed in a GS role to defend a division or brigade crossing area consisting of several crossing sites. In such an instance, the above items will apply with the exception of consideration of the battalion commander's priorities. In conducting a GS mission to defend a crossing site, you would remain in place until all brigade or division elements designated to cross at that point had completed the crossing and possibly until engineer assets had been removed.

HASTY RIVER CROSSING

Site vulnerability must be taken into consideration by the commander prior to any attempt to successfully complete a hasty river crossing. The guidelines for a hasty river crossing are outlined as shown below and on the following page.

HASTY RIVER CROSSING GUIDELINES

Where is the location of the crossing site(s)?

HASTY RIVER CROSSING GUIDELINES (continued)

Is any delay anticipated at the crossing site?

1. The nature of the water obstacle or the anticipated speed in crossing it may eliminate a need for special considerations in defense of the crossing site.
2. If a significant delay in the movement of the force is anticipated, you may be required to reorganize your coverage due to the increased vulnerability at the crossing site.

Who will control the crossing site (crossing site commander)?

How will you communicate with the crossing site commander?

1. Should you collocate with the crossing site commander?
2. When is defense of the site no longer necessary? (This is the key point.)

How will your assets be reconfigured after the water obstacle is crossed?

How does crossing the obstacle affect the commander's priorities?

AIR ASSAULT

Air assault operations will be conducted when speed is essential, distances are great, and terrain is restrictive. Employment of air assault forces can be executed in the offense, defense, or retrograde. The most likely operation which would involve the use of air defense elements with the assault force are rapid penetration during pursuit and exploitation, conducting covering force operations, reinforcement, or elements in a highly mobile reserve. This type of operation requires detailed planning, organization, and strict control. The guidelines for air assault operations are outlined as shown below and on the following page.

AIR ASSAULT OPERATIONS GUIDELINES

What is the ground tactical plan?

1. How will you support the force after departure from the landing zone (with Vulcan or Stinger)?
2. What is the size of the force conducting the air assault?
3. If you are providing only dismounted Stinger, how will communications work?

AIR ASSAULT OPERATIONS GUIDELINES (continued)

Will the force withdraw after the objective is taken or is a link-up with the bulk of the force planned?

1. What are the details of how that will work (withdrawal or link-up)?
2. What control measures will be used?

What is the staging plan at the PZ and who is controlling movement in this area? Face-to-face coordination will lessen much confusion before the main body of your elements arrives at the staging area.

Do you have dedicated chalks for your elements or are you integrated into the supported unit's assets?

Is ADA coverage of the PZ required (night or day operation)?

Is ADA coverage at the landing zone required? If so, do you have assets manifested on the first chalk in with a leader on board to control movement when the rest of your elements arrive?

Do you have cargo slings?

Does your equipment preparation schedule give you adequate time to make your pickup time? Give yourself a margin of time. You do not want to miss your flight because your guns are not ready.

Do you have qualified personnel to properly sling load your equipment?

Are key personnel and equipment distributed throughout the chalks?

Do your soldiers know their chalk number, pickup time, and movement time from holding area to PZ?

Did you give a detailed mission brief to your platoon elements? Their understanding of the mission is critical to the mission.

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29 MAY 1987

By Order of the Secretary of the Army:

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GLOSSARY

ABBREVIATIONS AND ACRONYMS

A

AA	assembly area
AATF	air assault task force
abn	airborne
a/c	aircraft
AD	air defense
ADA	air defense artillery
ADO	air defense officer
ADCT	air defense coordination team
ADW	air defense warning
AIM	armored-infantry-mechanized
ALO	air liaison officer
A/O	area of operations
AM	amplitude modulated
ammo	ammunition
APC	armored personnel earner
app	appendix
ar	armor
ARM	antiradiation missile
ARTEP	Army training and evaluation program
arty	artillery
aslt	assault
ASM	air-to-surface missile
ASP	ammunition supply point
asst	assistant
at	antitank
ATGM	antitank guided missile
atk	attack
ATP	ammunition transfer point
AVLB	armored vehicle launched bridge
avn	aviation

