Therefore, the commander could position himself on the ground where he could best influence and inspire his troops. Firefights with the VC are of short duration and violent; the enemy strikes hard in an attack or from ambush and then rapidly withdraws; he tries to avoid sustained combat unless assured of victory. Because the critical point cannot be predetermined, the commander must retain his ability to move about the battlefield both in the air and on the ground; Marine units in RVN have provided tanks to unit commanders to provide them the capability of moving to the decisive point during engagements. Mechanized infantry and armor commanders already possess this capability.

(b) The command and control helicopter in some situations offers the best means to control operations. It sometimes provides the only practical way to personally visit subordinate units operating separately. While operating from a helicopter, however, the commander must recognize his inability to accurately judge terrain conditions and the extent of enemy resistance being encountered by his units.

(c) On those occasions when the commander finds it advantageous to control his forces from a ground position, one of his staff may assist from the airborne command post.

(3) Rules of Engagement. During the conduct of combat operations in RVN, efforts directed toward minimizing noncombatant battle casualties preclude the full application of available firepower prescribed by existing offensive doctrine; the use of force likely to result in noncombatant battle casualties is forbidden. Aside from obvious humanitarian considerations, experience shows that such indiscriminate use of force embitters the population and turns them towards support of the enemy, thus interfering with the accomplishment of RVN nation-building goals. U.S. Army units in RVN have developed implementing instructions and SOP’s concerning rules of engagement based on policy contained in current USMACV directives. Within the policy of these directives, however, rules of engagement vary to accommodate differences in local situations, e.g., assignment of a unit to an area of operations in a VC-dominated war zone may result in removal of restrictions placed on that unit’s employment of firepower. Temporary changes to unit SOP on rules of engagement are appropriately announced in commander’s conferences, staff briefings, and unit operation orders. The most pertinent restrictions incurred by application of rules of engagement are those which limit use of reconnaissance by fire and those which require units to obtain extensive clearances prior to employing supporting fires of mortars and artillery. By continuous and detailed planning for supporting fires, clearances can be obtained in advance based on the anticipated need for the fires. Without such prior clearances, delays of thirty minutes or more are not uncommon.

3. COMBAT FORMATIONS - BATTLE DRILL.

a. COMBAT EXAMPLE.

(1) Elements of the armored cavalry regiment presently
in RVN benefited from a last-minute intelligence warning and the employment of battle drill in an action which occurred on 21 November 1966. A convoy composed of regimental headquarters elements and attachments was moving from the regimental staging area to a new base camp and was ambushed near XA TRANG BCM (Figure II-12). As is customary in this area of RVN, armored vehicles escorted the convoy. The VC had established an ambush as shown in Figure II-13 with a force estimated to have been two battalions of a VC regiment.

As the lead vehicle approached to within 1,000 meters of the ambush site, the convoy commander was informed through intelligence channels that an ambush had been established. This warning permitted the commander to throw the enemy off balance; reconnaissance by fire by the escort vehicles as they entered the ambush site resulted in drawing the VC fire prematurely - small arms, automatic weapons, recoilless rifles, and hand grenades. The suppressive effect of the cavalry escort fires permitted half of the convoy to pass through the ambush safely before a recoilless rifle hit destroyed a truck in such a position that the road was blocked; three following trucks were destroyed practically simultaneously.

Two escorting M113's were hit by recoilless rifle fire. They and the dismounted personnel from the destroyed trucks engaged the enemy by fire. The lead M113's, having cleared the ambush with some of the trucks, reorganized to provide continuing escort to the trucks and to provide two M113's to return to the assistance of those elements heavily engaged with the ambush force. One of these M113's was subsequently diverted to provide security for a "dust off" helicopter mission to evacuate wounded, while the other proceeded to rejoin the fight to prevent the remainder of the convoy from being overrun by the numerically superior enemy force.

The resulting thirty VC killed (by body count), as compared to U.S. losses of seven killed and eight wounded, can be attributed largely to the warning provided to the convoy prior to its engagement by the ambush force and to the battle drill employed by the escort force during the ensuing action.

b. BATTLE DRILL AND COMBAT FORMATIONS. The squadron SOP for action to be taken in event of ambush described in the combat example above is typical of additional items of battle drill developed and employed by armor and mechanized units in RVN to provide effective firepower quickly. Battle drill is comprised of standard techniques to be learned by all members of the unit and to be used when confronted by recurring or foreseeable situations, e.g. platoons changing formation from column to wedge upon emerging from a wood; vehicles assuming predesignated positions when the platoon leader orders a change in formation.

Ambush. The herringbone formation has been successfully used when forward movement of an armored column has been stopped by an ambush covering a portion of the route from which vehicles cannot deploy (Figure II-14). Its purpose is to rapidly place all
Figure II - 13. Enemy Dispositions for 21 November 1966
Ambush. Vegetation north of Highway 1 in
this vicinity is high grass and shrub;
south of the highway vegetation varies
(from west to east) in sequence: brush,
secondary timber, banana trees with grass,
and shrub brush with high grass.
available fires onto suspected enemy locations at the site of the ambush, so vehicles close rapidly to within a few feet of each other to achieve a high density of firepower. If possible, armored vehicles move directly to close with and destroy the enemy instead of assuming this formation; if unable to deploy, they move as far as the terrain permits so as to leave an open lane on the route to permit evacuation of wounded, resupply, or reinforcement. If wheel vehicles are trapped by the ambush, they position themselves to get maximum cover among the armored vehicles. By SOP, elements which have successfully passed through the ambush, following elements, or reinforcing elements seek to maneuver to kill or route the enemy; only those vehicles halted and engaged assume this posture to destroy or at least to fix the enemy in his position.

(2) Formations in Heavy Undergrowth. Tanks proceeding through dense undergrowth or jungle have a limited capability of traversing their turrets due to interference by tree trunks. Two formations which have successfully been used in RVN to enhance the ability of the tank units to fire in directions other than to the front under these circumstances are the inverted wedge and the inverted echelon (Figures II-15 and II-16). The echelon formation shown is the same as that described in current publications; however, in this case, the formation is called "inverted" because the primary direction of fire is opposite to that of the usual echelon formation. Except for the lead tanks in both formations, all can traverse and fire to at
Figure II-15. Tank Platoon in Inverted Wedge Formation.

Figure II-16. Tank Platoon in Inverted Echelon Formation (enemy threat from right).
least one flank and to the rear. The inverted wedge formation is also employed for opening mined roads and trails when the terrain permits such employment (as will be discussed in a following paragraph).

(3) Positions of Crew Members. Tanks and K113's usually operate with all hatches open until contact is made with the enemy. Exposed armor vehicle crewmen habitually wear body armor for protection against small arms fire and shell fragments. When moving through dense jungle where claymore mines and booby traps suspended in vines or trees can be expected, squad leaders may require personnel to ride buttoned up inside of their K113; when moving on roads or trails through less dense areas where the major threat is from RPG-2 grenades, recoilless rifles and antitank mines, scout and rifle squad members may travel at least partially outside of the vehicle. Those not manning vehicular weapons ride on top of the K113. Upon establishing enemy contact, all take partial cover within the K113; exterior machineguns continue to be manned; and all personnel who can, occupy firing positions from which they employ their individual weapons against the enemy. The determination of whether the threat is greater from enemy antipersonnel or antitank weapons and the decision on how squads will position themselves within or on the K113 will be made by the squad leader.

4. ARMOR AND MECHANIZED INFANTRY UNIT EMPLOYMENT TECHNIQUES.
   a. MOVEMENT EXPEDIENTS.
      (1) Terrain. A description of the terrain of RVN and techniques employed in estimating trafficability are presented in
Section I, Introduction.

(2) Expedients. U.S. mechanized infantry units anticipating employment in inundated areas benefit from their ARVN counterparts experience in movement expedients and are presently fabricating equipment needed for employing these expedients. The use of a capstan-and-anchor technique (see Figure 11-20) permits an M113 to recover itself once stuck or to traverse a small area known to be an obstacle. ARVN units regularly employ rush-bars (see Figure II-23) to pass over areas where sufficient traction cannot be achieved. Extra-long cables carried by some M113's facilitate towing the remaining vehicles through soft spots once the lead vehicle is pushed across. Additional movement expedients are shown in Figures II-21, II-22, and II-24.

Figure II-19. Capstan Mounted on M113 Sprocket and Capstan in Action.

Figure II-20. Use of Capstan Kit. In this instance a "deadman" anchor is employed. Some kits contain marine anchors to use in place of improvised anchor. The capstans can be removed when required to restore original vehicle width.
Figure II-21. Block and Tackle. Simple block and tackle rigging is sufficient to move an M113 when the river or canal bank is not too steep.

Figure II-22. Tow Cables. The tow cables used to extract an M113 mired in mud are 50 to 100 feet long. The yoke connections at the front of each vehicle are made from the 10 foot tow cables issued with each M113. Poor traction in the vicinity of a mired vehicle may require multiple tows such as the one illustrated.

Figure II-23. M113 Employing a Prefabricated Push-bar to Assist a Mired Vehicle. Push-bars improvised from 4 x 4 inch timbers are also employed.
positions on the south bank of the Saigon River (the southwest boundary of the "Iron Triangle") while major units of two divisions and an armored cavalry regiment were committed to search and destroy within the triangle itself. (See Figure II - 25.) During a nineteen day period, this task force killed 54 VC (by actual body count), the highest number killed by any battalion-sized unit committed to the operation.

(2) Canister Ammunition. The most significant feature of this successful armored task force operation was the fact that the preponderance of kills were made through the use of canister ammunition and machine gun fire employed at close range. Only rarely were fields of fire adequate for employment of the tank main armament in its conventional long-range capacity. Canister ammunition was also employed to destroy antipersonnel mines and to knock down foliage and undergrowth concealing enemy location. The relatively short range of canister ammunition permits its employment in situations in which friendly troops or noncombatants might be jeopardized by machine gun or HE firing. That close-in firing is the rule rather than the exception for tanks encountering VC in RVN operations is demonstrated by the typical basic load breakout of 90mm ammunition carried by tanks of two units:

<table>
<thead>
<tr>
<th>Unit A</th>
<th>Unit B</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 Canister</td>
<td>34 Canister</td>
</tr>
<tr>
<td>16 HE</td>
<td>14 HE</td>
</tr>
<tr>
<td>4 WP</td>
<td>10 WP</td>
</tr>
<tr>
<td>2 HEAT</td>
<td>4 HEAT</td>
</tr>
</tbody>
</table>
Figure II - 25. Map of area in which OPERATION CEDAR FALLS was conducted. Saigon is 25 KM SW of lower right corner of map shown.

Figure II - 26. Blocking positions assigned to tank battalion task force during OPERATIONS CEDAR FALLS. Task force also executed search and destroy operations in FIHOL PLANTATION.
(3) Uses of M113. In addition to its traditional use as an infantry carrier and its emerging use in a tank-like role, the M113 is demonstrating further versatility in RVN. In those areas in which tanks are unable to operate because of soft terrain, the M113 is used to make trails through light jungle and dense underbrush. This capacity of the M113 to knock down undergrowth is also used to make landing zones for helicopters and fields of fire for defensive perimeters in wooded areas. During search and destroy operations, M113’s are used to transport rice and other materiel uncovered in locations inaccessible to other vehicles. The M113 continues to be used as a CP vehicle and as a communication platform for a wide variety of radio equipment.

Figure II - 27. Tanks and M113 Assisting Infantry in Preparing Helicopter Landing Zone in Jungle.

Figure II - 28. M113 at Right is being loaded with Rice Found in Cache Hidden in Dense Undergrowth.

Figure II - 29. Armor Battalion CP in “Open Area” prior to Crushing Secondary Growth with Tanks.
(4) Flamethrowers (Figure II - 30). The M132 mechanized flamethrower has been successfully employed in offensive and defensive operations in RVN. In search and destroy operations, they are normally employed in pairs against bunkers and densely foliaged enemy-defended areas containing antipersonnel mines and booby traps. Flame directed at such areas may not destroy a protected enemy, but heat detonates mines and defoliates the area. In defensive positions, the flamethrower is employed to fill gaps not covered by direct fire weapons and to illuminate the area. During movements, the M132's can provide close-in flank protection to the column.

Figure II - 30. Flamethrower M132 Destroying Foliage and Enemy AP Mines.

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C. MINES AND BOOBY TRAPS. The VC reaction to the increased introduction of armor and mechanized infantry units to RVN has been to increase his use of antitank mines. He usually incorporates antitank mines in his ambushes and organized defenses of base camps and other important installations, and he emplaces a large number to harass and interdict friendly traffic on routes of his choice. Mines employed include those captured during previous operations against the French Army, some imported from Communist China with other war materiel, and many improvised from U.S. dud artillery shells and aircraft bombs. Detonation of VC mines is initiated by the weight of a vehicle driving over an electrical switch or a direct pressure plate, by the tilting of a rod protruding upward from the mine, or by the pulling of a trip wire or closing of an electrical circuit by a concealed enemy observer.

(1) Mine Damage. Most U.S. armor and mechanized infantry units operating in RVN have encountered VC mines. As might be predicted, damage to tanks has been generally moderate to light, although a small number of mined tanks have not been repairable; damage to M113's has been greater, with a correspondingly higher proportion of them total losses. Particular significance is attached to the comparatively high personnel casualty rate among crew members of mined M113's versus crew members of mined tanks.

(2) Protection. The greater vulnerability of M113's to mines recommends employment in conjunction with tanks whenever trafficability permits. Normally some tanks are placed at the head
of any unit moving in column. Of course, dependent on time available and the enemy situation, dismounted troops with mine sweepers are employed to clear at least those sections of the route considered critical. In RVN it is always necessary that such minesweeping parties be provided adequate security; a rifle squad accompanied by two or more armored vehicles is typical. In any event, tanks lead columns in an attempt to detonate mines with minimum injury to crew personnel.

(3) Avoidance. Experience indicates that the enemy emplaces his mines singly or in small groups. The more commonly selected sites are roads, trails, defiles, and breaks in paddy dikes caused by our movement. Where possible, repeated use of these sites is to be avoided. Once we have made a trail, we must assume that the Viet Cong will mine it. Constantly cutting new trails to avoid using old ones will reduce mine incidents. Though not foolproof, following in the tracks of the lead vehicle provides a measure of protection against pressure detonated AT mines.

(4) Clearing. Some emplaced mines have been discovered by identification of markers nearby. Whether these markers are erected by the local inhabitants or by the VC is not known, but any unusual sign should be examined. Rocks or sticks found along or on the side of the roads or trails, and knotted vines or tied tufts of grass found along jungle trails have marked mine locations in the past. The leading of columns by tanks does not preclude destruction of more vulnerable vehicles by those mines which fail to fire because of improper emplacement or insufficient pressure and those which are command-detonated; with the latter the enemy can select his target.
from among the elements in the column. Techniques are being developed to deny the enemy this opportunity. One technique employs three tanks, two driving on the shoulders of the road to disrupt wires leading to mines and one following the center of the road to detonate pressure mines (Figure II - 32). Variations on this technique include the use of additional armor vehicles on the flanks to kill or disperse hidden personnel and the use of tractor-drawn single-tooth rooters to dig up and break electrical wires or trip wires from the road. The resulting formation is usually the inverted wedge. Terrain sometimes limits application of these techniques.

(5) Road-runner Operations. Some of the above techniques are employed daily by armor units conducting route security missions; it is general practice to open routes each day by passing tanks over them prior to permitting other vehicles to use the road. Once opened, roads are secured by the establishment of mobile outposts at critical points and the conduct of mounted patrols between the outposts. These mobile patrol actions are locally called "road-runner" operations. Because the security of routes is not always maintained through the hours of darkness, the enemy is able to emplace additional harassing mines at night. At the end of each day one unit draws a heavy drag or spring-tooth harrow behind the last vehicle traversing a dirt road which they are securing. On the following morning, careful examination of the patterns thus created in the road surface reveal whether or not enemy mining activity has occurred. Despite current efforts, development of countermasures to VC antitank mine warfare remains a major challenge; increased use of ground lines of communication leading to saturation of a route with 24-hours a day traffic can preclude the enemy's use of AT mines on that route.