B

bde	brigade
BMNT	beginning morning nautical twilight
BMD	Soviet airborne amphibious Combat vehicle
BMP	Soviet amphibious infantry combat vehicle
bn	battalion
BP	battle position
BRDM	Soviet amphibious reconnaissance vehicle
BTR	Soviet amphibious personnel carrier
btry	battery
BSA	brigade support area

C

c	Chaparral
C^2	command and control
C^3	command, control, and communications
CAB	combined arms battalion
cal	caliber
CAS	close air support
cav	cavalry
CE	communications-electronics
CEOI	Communications-Electronics Operation Instructions
CFA	covering force area
CFC	company fire control
CFL	coordinated fire line
cGY	centigray
cm	centimeter
cmd (comd)	command
CO	commanding officer
co	company
comm	communications
COMSEC	communications security
CP	command post
crypto	cryptographic
CSS	combat service support
CTA	common table of allowances
C/V	Chaparral/Vulcan
C/V/S	Chaparral/Vulcan/ Stinger

D

D	Duster
DA	Department of the Army
DAO	division ammunition officer
DEFCON	defense readiness condition
DISCOM	division support command
DIVARTY	division artillery
DMMC	division material management center
DODIC	Department of Defense identification code
DS	direct support
DTG	date, time group
dvr	driver

E

EA	engagement area
ECCM	electronic counter-countermeasures

E

ECM	electronic countermeasures
EEI	essential elements of information
EENT	end of evening nautical twilight
eff	effective
en	enemy
engr	engineer
EPW	enemy prisoner of war
EW	early warning
EWBN	early warning broadcast net

F

FA	field artillery
FAAR	forward area alerting radar
FAC	forward air controller
FARP	forward arming and refueling point
FASCAM	family of scatterable mines
FAST	forward area support teams
FC	field circular
FDC	fire direction center
FEBA	forward edge of the battle area
FIST	fire support team
fld	field
FLIR	forward looking infrared radar
FLOT	forward line of own troops
FM	frequency modulated, field manual
FO	forward observer
FRAGO	fragmentary order
FRG	Federal Republic of Germany
FSB	forward support battalion
FSO	fire support officer
ft	foot, feet
FU	fire unit

G

GE	German
gen	generator
gp	group
GS	general support
GSFG	Group of Soviet Forces Germany
GSR	general support reinforcing
GTA	graphic training aid

H

HAW	heavy antitank weapon
HE	high explosive
HEI	high explosive incendiary

H

HEIT	high explosive incendiary, tracer
HF	high frequency
HHB	headquarters and headquarters battery
HHC	headquarters and headquarters company
HMMWV	high-mobility, multipurpose wheeled vehicle
HOB	height of burst
hq	headquarters
HUMINT	human intelligence
hr	hour
hv	heavy

I

I^2	image intensification
IAW	in accordance with
ID	identification
IDSM	intermediate direct support maintenance
IFF	identification, friend or foe
IFV	infantry fighting vehicle
IGSM	intermediate general support maintenance
in	inch
inf	infantry
IP	initial point
IR	infrared

J

JCS Pub	Joint Chiefs of Staff Publication

K

kg	kilogram
KIA	killed in action
km	kilometer
kph	kilometers per hour

L

LAW	light antitank weapon
lb	pound
LBE	load bearing equipment
LC	line of contact
LCE	load carrying equipment
LD	line of departure
ldr	leader
LID	light infantry division
ln	liaison
LO	lubrication order
LOA	line of advance
LOGPAC	logistics package
LP	listening post
LR	long range
LRP	logistics resupply point
LSS	lightweight screening system
LT	lieutenant
LZ	landing zone

M

m	meter
MACOM	major Army command
maint	maintenance
MANPAD	man-portable air defense
max	maximum
MBA	main battle area
MBT	main battle tank
mech	mechanic
METT-T	mission, enemy, terrain, troops, and time available
mg	machine gun
MI	military intelligence
MiG	Soviet aircraft manufacturer
MIJI	meaconing, intrusion, jamming, and interference
min	minute
MLRS	multiple launch rocket system
mm	millimeter
MMC	Materiel Management Center
MOGAS	motor gasoline
MOPP	mission-oriented protective posture
mort	mortar
MOUT	military operations in urbanized terrain
MOS	military occupational specialty
MP	military police
mph	miles per hour
MR	moonrise
MRD	motorized rifle division
MRE	meals ready-to-eat
ms	moonset
MSCS	manual SHORAD control system
MSR	main supply route
MT	metric ton
MTOE	modification table of organization and equipment

N

N	north
NAAK	nerve agent antidote kit
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, and chemical
NCO	noncommissioned officer
NDP	night defensive position
NLT	not later than
Nov	November
NSN	national stock number

O

0	observer
obj	objective
O/I	operations/ intelligence
OP	observation post
OPCON	operational control
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
OT	observer target
OVM	on-vehicle materiel

P

PD	point of departure
PDS	personnel decontamination station
PIR	priority intelligence requirements
PL	phase line
plt	platoon
PMCS	preventive maintenance checks and services
POC	point of contact
POL	petroleum, oils, and lubricants
pos	position
PP	passage point
PSF	primary sector of fire
PSG	platoon sergeant
PTL	primary target line
PZ	pickup zone

R

R	reinforcing
rd	round (ammunition)
RE	Redeye
recon	reconnaissance
rept	report
RF	radio frequency
ROE	rules of engagement
ROL	Roland
RP	release point
RPG	rocket-propelled grenade
RPV	remotely piloted vehicle
RSOP	reconnaissance, selection, and occupation of position
RT	receiver transmitter
RTO	radiotelephone operator
RX	rocket

S

S	Stinger
SACLOS	semiautomatic command to line-of-sight

S

SAEDA	Subversion and Espionage Directed Against the Army
SAM	surface-to-air missile
sct	scout
SEAD	suppression of enemy air defense
sec	second
sep	separate
SF	standard form
SGT	sergeant
SHORAD	short-range air defense
SIGINT	signal intelligence
SIGSEC	signal security
SINCGARS	single channel ground-to-air radio system
SM	scatterable mines
SMLM	Soviet Military Liaison Mission
SOFA	Status of Forces Agreement
SOP	standing operating procedure
SOR	state of readiness
SP	start point
apt	support
sqd	squad
SR	short range
ss	sunset
SSN	social security number
STANAG	Standardization Agreement
STM	standard tactical mission
STR	Stinger

T

T	target
TAB	target acquisition battery
tac	tactical
TACP	tactical air control party
TAMC	the aviation maintenance company
TASM	tactical air-to-surface missile
TF	task force
tgt	target
tm	team
TM	technical manual
TOC	tactical operations center
TOE	table(s) of organization and equipment
TOW	tube-launched, optically tracked, wire-guided
TRADOC	Training and Doctrine Command

TRP	target reference point
TSOP	tactical standing operating procedure

U

UHF	ultra high frequency
USAADASCH	US Army Air Defense Artillery School
USAF	United States Air Force

V

V	Vulcan Air Defense System
VEESS	vehicle engine exhaust smoke system
veh	vehicle
VS	versus
V/S	Vulcan/Stinger
VT	variable time

W

w	with
WCS	weapons control status
wo	without
wpn	weapon

X

XO	executive officer

TERMS AND DEFINITIONS

Air Defense (AD) — All measures designed to nullify or reduce the effectiveness of enemy attack aircraft or guided missiles in flight.

Alerting – Providing a warning signal of real or threatened danger such as an air attack. To forewarn; to prepare for action.

Alternate Position — A place located generally adjacent to the primary position from which a weapon, a unit, or an individual can perform the original task when the primary position becomes untenable or unsuitable.

Attach — The placement of units or personnel in an organization where such placement is relatively temporary. Subject to limitations imposed by the attachment order, the commander of the formation, unit, or organization receiving the attachment will exercise the same degree of command and control thereover as he does over units and persons organic to his command. However, the responsibility for transfer and promotion of personnel will normally be retained by the parent formation, unit, or organization.