(6) AP Mines. VC employment of large numbers of antipersonnel mines and booby traps limits the employment of dismounted troops in some situations. Armored vehicles, either tanks or M113's, precede the infantry to detonate the mines; in these instances, the hazards of detonating AP or AT mines often dictate that the infantry follow the track vehicles at a considerable distance.
Against an enemy better armed with antitank weapons, this formation for the attack might not prove effective. As in the past, grappling hooks thrown forward along trails and then retrieved will detonate mines or booby traps set with trip wires. Road-runner operations conducted at random intervals during the night are highly successful in restricting \textit{VC} mining activities and maintaining the use of LOC's.

d. **USE OF ARTILLERY AND ARMY GUNSHIPS FOR FLANK SECURITY.**

In many areas of RVN, cross-country movement of tracked vehicles is practical only at reduced speed; the limited RVN road net provides no parallel routes. As a result, mounted road marches are frequently conducted without organic elements performing flank security; however, artillery fires or Army gunships are extensively used for this purpose. Clearance for pre-planned fires to the flanks of moving columns is requested in advance of the unit's approach to the sites of the concentrations; in this manner, fires can be provided quickly on call against enemy threats. In areas where rules of engagement permit, these concentrations may be fired at suspected enemy locations. Effective flank security using this technique depends upon prepositioning or displacement of supporting artillery units controlled by an aerial forward observer or continuous gunship coverage.

e. **ARMORED CAVALRY REGIMENT M113's.** Existing doctrine regarding the employment of the armored cavalry regiment (ACR) is based on an integrated combined arms team of scouts, tanks, indirect fire support, and infantry, all organic at armored cavalry platoon level. The 11th ACR has been reconfigured to eliminate tanks from the platoons. Substituted are platoons containing eight modified M113 vehicles (ACAV) and one M106 mortar carrier. The tank company of each squadron remains unchanged. Much of the available basic doctrine which pertains to the ACR is still applicable to the 11th ACR. However, the substitution of ACAV's for tanks and scout vehicles changes the platoon leader's method of employing his unit. Some platoons distribute the infantry squad among their M113's to achieve similar vehicles equally manned; others retain the infantry squad as a distinct unit. Both methods have proven to be effective.

5. **INTELLIGENCE, RECONNAISSANCE AND SECURITY.**

a. **INTELLIGENCE.**

(1) Combat Intelligence. Accurate and timely intelligence on the location of the elusive enemy continues to be a major problem in the conduct of armor and mechanized infantry combat operations in RVN. Typically, units are committed to combat operations with little specific knowledge of the enemy location or activity; present practice is to locate him through contact and then to destroy him by reacting to his efforts. This technique requires the establishment of adequate reaction forces able to be employed at any point at which contact is established.

(a) Combat Example.

1. A divisional cavalry squadron conducted successful combat operations for intelligence collection purposes in the vicinity of SROK DONG on 30 June 1966. The mission of this squadron was to conduct a reconnaissance in force north along...
Highway 13 (Figure II - 34). Three battalions of straight infantry were available to the controlling brigade for consecutive commitment by helicopter. Units available to the squadron were its organic B and C troops and an attached company of a straight infantry battalion. Vietnamese Regional Force units secured Highway 13 for a portion of the route, and a South Vietnamese Army (ARVN) infantry division was later made available in a blocking role to assist the brigade.

2. In this instance, the enemy initiated contact by attempting to ambush the cavalry force conducting the reconnaissance. A VC regiment had established an L-shaped ambush, as shown in Figure II - 35. Logs piled at random provided emplacements for recoilless rifles; the road was mined; mortars were pre-registered; and dismounted VC with automatic weapons and small arms were deployed in the adjacent jungle so as to cover approximately 2,000 meters of the road by fire. It is estimated that a force in excess of two VC battalions manned the ambush.

2. Moderate casualties were inflicted on the lead platoon of B troop by the VC springing the trap (Figure II - 36). Although the bulk of this platoon was permitted by the commander to withdraw to evacuate the wounded, the rapid commitment of the other two platoons of B troop, followed by C troop, inflicted heavy casualties on the ambushing force and interfered with its attempted withdrawal. Continuous tactical air strikes on the west side of the road and artillery fire on the east side of the road supported both the armored cavalry units engaged and the infantry reaction force elements subsequently landed by helicopter in adjacent LZ's.
Figure II - 35. Enemy Dispositions for 30 June 1966 Ambush. Dense forest covered most of the area.

Figure II - 36. Disposition of Lead Elements of Armored Cavalry Squadron Entering 30 June 1966 Ambush.
A dismounted sweep of the site by a reaction force infantry battalion supported by the fires of C troop dislodged the enemy (Figure II - 37). An additional two infantry battalions, the remainder of the reaction force, were helilifted to nearby LZ's the following day. Although the VC launched five assaults against the night perimeter occupied by infantry elements on 2 July, and although he directed mortar fire against the perimeter on the morning of 3 July, subsequent dismounted sweeps in diverse areas by elements of the brigade yielded only light contact.

The units engaged in this operation captured seven VC and killed two-hundred and seventy (by actual body count) while sustaining losses of twelve killed and fifty-five wounded. It is doubtful that any unit other than the cavalry squadron available to the brigade commander could have withstood the shock of the VC-initiated action, reacted with equal fury, or achieved such satisfying results by reconnaissance in force. This example is typical of combat operations conducted by a cavalry squadron for the purpose of obtaining intelligence information for the brigade to which it was attached.

(b) Patrolling. All units in SVN routinely conduct both day and night reconnaissance patrols to obtain information of the terrain and the enemy. Scout platoons conduct both mounted and dismounted reconnaissance patrols. It must be acknowledged that the ephemeral enemy successfully eludes many of the routine U.S. efforts to locate him and to determine his activities.
On the other hand, long range reconnaissance patrols (LRRP) composed of small numbers of men trained in ranger tactics and techniques provide some excellent information on the movement of military formations in VC-dominated areas. LRRP and four techniques are discussed below because of their increasing use in RVN and because of their assessed potential for improving patrol action in RVN.

1. **LRRP.** LRRP operating in sparsely inhabited border areas assist major commands in the conduct of effective blocking operations with minimum forces. The employment of one LRRP by elements of the airmobile division in Pleiku Province during the initial phase of OPERATION SATADOR I in January 1966 resulted in the capture of three North Vietnamese Army soldiers who admitted that they were members of an antiaircraft battalion which had arrived in the area ten days prior to their capture. This information had a direct impact on the planning and execution of the airmobile operation then pending. The formation and training of LRRP under current TOE's and MACV training directives continues.

2. **Saturation Patrols.** The technique of saturation patrolling entails each battalion being assigned a specific area of operation for patrolling. Each battalion with its supporting artillery positions itself within its area. Companies may be assigned sub-areas or may operate from the battalion forward base. Large numbers of platoon and squad size patrols move by helicopter or M113 several thousand meters from the base. They are either assigned to reconnoiter specified routes back to their base or to establish ambush sites. Two to three days provisions are carried by each patrol to prevent disclosure of its location by supply helicopters. Small groups of Viet Cong encountered are destroyed or captured; adjacent patrols converge to counter larger groups contacted. The battalion patrol plans must include night operations to be effective. It is necessary to maintain mobile reaction forces at company and battalion level to overcome Viet Cong forces larger than the patrols can handle.

3. **Checkerboard Concept.** In this technique the battalion areas of operation are divided into small sub-areas resembling a checkerboard. Each platoon is assigned one area in which it is to conduct search and destroy operations for one or two days. Platoons are then moved to unoccupied areas in accordance with a random pattern established by the battalion. Once contact with the enemy is made, the battalion directs adjacent platoons to converge on the action or to establish blocking positions or ambush sites. The random pattern of movement used permits a limited force to deny a large area to the enemy. It is necessary to hold one mobile company in reserve as a reaction force to be committed when the platoons encounter large forces.

4. **Stay Behind Patrols.** Experience shows that shortly after we desert from an area, the Viet Cong send in small parties to forage. By leaving a patrol in well camouflaged positions, units can destroy or capture the Viet Cong foragers.

The HU13 is successfully used as a means of positioning patrols. Using HU13's for this purpose has the advantage of concealing the location and the actual number of men being positioned. The Viet Cong, or their informers, can count the number of HU13's departing and returning to a base of operation; however, they do not know where or how many personnel have been released for patrol operations enroute.

(c) Local Intelligence Agencies. U.S. units in RVN recognize the need for increased exploitation of all local intelligence resources. U.S. and ARVN intelligence agencies operate jointly, and the resulting exchange of intelligence information has improved the intelligence coverage. The continuing development of coordination between U.S. and RVN agencies will improve the intelligence capabilities of both.

(d) Psychological Operations Teams. During the conduct of tactical operations in the Republic of Vietnam, U.S. units experience difficulty in communicating with the local population due to language barriers. In some instances Americans are unfamiliar with the area and have little knowledge of enemy activities and location of enemy installations. The concurrent and coordinated employment of psychological operations teams in areas with which they are familiar has been beneficial for units during the conduct of tactical operations. These teams are furnished by the sector or sub-sector commander from the province in which the area of operations is located. While their size and composition may vary, they normally include interpreters, sector or sub-sector intelligence and psychological warfare personnel, National Police and local government representatives. The teams are commanded by ARVN officers who represent the Province Chief and are accompanied by members of Sector Advisory Teams. The U.S. advisors coordinate team activities with the operations of the units being supported. Team members are from the local area. They assist in identifying local residents, Viet Cong sympathizers, and the Viet Cong infrastructure; and they are helpful in obtaining and providing information of the area and enemy activity.