Attack — An offensive action characterized by fire and maneuver and culminating in a violent assault or, in an attack by fire, in the delivery of intensive direct fires from an advantageous position. Its purpose is to direct a decisive blow at the enemy to hold him, destroy him in place, or force him to capitulate.

Deliberate attack — An attack planned and carefully coordinated with all concerned elements on the basis of thorough reconnaissance, evaluation of all available intelligence and relative combat strength, analysis of various courses of action, and other factors affecting the situation. It is generally conducted against a well-organized defense when a hasty attack is not possible or has been conducted and failed. Replaces coordinated attack.

Hasty attack — An offensive operation usually conducted following a movement to contact, for which a unit has not made extensive preparations. It is conducted with the resources immediately available in order to maintain momentum.

Main attack — The principal attack or effort into which a commander throws the bulk of the offensive combat power at his disposal. An attack directed against the chief objective of the campaign or battle.

Supporting attack — An attack designed to hold the enemy in position, to deceive him as to where the main attack is being made, to prevent him from reinforcing the element opposing the main effort, and or to cause him to commit his reserves prematurely at an indecisive location. (Synonymous with holding attack.)

Basic Load (Ammunition)— That quantity of nonnuclear ammunition authorized to be on hand in a unit to meet combat needs until resupply can be accomplished. Size of the basic load is normally determined by corps or the major overseas commander.

Battalion Task Force — A force generally organized by combining tank and mechanized infantry elements under a single battalion commander to conduct specific operations. A battalion task force may be tank-heavy, mechanized infantry-heavy, or balanced, depending on the concept and plan of operation.

Battle Position (BP)– A location selected as a result of terrain and weapon analysis from which units can defend or attack. Battle positions can be selected for occupation by units as large as task forces and as small as platoons. The defending commander directs the fight by specifying which battle positions his unite will occupy and what they will do there. Normally, the task force commander selects platoon battle positions.

Boundary — Boundaries mark sectors of responsibility. With coordination, units may move across boundaries. Whenever possible, coordination should be made prior to firing across boundaries. If an enemy target on the other side of a boundary can be clearly identified, it should be engaged with direct-fire weapons regardless of boundaries.

Close Air Support (CAS) – Air attacks against hostile targets which are in the proximity of friendly forces and which require detailed integration of each air mission with the fire and maneuver of those forces.

Combat Service Support (CSS) — The support provided to sustain combat forces, primarily in the fields of administration and logistics. It may include administrative services, chaplain service, civil affairs, food service, finance, legal service, maintenance, medical service, military police, supply, transportation, and other logistical services.

Combat Support - Fire support and operational assistance provided to combat elements. May include artillery, air defense, aviation (less air cavalry and attack helicopter), engineer, military police, signal, and electronic warfare.

Combat Trains — The portion of unit trains that provides the combat service support required for immediate response to the needs of forward tactical elements.

Command Group — The commander and a few selected staff assistants who normally move forward of the command post, with appropriate communications means, in order to see and generally supervise combat action at a critical point.

Command Post (CP) – The headquarters of a force from which the staff and sometimes the command group operates. The functions performed in the command post are grouped into those which relate to directing the battle and those required for sustaining the force. Usually, three command posts are established: main, rear, and tactical.

Communications Security (COMSEC) – Protection resulting from measures taken to deny unauthorized persons information derived from the possession and study of telecommunications, or to mislead their interpretations of the results of such study. Includes cryptosecurity, physical security, and emissions security.

Company — Formed by attachment of one or more nonorganic tank, mechanized, or infantry platoons to a tank, mechanized, or infantry company either in exchange for or in addition to organic platoons, sometimes referred to as company team.

Covering Force — 1. A combined arms force operating apart from the main body which provides early warning, reaction time, maneuver space, and information about the enemy. The covering force is a tactically self-contained security force which operates at a considerable distance to the front, flank, or rear of a moving or stationary force. Its mission is to develop the situation early and defeat the enemy, if possible. If defeat is not possible, then the covering force deceives, delays, and disorganizes the enemy and develops the situation so that the main body can effectively react. 2. In defensive operations, a covering force operating apart form the main body has four basic tasks:

Ž Force the enemy into revealing the strength, location, and general direction of his main attack.

Ž Deceive the enemy or prevent him from determining the strength, dispositions, and locations of friendly forces, especially those in the main battle area.

Ž Strip away the enemy air defense umbrella, or force displacement of enemy air defenses prior to attacking the main battle area.

Ž Gain time for the main body to deploy, move, or prepare defenses within the main battle area.

3. In withdrawal operations, the covering force may cover the disengagement and withdrawal of the withdrawal force.

Cross Attachment — The exchange of subordinate units between units for a temporary period. Example: A tank battalion detaches a tank company that is subsequently attached to a mechanized infantry battalion and the mechanized infantry battalion detaches a mechanized company that is then attached to the tank battalion.

Cueing – Providing specific and timely position data with tentative identification of aircraft within a designated range of a fire unit.

Decisive Engagement — An engagement in which a unit is considered fully committed and cannot, or is not free to, maneuver or extricate itself. In the absence of outside assistance, the action must be fought to a conclusion and either won or lost with the forces at hand.

Defend — A mission assigned to a unit which requires it to destroy an attacking enemy force or stop it from penetrating the assigned sector or battle position. Subunits of the defending unit may have such missions as defend, delay, or counterattack.

Delay — A mission which requires a force to trade space for time without losing freedom to maneuver or risking penetration or being bypassed. The delaying force may attack, defend, ambush, raid, or use any other tactic necessary to accomplish the mission.

Early Warning (EW) – Early notification of the launch or approach of unknown weapons or weapon carriers. Information concerning an impending hostile air attack by use of an air defense warning.

Electronic Countermeasures (ECM) – Actions taken to prevent or reduce the enemy's effective use of the electromagnetic spectrum. Includes jamming and electronic deception.

Engagement Area (Killing Area or Zone) (EA) – An area in which a commander concentrates fire on an enemy force.

Field of Fire — The area that a weapon or group of weapons may effectively cover with fire from a given position.

Field Trains — The portion of the unit trains that provides the combat service support not required for immediate response to the needs of tactical elements. They are located rearward to prevent interference with the tactical operation. Field trains, displaced independently from the supported tactical unit, achieve security through passive measures.

Fire and Maneuver — A tactical technique, usually an extension of bounding, overwatch, used once contact with the enemy is gained. One element moves while another provides a base of fire.

Fire and Movement — The simultaneous moving and firing by vehicles. This technique is primarily used during the assault of an enemy position.

Fire Support Coordination Line (FSCL) — A line, normally placed on terrain identifiable from the air, beyond which all targets may be attacked by any weapon system (including aircraft and special weapons) without endangering friendly troops or requiring additional coordination with the establishing headquarters so long as the effects of the weapon do not fall short of this line. Its purpose is to expedite the attack of targets beyond the line. It is normally established by corps or independent division.

Fire Support Team (FIST) – A team provided by field artillery to each maneuver company or troop. The fire support team chief, a field artillery lieutenant, acts as the company or troop commander's fire support coordinator and is responsible for planning and coordinating all indirect fire means available to the unit. This includes mortars, field artillery, close air support, and naval gunfire.

Forward Arming and Refueling Point (FARP) – A temporary facility organized, equipped, and deployed by an aviation unit commander and located closer to the area of operation than the aviation unit's combat service area to provide fuel and ammunition necessary for the employment of helicopter units in combat.

Forward Edge of the Battle Area (FEBA) — The forward limit of the main battle area. 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.

Forward Line of Own Troops (FLOT) — A line which indicates the most forward positions of friendly forces in any kind of military operation at a specific time.

Fragmentary Order (FRAGO) — An abbreviated operation order used to make changes in missions to units and to inform them of changes in the tactical situation.

Hostile Criteria — Description of conditions under which an aircraft or vehicle may be identified as hostile for engagement purposes.