(e) Attachment of RF/PF Personnel. Another use of local intelligence resources is illustrated by the attachment of three RVN Regional Force/Popular Force (RF/PF) enlisted men to each company of a U.S. mechanized infantry battalion during the conduct of an independent operation southwest of Saigon. Although these men were not intelligence specialists, they knew and were known by the inhabitants of the area in which operations were to be conducted. They provided the companies with the capability of identifying and questioning indigenous suspects; through their assistance, one company captured the highest ranking member of the VC political infrastructure taken by ARVN or U.S. forces to date. The battalion derived particular benefit from these personnel because, being attached down to the company level, they were immediately available when needed.

(f) Chieu Hoi. Many indigenous personnel, particularly Chieu Hoi ralliers (enemy defectors) who willingly cooperate with U.S. Forces, have experienced difficulty in recognizing terrain features from the air or while riding on tracked vehicles. Most of them are also unable to identify locations on maps. They can best guide troops when permitted to travel dismounted on trails which contain landmarks familiar to them.

(2) Counterintelligence.

(a) General. Attachment of SVN personnel can improve the counterintelligence capability as well as the combat intelligence capability of U.S. units. The extensive VC covert agent nets, aided by the requirement that we must tolerate practically unrestricted movement of friendly inhabitants in most RVN areas of operation, foil most efforts to deny the enemy information of our unit strengths and dispositions. Working closely with local Vietnamese military counterintelligence personnel assists in the discovery and disruption of some portion of the VC intelligence effort.

(b) Deception.

1. Care must be exercised by U.S. units to avoid carelessly divulging valuable military information to the enemy. Premature relocation of artillery to provide supporting fires into proposed areas of operations, and excessive aerial reconnaissance of such areas prior to launching operations are practices to be avoided. Any disregard for the enemy intelligence capability is not warranted.

2. The enemy seeks to identify and attack armored vehicles recognized as command vehicles. Installing dummy antennas on other vehicles, changing or obscuring vehicle numbers, and varying the position of command vehicles within formations are techniques employed to deceive the enemy in this respect. However, the recent disproportionate loss of commander's M113's of one mechanized infantry battalion to VC command-detonated mines, despite having taken the precautions described, indicated that the enemy had previously identified the key vehicles, probably by observation of the unit in bivouac. Additional deceptive measures are needed.

b. CONVOY ESCORT AND ROUTE SECURITY.

(1) General. One of the major long-range goals of U.S. and ROKAF forces in RVN is to provide secure ground routes for the flow of military and commercial traffic throughout RVN. At the present stage of the area war, only a small percentage of the available highway network is sufficiently secure to accommodate twenty-four hour per day traffic. This is not to say that the remainder of the highways cannot be used; any highway in RVN can be opened and used provided convoy escort or route security is established. Armor and mechanized infantry units are well suited to perform these tasks; and armored cavalry units are judged to be best suited. In RVN these units spend as much as one-third of their time performing these missions.

(2) Objectives and Forces Employed. The enemy employs three tactics in denying free use of the highways in RVN: small
groups of VC halt commercial vehicles for tax-collection purposes; guerrillas or military units establish ambushes to destroy U.S. or PHNAP forces using the roads. The objective of route security operations is to prevent these acts, and the objective of convoy escort is to render such enemy actions ineffective. Route security requires the continuous commitment of large forces over long periods of time while convoy escort requires smaller forces only for the time required for the passage of the convoy. The forces to be employed in either operation depend on the factors of MRTT, with emphasis on the length of the route, the enemy situation, and troops available.

(3) Route Security. Route security operations require the protection of bridges, defiles, roadway fills, and other critical portions of the route against enemy mining or acts of sabotage; frequent movement of armored forces along the route and inspection of areas adjacent to the route are also required; and reaction forces must be maintained to cope with enemy attacks conducted against troops securing the route. On major routes, the securing of bridges and other critical points is normally a full-time mission for RNRP units from the local areas; in the absence of such forces, strong points must be of sufficient strength to sustain an enemy attack until reaction forces can arrive; two armored vehicles with a rifle squad would be minimum. Mobile patrols operate on stretches of road between strongpoints established. Avoiding establishing patterns of movement discernable to the enemy, these patrols move on the roads, reconnoiter areas adjacent to the roads, and on occasion halt to observe; from each halt, movement may be continued in the original direction or back to retrace the patrol route - constant random variation of the patrol actions is essential to keep the enemy off balance and to provide necessary protection to vehicles using the route. A logical distribution of forces would be to have one-third of available troops man strongpoints, one-third conduct patrols, and to distribute one-third among two or more reserve reaction force locations.

(4) Convoy Escort. When forces are insufficient to maintain route security for prolonged periods or when the enemy threat is enough to require additional security, units are assigned to escort convoys. In these circumstances, vehicles are not permitted to travel on the road except in convoy. Convoy escort is performed by assigning tanks to the lead and by distributing tanks or RNRP's throughout the convoy for control and additional protection. Actions to be taken by convoy escorts in event of ambush have been described in a prior paragraph. Armored vehicles are assigned to escort convoys in the ratio of one armored vehicle per five to ten wheeled vehicles.

(5) Combinations. Units assigned to escort convoys may accomplish the task by securing the route for a limited time. In this technique, only those vehicles needed for control accompany the convoy; and strongpoint and patrol forces are made available for other missions when the tail of the convoy passes their sectors. Even though a route is being secured, it is possible for the enemy
to place individual harassing mines: tanks should lead convoys through doubtful portions of the route, and tanks should be the first vehicles over a route each day. It must be emphasized that the only way to really secure a route against other than coordinated attacks is to use the road daily - and use it for 24 hours each day.

(6) Combat Example.

(a) A route security mission from TAY NINH to THI TAM was conducted by a tank battalion during December 1966 (Figure II - 38). Small groups of Viet Cong had been successful in mining the road during darkness. The weather was hot and dry; the terrain was flat, and varied from rubber plantations and dense jungle to paddies.

(b) The entire route, with the exception of several friendly hamlets, was a "free-fire" zone at night. During the hours of darkness each night, a tank company or platoon "ran the road" two or three times at irregular intervals. Individual tanks fired canister, caliber .50 and 7.62mm machine guns at likely enemy locations on both sides of the road. After three nights of this activity, mining incidents stopped and the first "Chieu Hoi" rallier in that area surrendered. He attributed his action to his fear of tanks. The armor protection, firepower, mobility and shock effect of tanks make them an effective weapons system for route security missions during both night and daylight hours.

c. POLICE OF THE BATTLEFIELD. The Viet Cong's extended supply line and relatively critical supply situation have forced
him to use all means possible to augment his logistic system. He
has demonstrated adeptness and ingenuity in fabricating equipment
from the battlefield debris. Waterproof paper, plastic bags, and
shell casings have all been used for mine containers. Duds of all
sizes have been booby trapped in place, removed and emplaced in
other areas, or disassembled for their explosive content. Scraps
of metal have been used to fabricate foot traps and to construct
firing mechanisms for mines and fragments for booby traps. Accord-
ingly, emphasis must be placed on police of the battlefield. When
moving into an area after artillery and air strikes, troops should
dispose of duds if possible. Prior to leaving a battle area, an
effort should be made to destroy or remove all items that may be
of use to the enemy.

6. SEARCH AND DESTROY OPERATIONS.

a. GENERAL. A typical search and destroy mission exe-
cuted with armor and mechanized infantry is accomplished in three
phases; isolation of the area by surrounding it with troops or
placing elements in blocking positions across likely avenues of
enemy escape; a mounted sweep through the area with tanks leading
to disrupt any organized resistance, to detonate mines and booby
traps, to locate large installations, and to destroy all possible
enemy personnel and emplacements; and finally one or more thorough
searches by dismounted personnel accompanied by tanks and carriers
to locate any remaining enemy personnel or emplacements and to com-
plete their destruction.

(1) Supporting fires may be employed preceding or con-
currently with the isolation phase to fix the enemy in place; or,
if surprise is paramount, they may be withheld until used to assist
the mounted sweep in the second phase.

(2) Because of the size or nature of the area to be
searched or because of insufficient troops, a search and destroy
operation may be executed with isolation of the area accomplished
only by supporting fires.

(3) In this type operation, tactics employed are more
in the nature of a reconnaissance in force, and enemy contact will
most often be a matter of his own choosing. Such an operation
accomplishes the destruction of enemy emplacements, produces intel-
ligence, and harasses and disrupts the enemy.

b. TECHNIQUES. In search and destroy operations a
systematic search must be assured. This may be accomplished by
moving through the area in line formation or areas may be assigned
to subordinate elements. One solution is the use of what has been
named a "cloverleaf" formation. This formation is used to make a
rapid mounted search of a large area. This technique will not assure
complete coverage of the area but it does move units through the
area in a systematic manner that assures the discovery of emplace-
ments or installations of sufficient size to be of importance. It
permits use of all troops simultaneously as no reserve is designated.
Unengaged units are able to move rapidly to the assistance of other
elements. The diagram below depicts the theoretical application of
this technique (Figure II - 39).
c. TUNNEL SEARCH OPERATIONS. A common enemy technique is to build his installations underground to protect them from air strikes and artillery fires. Since these installations normally contain his base of operations, command and control headquarters, and supplies, it is mandatory that they be thoroughly searched and then destroyed. The task of conducting a detailed search of these underground facilities is tedious and time consuming. While dismounted troops conduct the underground phase of the search, tanks and M113's are helpful in the surface phase of the search.

(1) The surface phase of the operation commences upon the discovery of one or more entrances to caves and tunnels. Tanks and M113's are effectively used to clear these entrances of camouflage, mines and booby traps and to thoroughly search, clear, and secure the surrounding area during the underground phase of the search. The employment of flame weapons to defoliate the area surrounding the entrance to tunnels is another effective means of gaining access to the area.

(2) The underground phase of tunnel search operations is accomplished by special dismounted teams composed of three to five men each. The number of personnel in the team will vary depending on the length and complexity of the tunnel.

(a) The entrance is approached cautiously. To avoid unnecessary casualties from undetected mines and booby traps, only one man should approach the tunnel and probe the area surrounding the entrance. Lowering a light into the entrance to draw enemy fire before the lead man enters the tunnel complex is another logical precaution.

(b) If it is discovered that personnel are in the tunnel, an interpreter should be used to talk them into surrendering. Riot control agents or smoke have been successfully employed to force the enemy out of tunnels when persuasion fails. Smoke may
filter through air vents and other openings to provide information on the size and trace of the tunnel.

(c) The lead man of the tunnel searching team, equipped with a portable telephone, enters the tunnel followed by other members of the tunnel search team. At least one member of the team remains near the tunnel entrance to monitor the telephone and pass instructions to the team. As the lead man proceeds through the tunnel, he reports changes in direction and other information to the operator near the entrance. The lead man is also in voice contact with the man following him. When a junction is encountered, one individual remains at the junction to prevent those ahead of him from being attacked from the rear. Tunnel team members are armed with pistols with silencers for use in the close confines of tunnels.

(d) A field expedient which employs two mine detectors has been successfully used in plotting traces of tunnels up to eight feet below the surface of the ground. One detector is used on the surface and the other is carried by a team member inside the tunnel. With both mine detectors turned on, the tone of the detector on the surface is very clear when directly over the detector in the tunnel.

(e) Once a tunnel has been thoroughly searched, it must be destroyed. Tank dozers and demolitions have been effective in this role. Acetylene or other explosive gases pumped into tunnels and then ignited have been tried in place of demolitions. Whichever method is used, however, requires large quantities of explosives or gas; to destroy large tunnel complexes may be beyond the logistical capability of the unit conducting the operation. More economical means of destroying tunnels are needed.

7. DEFENSIVE OPERATIONS.

a. PERIMETER SECURITY. The nature of area warfare dictates greater emphasis on all around security in defensive positions. Since the greatest enemy threat in RVN is ground attack, greater security is achieved by selecting open terrain for its better observation and longer fields of fire rather than wooded areas offering cover and concealment. Open terrain further enhances the use of radar, image intensification devices, and all means of illumination. To supplement these technological advantages, perimeters are ringed with concertina wire, claymore mines and trip flares. Listening posts and ambush patrols positioned on likely avenues of approach provide warning and deny enemy access to the area. Defensive perimeters should be moved frequently to reduce VC opportunity for deliberate planning and execution of an attack.

b. DISPERSION IN THE DEFENSE. The enemy lack of any heavy artillery and his shortage of antitank weapons permit U.S. units in RVN to establish defensive perimeters with little dispersion. By concentrating rather than dispersing, units achieve increased control and greater protection against enemy infiltration.

c. DEFENSE AGAINST INDIVIDUAL INDIRECT FIRE WEAPONS. Frequent VC mortar attacks on U.S. units and installations dictate that all facilities be sandbagged or dug in, and preferably provided with
overhead cover. Use of engineer dozers or tank dozers to dig positions for CP's, wheel vehicles, sleeping tents, and supply stocks is common in those units so equipped; other units rely more heavily on the use of sandbags. Whether armor or mechanized infantry, when not moving, the unit must dig in.

Figure II-40. M48 Tank with Dozer Blade.
flying techniques to provide for the best low level observation. They search for indicators of enemy presence such as footprints, ashes or smoke from cooking fires, and unusual activity (or the lack of usual activity) in the area. They are able to examine personnel observed and to determine if they are carrying weapons, packs, ammunition, or other combat materiel. When positive enemy contact is made, the scout team undertakes action to develop the situation and reports the contact to the troop operations center. If it is determined that the enemy force is small enough, and the current rules of engagement permit attack, the scout team may engage and defeat the enemy force unassisted. If the force is beyond the capability of the scout team, they call for additional elements of the air cavalry troop. Only one-half of the available aero-scout teams are committed normally; this permits the teams to relieve each other on station to provide continuous reconnaissance.

(2) Aero-weapons. The aero-weapons platoon provides the organic fire support means for the air cavalry troop. Weapons systems mounted on utility helicopters provide the platoon with a point target and area fire capability. Most of the helicopters mount combination weapons systems which permit flexibility in their employment. Like the aero-scouts, this platoon is also employed by team to achieve mutual support. These teams are usually the first elements of the troop to respond to a call for reinforcements from the scouts. The aero-weapons teams work to fix the enemy in position by keeping him pinned down with a heavy volume of aerial firepower.

When not firing a mission, aero-weapons teams augment the reconnaissance effort.

(3) Aero-rifles. The aero-rifle platoon is not just another rifle platoon; it is a highly trained ground reconnaissance force. The primary mission of this platoon is to perform detailed ground reconnaissance in areas which cannot be effectively reconnoitered from the air. The platoon is also the ground fighting force of the troop. It is usually the second element of the troop to respond to an aero-scout's call for reinforcement. The platoon is delivered by helicopter to a landing zone close to the enemy force and, depending on the strength of the enemy force, attacks the enemy either to defeat him or to contain him until a larger unit can be committed.

b. CAVALRY TROOP. The cavalry troop of the air cavalry squadron is equipped with unarmored wheel vehicles to permit its combat elements to be transported by Army helicopters. The troop's ground mobility and combat power are limited. The troop is, however, well suited for the missions which it has normally been assigned in RVN; local convoy escort, local route security, engineer work party security and airborne reconnaissance operations. The cavalry platoons are frequently used as additional aero-rifle platoons under the operational control of one of the air cavalry troops. These platoons are frequently held in reserve as the squadron reaction force; and they have, on occasion, constituted the reaction force of the division. The troop's automatic weapons, recoilless rifles and mortars are used extensively in the defense of the squadron perimeter.
c. PUBLICATIONS. The MACOV Study Group has prepared a draft field manual covering operations of the air cavalry squadron of the airmobile division. Following informal coordination with the airmobile division in RVN, this draft manual will be published by U.S. Army Combat Developments Command and will be distributed to service schools and units.