Identification, Friend or Foe (IFF) – A method of determining the friendly or unfriendly character of aircraft, vehicles, or ships by other aircraft, vehicles, weapons, and ships by using electronic detection and associated identification equipment.

Indirect Fire – Fire delivered at a target which cannot be seen by the aimer.

Insertion — 1. Placement of troops and equipment into an operational area in airmobile operations. 2. The placement of observation posts, patrols, or raiding parties either by helicopter or parachute.

Jamming — The deliberate radiation, reradiation, or reflection of electromagnetic energy to prevent or degrade the receipt of information by a receiver. It includes communications jamming and noncommunications jamming.

Liaison — That personal contact or communication maintained between elements of military forces to ensure mutual understanding and unity of purpose and effort.

Main Battle Area (MBA) — That portion of the battlefield extending rearward from the forward edge of the battle area and in which the decisive battle is fought to defeat the enemy attack. Designation of the main battle area may include the use of lateral and rear boundaries.

Mask Clearance — 1. The absence of any obstruction in the path of a trajectory. 2. The amount of clearance by which a projectile passes over any object between the weapon and its target.

Movement Technique — Manner of traversing terrain (for example, traveling, traveling overwatch, and bounding overmatch). The likelihood of enemy contact determines which technique is used.

Traveling — A movement technique used when speed is necessary and contact with enemy forces is not likely. All elements of the unit move simultaneously with the unit leader located where he can best control.

Traveling overwatch — A movement technique used when contact with enemy forces is possible. The lead element and trailing element are separated by a short distance which varies with the terrain. The trailing element moves at variable speeds and may pause for short periods to overwatch the lead element. It keys its movement to terrain and the lead element. It overmatches at a distance such that enemy engagement of the lead element will not prevent the trailing element from firing or moving to support the lead element.

Bounding overwatch — A movement technique used when contact with enemy forces is expected. The unit moves by bounds. One element is always halted in position to overwatch another element while it moves. The overmatching element is positioned to support the moving unit by fire or tire and maneuver.

Movement to Contact — An offensive operation designed to gain initial ground contact with enemy or to regain lost contact. (In NATO, the term "advance to contact" is used.)

Operation Overlay – Overlay showing the location, size, and scheme of maneuver and or fires of friendly forces involved in an operation. As an exception, it may indicate predicted movements and locations of enemy forces.

Operation Plan (OPLAN) – 1. A plan for operations extending over a considerable space and time and usually based on stated assumptions. It may cover a single operation or a series of connected operations to be carried out simultaneously or in succession. It is the form of directive employed by higher echelons of command in order to permit subordinate commanders to prepare their supporting plans or orders. 2. The designation "plan" is often used instead of "order" in preparing for operations well in advance. An operation plan maybe put into effect at a prescribed time or on signal; it then becomes the operation order.

Operational Command – 1. Operational command is synonymous with operational control and is uniquely applied to the operational control exercised by the commanders of unified and specified commands over assigned forces. 2. NATO usage: The authority granted commanders to deploy units, to reassign forces, and to retain or delegate operational and or tactical control as may be deemed necessary. It does not, of itself, include administrative or logistic responsibility, discipline, internal organization, or unit training.

Operation Order (OPORD) – A directive, usually formal, issued by a commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation.

Operations Security (OPSEC) — All measures taken to maintain security and achieve tactical surprise. It includes countersurveillance, physical security, signal security, and information security; and it involves the identification and elimination or control of indicators which can be exploited by hostile intelligence organizations.

Primary Position — A place for a weapon, unit, or individual to fight which provides the best means to accomplish the assigned mission.

Signal Intelligence (SIGINT) — The product resulting from the collection, evaluation, analysis, integration, and interpretation of all information derived from communications intelligence, electronic intelligence, and telemetry intelligence.

Signal Security (SIGSEC) — Measures intended to deny or counter hostile exploitation of electronic emissions. Includes communications security and electronic security.

Supplementary Position– A place to fight which provides the best means to accomplish a task that cannot be accomplished from the primary or alternate positions.