9. COMBAT SERVICE SUPPORT.

a. U.S. mechanized and armor units in RVN follow established doctrine for employment of combat and field trains with minor variations. Combat trains are reduced to essential personnel, high demand parts, maintenance equipment, recovery vehicles, and class I, III and V supplies to meet short term requirements. For security, the combat trains are normally collocated with the command post. Vehicles beyond the repair capability of subordinate units or contact team are evacuated to the combat trains or directly to the field trains or base camps.

b. Field trains consist of the remainder of the battalion or squadron service support elements and are positioned in a secure base camp in the vicinity of the area of operations. Although the major portion of the field trains are positioned in the nearest secure installation, a small portion is often left in the unit's base camp to support elements remaining there and to accomplish maintenance which cannot be done in the field. Aircraft are utilized extensively for resupply, evacuation, and transportation of key personnel and critical items.

c. Ground resupply requires secure LOC's; combat elements must clear and secure routes or escort convoys. Climate and terrain seldom permit extensive cross-country movement of wheeled vehicles; therefore, armored personnel carriers are frequently used as cargo carriers on a mission basis to pick up supplies from road terminals and transport them directly to the using unit. Plans and preparations are regularly made for emergency resupply by helicopter in case it is needed; when possible, landing zones are selected and prepared in the immediate vicinity of all unit trains areas. Resupply is normally accomplished on a daily basis. However, mechanized infantry and armor units habitually carry sufficient class I and, depending on expenditure rates, sufficient III and V supplies on their combat vehicles for three days of operations. This independence from daily resupply allows commanders greater leeway in planning and conducting operations in difficult terrain.

d. Medical evacuation helicopters are maintained on ground alert status at airfields throughout Vietnam for "dust-off" or medical evacuation of casualties. These helicopters provide immediate response to unit radio requests for casualty evacuation. Currently evacuation is being accomplished in an average elapsed time of 30 minutes from time of being wounded to arrival at a medical facility. Preparations are continually made for possible air evacuation requirements by selecting or clearing of successive landing zones as tactical operations progress. Commanders can request special equipment on a standby basis for helicopter extraction of casualties through the
jungle canopy while hovering above the trees. This system is necessary for evacuating seriously wounded personnel from areas where landing zones cannot be prepared.

SECTION III
ORGANIZATION AND EQUIPMENT

1. PURPOSE.

The purpose of this section is to, (1) present a general discussion of the current organization of U.S. Army mechanized infantry, tank and armored and air cavalry units in the Republic of Vietnam, (2) stimulate thought and discussion concerning the optimal organization of these units by presenting the various structures examined by the MACOV Study and, (3) point out the unusual care and maintenance requirements of certain items of equipment.

2. SCOPE.

The scope of the MACOV Study consisted of an evaluation of the current organizational structure of U.S. Army mechanized infantry, tank, and armored and air cavalry units, to include authorized, substituted and modified equipment, within the framework of the five functions of land combat: intelligence, movement, firepower, control and service support. A major consideration in developing organizational structures was the premise that the units could be employed in the near future and would be supportable within current U.S. Army resources. The final portion of this section discusses equipment substitutions and modifications, and points out unusual care and maintenance problems encountered with certain items of equipment.
3. GENERAL.

a. METHODS. Comments and recommendations from the field were collected and evaluated to provide a base for the various organizational structures under consideration. MACOV team members assigned to selected combat and support elements of IFFV and IIFFV provided the primary source of data. This basic data was collected through the use of questionnaires pertaining to each echelon of command–squad through field force. Additional data was obtained through observation of combat operations and analysis of after action reports, quarterly summaries, reports of lessons learned and various administrative and logistical reports. The evaluation process consists of verifying and recording all data. This is then reduced to each functional area and task section of the evaluation staff. The collected data, plus current organizational charts and equipment lists of units in RVN, are then compared with the Department of the Army approved "C" Series TOE. Deviations from the "G" Series TOE are recorded and analyzed. At the time of this writing evaluation of data is continuing, and, although it may favor one organizational structure over another, the final recommendations have not been determined. The resulting MACOV organizations will be prepared in the form of modifications to the "G" Series TOE and will reflect the findings and conclusions of the study. The organizational structures under consideration have been exercised in a series of combat effectiveness models in all geomorphic regions to provide a disciplined procedure for evaluating the relative combat effectiveness of men and equipment, by unit, in combat environments.

b. TOE. The organizational structures examined are in the form of modifications to the "G" Series TOE. This TOE was chosen as a point of departure because it provides the latest personnel and equipment authorizations and is the first series to implement the New Army Authorization Document System (NAADS). The principal objective of NAADS, as it applies to the MACOV Study, is the standardization of like TOE units. Other applicable objectives are, (1) the development of common criteria applicable to balanced organizational structures, (2) the generation of a basis for determining the combat requirements of TOE units and, (3) the provision of a means for rapid reorganization caused by changes in available resources. After a unit has been organized under a TOE, an MTOE is the only means of changing portions of the TOE to meet specific combat requirements. Further, the MTOE provides a single document to simplify and facilitate control of organizational changes at all levels of command. Proper application of the established TOE/MTOE procedures will insure that commanders have the most effective organization for combat, consistent with optimum utilization of available resources.
c. EQUIPMENT. Evaluated data and commanders' comments indicated a high degree of equipment suitability for the normal roles and missions of the units in RVN. The individual soldier has confidence in his equipment, and is knowledgeable concerning its proper employment. Successful substitutions, modifications and maintenance pointers are discussed at the end of this section.

4. TYPE ORGANIZATIONS.

a. GENERAL. This paragraph outlines in general terms the current organizational structures of armor, armored cavalry, air cavalry and mechanized infantry units now in RVN, and presents the major changes under consideration for each type unit. In order to avoid unnecessary duplication, the following changes were considered for application to all units at the battalion/squadron level except for the air cavalry squadron:

(1) All organizations should be converted to the "G" Series TOE (paragraph 3b above).

(2) Because of the emphasis placed on civic action and rural development programs, a requirement exists for an S5 section at battalion/squadron level. Units in RVN have implemented the S5 functions by augmentation, by making it an additional duty or by utilizing personnel from other TOE positions.

(3) An assistant S2 is required to augment the battalion/squadron staff. This officer will be integrated into the combined S2/3 tactical operations center to improve the capability for twenty-four hour operations. Further, analysis of intelligence functions in RVN indicated that the processing of timely intelligence information is most important.

(4) One enlisted S1 clerk has been added to provide additional administrative support.

(5) Supply sections of battalions/squadrons in RVN are involved in direct clothing exchange and ration breakdown functions. This requirement is met by modifying the "G" Series TOE by the addition of two enlisted personnel to carry out these duties. At the present time, units are utilizing other TOE personnel to augment the supply sections.

(6) Two additional crew-men are required in the scout elements where the M113 with the type "A" subsystem has been substituted for the M114. A crew of five provides for three gunners, a driver and a grenadier.

b. THE MECHANIZED INFANTRY BATTALION.

(1) Current Organization. Mechanized infantry battalions which have deployed to RVN in the past were organized under the "E" Series TOE. Additional units converted to mechanized battalions in RVN used the "G" Series. Although there are only minor organizational differences among units, there is a considerable deviation in the armament modifications which have been made to the M113. Consideration should be given to modifying the mechanized infantry battalion by the addition of the type "A"
armament sub-system as described for the divisional armored cavalry squadron (paragraph 2d below).

(2) Organizational Structure. After evaluating the current structure of the mechanized infantry battalions, it appears that an extensive reorganization is required to provide the equipment and flexibility necessary for operations in RVN. Field commanders at all levels expressed a desire for a fourth maneuver element. This was reinforced by the requirements for additional security forces caused by the conduct of an area war. As a result of these factors, the requirement and composition of a fourth maneuver element emerged as a major issue. With this in mind, two different organizations were examined; Battalion "A" consisting of a headquarters and headquarters company and four rifle companies, and Battalion "B" consisting of a headquarters and headquarters company, three rifle companies and an armored cavalry troop. Each organization's performance was examined within the framework of the five functional areas of land combat. A rating system was established to measure each unit against the same set of factors-mission, enemy, terrain and weather and troops available. The missions used were search and destroy, blocking force and line of communications security. The results of the model exercises, the analysis of collected data, and the comments of the field commanders suggest that both organizations offer acceptable solutions.

(a) Battalion "A".

The advantages of this organization are, (1) it is essentially the same organization as the current battalion and would require no changes in the techniques of employment, (2) it increases combat power without a significant increase in command and control personnel, (3) it does not introduce a new item of equipment, (4) excellent cross-country mobility is provided and, (5) organic indirect fire support is provided by the heavy mortar platoon. Disadvantages of this proposal are, (1) attachment of tanks from other units is required for most operations which fragments the limited tank assets of the theater, (2) it lacks organic vehicles capable of penetrating dense brush and jungle and, (3) the unit contains no large caliber,
direct fire weapons except for the 90mm recoilless rifles which are too heavy for dismounted operations and which do not have a suitable antipersonnel round in sufficient quantity.

(b) Battalion "E".

FIG III - 2. ORG CHART INF BN (MECH)(BN "E")

The advantages of this organization are (1) the combination of rifle companies and the armored cavalry troop provides many possible variations when organizing for combat. The troop may be employed "pure", in the "scramble" formation, with platoons attached to rifle companies, or cross-attached with rifle platoons, (2) tanks provide a large caliber, direct fire capability and can penetrate dense brush and jungle, (3) the headquarters and headquarters company commander is freed of the responsibilities of combat support. Because of the firepower of the armored cavalry troop; the scout, mortar and antitank platoons are deleted, (4) there is a very significant increase in firepower with minimum of additional personnel, (5) additional tanks will seldom be required permitting more flexibility in the employment of the tank battalions and, (6) the armored cavalry troop provides an organic force particularly suited for line of communications security.

(c) General Comments, Battalions "A" and "B".

Since the 106mm recoilless rifle and the ENTAC have proved to be unsatisfactory in RVN because of mobility restrictions and the lack of armor protection, the antitank platoon is considered for deletion. This action is already being accomplished in some units in RVN, and the personnel of the platoon are being utilized as additional scouts or as security guards. A ground surveillance section, organized identically to the one found in the tank battalion, is proposed. It is suggested that the communications platoon be increased by one switchboard operator, one radio mechanic and one radar mechanic to provide necessary support to the battalion. The same substitution of the XM548 tracked cargo carriers as described for the tank battalion has been applied. Personnel in the maintenance platoon, allocated for the maintenance of headquarters vehicles, should be deleted and formed into a headquarters company maintenance section. This will allow the battalion maintenance officer to concentrate on battalion level maintenance without the additional burden of company responsibilities. Four battalion/squadron level units are conducting training in mechanized flamethrower operations, and the units which are equipped with these
weapons have reported their successful operational employment.
The addition of three M132 mechanized flamethrower vehicles and
three truck mounted service units is proposed. When available,
track mounted service units should replace the three trucks.

(d) Rifle Company. Possible changes to the "G" Series TOE for the rifle company are, (1) the deletion of the 106mm recoilless rifle from the weapons platoon (the 81mm mortars mounted in the M125 carriers have been retained) and, (2) the deletion of the weapons squad and the organization of the platoon into four rifle squads. Because of the weight and the lack of a suitable antipersonnel round in sufficient quantities, the 90mm recoilless rifle is seldom utilized in dismounted operations. This has caused the employment of the weapons squad in a role similar to that of the rifle squad. One 90mm recoilless rifle, less crew, has been added to each rifle platoon to provide a limited direct fire capability.

c. THE TANK BATTALION.

(1) Current Organization. As in the case with the majority of units evaluated, the tank battalions are organized under the "E" Series TOE with a headquarters and headquarters company and three tank companies. Minor modifications by MTOE have been made to compensate for varying mission assignments.

FIG III - 3. ORG CHART TANK BATTALION

(a) General. An analysis of both the current organization and that provided by the "G" Series TOE indicates that major modifications are required to construct an organization specifically for operations in RVN. A possible solution involves two major changes; the reorganization of the headquarters and headquarters company and a service support company, and the addition of a fourth tank company. This additional tank company is required to provide necessary armor support, without unacceptable fragmentation of the battalions, to the infantry units currently in RVN. Since the battalion headquarters, in its current configuration, is capable of controlling four maneuver elements, combat power can be increased substantially without adding additional command and control
personnel. Other alternate organizations which were considered feasible, but less desirable are:

1. A headquarters and headquarters company and four tank companies.

2. A headquarters and headquarters company, a service support company and three tank companies.

(b) Headquarters and Headquarters Company.

An analysis of missions assigned to the headquarters and headquarters company disclosed that the command and control and combat support elements deployed to the field. Only a small portion of the combat service support elements, however, habitually deployed in support of the maneuver elements. Because of the large amount of support required by the tank battalion, and the number and size of these elements in the headquarters and headquarters company, it is considered that a reorganization is desirable. This would separate the functional areas of command and control and combat support from combat service support, and would provide a more flexible and responsive structure. In addition to those changes discussed in paragraph 2a above, the following modifications are considered for the headquarters and headquarters company: (1) because of the re-alignment of the company, those maintenance personnel associated with the headquarters and the combat support elements should be retained in the unit. The scout platoon has been authorized the type "A" armament sub-system by a Department of the Army basis of issue (BOI). This consists of an open-top turret for the .50 caliber machine gun and two side-firing M60 machine guns with shields (see paragraph 2d below for additional details). An increase in firepower can be achieved by substituting the rapid-fire, high velocity 40mm grenade launcher for the .50 caliber machine gun on one-half of the vehicles, (2) an additional forward observer team would be required for the mortar platoon to provide observed fires for the fourth tank company, (3) the communication platoon would be augmented with an additional switchboard operator to provide twenty-four hour service and (4) the battalion ground surveillance section would be organized into four company teams of five men each.

FIG III - 4. ORG CHART HQ & HQ CO TK BN
Each team would be mounted in two M113's equipped with the AN/PPS-5 radar system. In this regard, an evaluation of the use of the surveillance systems in RVN revealed that both the AN/TPS-33 and the AN/PPS-4 systems are inadequate. The stated operational capabilities of the AN/PPS-5 would correct this situation and provide a system suitable for employment in this environment.

(c) Service Support Company.

The major elements of this type organization would be a support platoon, a maintenance platoon and a medical platoon. Personnel and equipment have been increased to provide the required support to the fourth tank company. The evaluation of collected data and the comments of commanders indicated that the 5-ton truck, because of its movement restrictions, is inadequate in a combat resupply role. Because of the difficult terrain to be negotiated, a requirement exists for a tracked cargo carrier with mobility characteristics similar to those of the M113. This requirement could be met by the substitution of nine XM548 tracked cargo carriers for nine 5-ton trucks. Eight of these XM548 would be issued to transport cargo and fuel, while the remaining carrier would be equipped with a welding set to provide a capability for on-site maintenance and repairs. Further, two additional wrecker drivers/operators are required to release mechanics who were assigned this function as an additional duty. One armored ambulance would be provided for each tank company because of the mine incident rate and the difficulty of the terrain encountered. Because of support provided by other services and the lack of an air threat, the air control team and the air defense section could be considered for deletion from the "G" Series organization. Two additional mess teams are required to support the fourth tank company and service company.

(d) Tank Company. The adequacy of the current organization of the tank company has been proved in combat operations. Other than the conversion of the unit to the "G" Series
TOE to obtain the latest equipment changes and personnel skill levels, only minor modifications appear to be warranted. These are, (1) an equipment substitution to provide each platoon with a dozer tank, (2) the addition of one M113 for use as a company command post vehicle, (3) the addition of a turret mechanic and, (4) the substitution of one M79 grenade launcher for one submachine gun caliber .45 on each tank.

d. THE ARMORED CAVALRY SQUADRON, DIVISIONAL.

(1) Current Organization. Analysis of after action reports and reports of lessons learned, in addition to comments from commanders and data collectors, has indicated that the basic organization of the armored cavalry squadrons assigned to the infantry divisions requires no major modification. A standard equipment substitution has been the replacement of the M114 with the M113 which has, in turn, been modified by the addition of two side-firing M60 machine guns with shields. When the M113 has been so modified, it is known locally as the Armored Cavalry Assault Vehicle (ACAV) and is depicted below.

![FIG III - 6. Armored Cavalry Assault Vehicle (ACAV)](image)

(2) Organizational Structures.

(a) Headquarters and Headquarters Troop. While the organization of this troop under the "G" Series TOE is considered to be sound basically, certain modifications were considered for RVN oriented units. The requirement to rapidly span antitank ditches, road craters and natural terrain obstacles necessitates the addition of an armored vehicle launched bridge (AVLB) section as authorized currently to the tank battalion. Also, a flamethrower section identical to the one found in the mechanized infantry battalion is required. The size of current flamethrower sections in units in RVN vary from three to six self-propelled flamethrower type vehicles. Responses from the field have verified the requirement for such a weapon at battalion/squadron level for immediate response to support requests. The three-vehicle configuration appears to be adequate to provide the required support. Other possible changes are; (1) the addition of a switchboard operator and a radio operator in the communications platoon, (2) the substitution of nine XM 548 tracked cargo carriers as described in the organization for the tank battalion, (3) the addition of one welder and two wreckers drivers/operators to the maintenance platoon with the welder's equipment mounted on one of the XM548 carriers, (4) the authorization of armored ambulances on the basis of one per troop and, (5) the deletion of the air defense section and the air control team for reasons discussed previously.
(b) Armored Cavalry Troop. An evaluation of the organization and equipment of the armored cavalry troop, together with the comments of commanders and data collectors, indicates that only minor changes to the "G" Series TOE are required. Since the M113 has been substituted for the M114, the strength of the scout section should be increased from three to five men per vehicle in order to man the added armament. An analysis of the employment of the 4.2 inch mortar reveals that the same problems exist for this troop as for the troop of the armored cavalry regiment. Difficulties are encountered in positioning the weapon because of its minimum range of 840 meters. Unless the weapons are centralized at battalion/squadron level, additional security must be provided when the mortars are trailing the maneuver elements. The 81mm mortar, however, has been employed effectively without this added security requirement. Replacement of the 4.2 inch mortar with the 81mm mortar in the armored cavalry troops would alleviate these difficulties. The minimum range of the 81mm, plus the forward firing capability of the M125 carrier, would provide an immediately responsive, indirect fire support capability to the armored cavalry troop.