Suppression — Direct and indirect fires, electronic countermeasures, or smoke brought to bear on enemy personnel, weapons, or equipment to prevent effective fire on friendly forces. When suppressive measures are lifted, the enemy may once again be fully effective.

Support Area — A designated area in which combat service support elements, some staff elements, and other elements locate to support a unit.

Tactical Operations Center (TOC) – An element within the main command post which contains staff elements that permit the commander to see the battle, allocate resources, and position combat service support.

Task Organization — A temporary grouping of forces designed to accomplish a particular mission. Task organization involves the distribution of available assets to subordinate control headquarters by attachment or by placing assets in direct support or under the operational control of the subordinate.

Team — A team may be composed of pure infantry (meaning all elements are mechanized infantry), or pure armor tank (all armor), or a combination of infantry and armor platoons.

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Field Manual
No. 44-16

***FM 44-16**
HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 29 May 1987

PLATOON COMBAT OPERATIONS — CHAPARRAL, VULCAN, AND STINGER

PREFACE

This manual describes how the ADA platoon (Chaparral, Vulcan, Stinger, and FAAR) conducts its operations. It provides principles, procedures, and techniques used by the platoon to exploit its ADA capabilities, to minimize its vulnerabilities and to survive and win on the battlefield.

This field manual is for ADA platoon, squad, and section leaders of Chaparral, Vulcan, and MANPAD units. It is a quick-reference, check-List, and information resource tool based on the principles, procedures, and techniques for ADA employment found in the 44-series field manuals and ARTEPs. It is general in nature and is not intended to be a step-by-step list for every detail required to operate an ADA Chaparral. Vulcan, or MANPAD platoon, section, or squad. It will, however, serve to bring to mind essential platoon operations needed when a platoon is acting as part of a combined arms team. Because weapons and equipment vary between units, users should adapt the information, principles, and techniques in this field manual to fit their specific situations. The data in this publication are based on the best information available; however, it is not all inclusive.

The proponent of this publication is HQ, TRADOC. Submit changes for improving this publication on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward them to Commandant, US Army Air Defense Artillery School, ATTN: ATSA-TAC-TD, Fort Bliss, TX 79916-7125.

Unless otherwise stated, the masculine gender applies to both men and women.

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NATO

2014	Operation Orders, Warning Orders, and Administrative/ Logistics Orders
2019	Military Symbols for Land-Based Systems
2034	Land Forces Procedures for Allied Supply Transactions
2047	Emergency Alarms of Hazard or Attack (NBC and Air Attack **Only)**
2103	Reporting Nuclear Detonations, Biological and Chemical Attacks, and Predicting and Warning of Associated Hazards and Hazard Areas
2129	Recognition and Identification of Forces on the Battlefield
2144	Call for Fire Procedures
2668	Land Force Tactical Doctrine - ATP-35(A)
2904	**Airmobile Operations - ATP-41**
3675	**Symbols on Land Maps, Aeronautical Charts, and Special Naval Charts**
3732	**Recognition Training**
4162	**NATO Identification System**

REFERENCES

REQUIRED PUBLICATIONS

Required publications are sources which users must read. This is necessary in order to understand or to comply with FM 44-16.

FIELD MANUALS (FM)

3-4	NBC Protection
21-60	Visual Signals
21-75	Combat Skills of the Soldier
44-1 (HTF)	US.Army Air Defense Artillery Employment (How to Fight)
44-3	Air Defense Artillery Operations and Employment Chaparral/Vulcan/Stinger
44-4	Operations and Training, Chaparral
44-5	Operations and Training, Vulcan
44-6	Operations and Training, Forward Area Alerting Radar (FAAR) and Target Alert Data Display Set (TADDS)
44-8	Small Unit Self-Defense Against Air Attack
44-18 (HTF)	Air Defense Artillery Employment, Stinger (How to Fight)
44-18-1	Stinger Team Operations
44-23 (HTF)	US Army Air Defense Artillery Employment, Redeye (How to Fight)
101-5-1	Operational Terms and Symbols

RELATED PUBLICATIONS

Related publications are sources of additional information. Users do not have to read them to understand FM 44-16.

FIELD MANUALS (FM)

3-3	NBC Contamination Avoidance
3-5	NBC Decontamination
3-100	NBC Operations

RELATED PUBLICATIONS (continued)

FIELD MANUALS (FM) (continued)

5-15	Field Fortifications
5-20	Camouflage
5-34	Engineer Field Data
5-36	Route Reconnaissance and Classification
5-100	Engineer Combat Operations
6-20	Fire Support in Combined Arms Operations
6-30	Observed Fire Procedures
7-7	The Mechanized Infantry Platoon and Squad (APC)
7-10 (HTF)	The Infantry Rifle Company (Infantry, Airborne, Air Assault, Ranger)
7-20	The Infantry Battalion (Infantry, Airborne, and Air Assault)
7-30 (HTF)	Infantry, Airborne, and Air Assault Brigade Operations (How to Fight)
9-6	Ammunition Service in the Theater of Operations
9-59	Unit Operations for Support of Missile and Air Defense Gun Systems
11-50 (HTF)	Combat Communications Within the Division (How to Fight)
17-47 (HTF)	Air Cavalry Combat Brigade (ACCB) (How to Fight)
17-95 (HTF)	Cavalry (How to Fight)
19-30	Physical Security
21-3	Soldier's Manual of Common Tasks (Skill Levels 2, 3, and 4)
24-1	Combat Communications
24-18	Tactical Single-Channel Radio Communications Techniques

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FIELD MANUALS (FM) (continued)

24-20	Tactical Wire and Cable Techniques
32-6	SIGSEC Techniques
44-30	Visual Aircraft Recognition
71-3 (HTF)	Armored and Mechanized Brigade Operations (How to Fight)
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71-101 (HTF)	Infantry, Airborne, and Air Assault Division Operations
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90-3 (HTF)	Desert Operations (How to Fight)
90-4 (HTF)	Airmobile Operations (How to Fight)
90-5 (HTF)	Jungle Operations (How to Fight)
90-6 (HTF)	Mountain Operations (How to Fight)
90-10 (HTF)	Military Operations on Urbanized Terrain (MOUT) (How to Fight)
90-10-1 (HTF)	An Infantryman's Guide to Urban Combat (How to Fight)
90-13 (HTF)	River Crossing Operations (How to Fight)
100-2-1	Soviet Army Operations and Tactics
100-2-3	The Soviet Army Troops Organization and Equipment
100-5 (HTF)	Operations (How to Fight)
100-10 (HTF)	Combat Service Support (How to Support)

TRADOC PAM

34-2	Joint Applications of Firepower (J-FIRE) Reference Guide

STANDARDIZATION AGREEMENTS (STANAG)

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When amendment, revision, or cancellation of this publication is proposed that will affect or violate the agreements concerned, the preparing agency will take proper action through international standardization channels.

COMMAND PUBLICATIONS

Command publications cannot be obtained through Armywide channels. Determine availability by contacting the address shown. Field circulars expire three years from date of publication unless sooner rescinded.

FIELD CIRCULARS (FC)

44-16R/16S	Vulcan, Stinger Integration Commandant US Army Air Defense Artillery School Fort Bliss, TX 79916-7000
71-1J	The Tank and Mechanized Infantry Company Team Commandant ATTN: ATSB-CS-C Fort Knox, KY 4012/5111 or Commandant US Army Infantry School ATTN: ATSH-B-ID Fort Benning, GA 31905-5000
71-2J	The Tank and Mechanized Infantry Battalion Task Force Commandant US Army Infantry School ATTN: ATSH-B-ID Ft Benning, GA 31905-6000 or Commandant US Army Armor School ATTN: ATZK-CSD-D Fort Knox, KY 40121-5211
71-3	The Armor and Mechanized Infantry Brigade US Army Armor School ATTN: ATS-SC-B Fort Knox, KY 40121-5211 or Commandant US Army Army Infantry School ATTN: ATSH-B-D Fort Benning, GA 31905-5006

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