(c) Air Cavalry Troop. Reorganization of the air cavalry troop under TOE 17-78G (Air Cavalry Troop, Armored Cavalry Squadron, Airborne Division) provides an organization with those characteristics most desired by field commanders. This TOE provides an air cavalry antitank/rocket platoon rather than the aero-weapons section found in the current organization. It eliminates the light and heavy scout sections and replaces them with four aero-scout squads. Additional door gunners and mechanics, including avionic mechanics, are provided. A further modification appears desirable. The structure in FIG III - 7 below includes the results of the "Aviation Requirements, Combat Structure of the Army (ARCSA)" study which provides additional pilots and mainten-
ance personnel beyond those authorized by TOE 17-78G. Replacement of the two UH-1-B helicopters in the supply and maintenance section by UH-1-D aircraft would provide an additional airlift capability.

e. THE ARMORED CAVALRY REGIMENT.

(1) Current Organization. The 11th Armored Cavalry Regiment is organized as shown below. It should be noted that unlike the divisional squadron, the air cavalry troop is authorized by TOE at regimental rather than squadron level.

![Org Chart, 11th Armored Cavalry Regiment](image)

FIG III - 8. ORG CHART, 11th ARMORED CAVALRY REGIMENT

The armored cavalry troop is organized into a troop headquarters and three armored cavalry platoons. Major organizational changes occur at the platoon level as shown below.

![Organizational Chart](image)

FIG III - 9. ARMORED CAVALRY PLATOON, 11th ARMORED CAVALRY REGIMENT

This current organization depicts the substitution of the M113 for the M114, as was done throughout the regiment. All M113 have been further modified by the addition of the type "A" armament subsystem. The chart also shows the deletion of the tank section and the addition of a third scout squad, equipped with two M113 in lieu of the three tanks normally issued. Because of the range characteristics of the 4.2 inch mortar discussed previously, it is not uncommon to find the support squads centralized at squadron level. This organization has proved to be readily adaptable for combat operations in this environment, and it is considered that no change other than the substitution of the 81mm mortar for the 4.2 inch
morton is required. The major items of equipment include:

- 51 M48A3 Tanks
- 296 M113 Personnel Carriers
- 18 Howitzers, Self-propelled 155mm
- 9 Flamethrowers, M132
- 27 4.2 inch Mortars
- 476 Caliber .50 Machine gun
- 727 Caliber 7.62 Machine gun
- 48 Helicopters

(2) Organizational Structures.

(a) Headquarters and Headquarters Troop, Armored Cavalry Regiment. In order to update authorization documents, it is considered that this troop should be reorganized under the "G" Series TOE. Additionally, an examination of the current MTOE and analysis of field comments indicates that the "G" Series TOE should be modified. These proposed modifications consist of the addition of, (1) an S5 section to supervise and coordinate at the regimental level the civic action programs and to integrate the actions of the squadron S5 into area development programs, (2) an awards and decorations team of two enlisted personnel to assist in the preparation and processing of awards and decorations. Units organic to divisions are provided this support from division resources. The strength of the armored cavalry regiment justifies the inclusion of this support as an organic element and, (3) a casualty reporting team of three enlisted personnel is essential to provide factual and timely reports to higher headquarters.

(b) Air Cavalry Troop. The operational requirements of this troop are similar to those of the air cavalry troops of the divisional squadrons and the squadron of the airborne division. Therefore, it is suggested that TOE 17-78G be adopted; however, a minor modification consists of adding a seven-man separate mess team.

(c) Armored Cavalry Squadron. Major changes to this organization, other than conversion to the "G" Series TOE, have not been considered. Combat reports, reports of lessons learned, comments of commanders and data collected from the field have all stated the suitability of the current organization for operations in RVN. Minor adjustments that could be implemented are discussed below.

1. Headquarters and Headquarters Troop. The flamethrower section as currently authorized by MTOE should be retained. Personnel adjustments (S5 section, assistant S2 and S1 clerk) are the same as those discussed in paragraph 2a above. The substitution of the XM548 cargo carrier for the 5-ton truck is identical to that stated for the tank and mechanized infantry battalions. Two wrecker drivers/operators would replace mechanics who have been assigned this function as an additional duty.
2. Armored Cavalry Troop. The organizational structure under consideration for this unit has already been discussed.

2. Tank Company. No change is considered for the tank company other than its conversion to the "G" Series TOE and the addition of a M113 as a command post vehicle.

4. Field Artillery Battery. As currently organized in RVN, the howitzer batteries of the armored cavalry squadrons are provided the personnel and equipment to perform their assigned mission. A conversion of these units to the "G" Series TOE would provide the latest combat essential equipment authorizations. Based on responses from the field, a M113 is suggested for the use of the battery commander and a recovery vehicle has been added to the maintenance section. It should be noted that a ten-man security section is provided by the new series TOE.

f. THE AIR CAVALRY SQUADRON, AIRMOBILE DIVISION.

(1) General. The United States Army Combat Developments Command will complete the revision of the "G" Series TOE for this squadron to the "G" Series in the near future. This revision is based on the recommendations of the air mobile division in RVN and the comments of U.S. Army, Vietnam (USARV) and U.S. Army, Pacific (USARPAC). The revised "G" Series TOE will reflect the latest personnel and equipment authorizations and implements approved Department of the Army studies.

(2) Organizational Structures.

(a) Air Cavalry Troop. This troop is reorganized to conform to the proposed troop for divisional armored cavalry squadrons and the armored cavalry regiment. The major changes involved are, (1) the addition of a service platoon, (2) the deletion of the maintenance section from the troop headquarters, (3) the organization of an antitank squad and a rocket squad and, (4) the addition of two scout sections to the scout platoon.

(b) Cavalry Troop. Responses from commanders and analysis of collected data indicated that the organization of this troop to conduct ground operations should be examined closely. Of major concern is the question of wheeled versus tracked vehicles. As organized currently, this troop is equipped with 1/4 and 3/4-ton trucks for combat operations. Responses from commanders are divided generally as to the suitability of wheeled vehicles in this role, and approximately one-half of the commanders recommended a conversion to tracked vehicles. An evaluation of the type missions which have been assigned the troop and a comparison of the advantages and disadvantages of both type vehicles, leads to a conclusion that there are three options available in the near time frame. These are, (1) convert to tracked vehicles, (2) retain the wheeled vehicles and, (3) provide armor units to the air mobile division on a mission basis. Considering these options and the difficulties encountered by introducing one-of-a-kind equipment into the division, a compro
mise appears to be the most attractive solution; retain the wheeled vehicles and reorganize the troop under the 'G' Series TOE when published. In the interim, armor units could be made available to the airborne division on a mission basis to operate in conjunction with the air cavalry squadron.

5. EQUIPMENT MODIFICATIONS.

a. M48A3 TANK.

(1) Cupola. The caliber .50 machine gun, M2, is difficult to load and operate when mounted in the M1 cupola. Since tank commanders seldom close their hatches, most units have removed the .50 caliber from the cupola and mounted it on top of the turret forward of the commander's hatch. The majority of these modifications were accomplished by shortening the legs of a M3 mount and welding it in place. This arrangement corrects the operating difficulties and permits the use of a longer belt of ammunition. For these reasons, consideration should be given to replacing the M1 turret with the M19. In addition, the M19 turret mounts the M85 machine gun with a greater basic load capacity, permits the use of night vision devices and provides increased crew comfort because of its size.

(2) Cutting Bar. Many of the armor units in RVN have modified one or more of the tanks by installing a cutting bar as shown below. This bar consists of a dozer blade tip welded from fender to fender across the front of the tank, and has proved to be an effective tool for clearing brush and small trees. It has been used to clear helicopter landing zones, access routes, and to remove dense jungle growth in areas of operation. The cutting bar increases the effectiveness of the tank, and most commanders feel that all tanks, other than those mounting the dozer blade, should be modified accordingly.
b. M113 PERSONNEL CARRIER.

(1) Lightweight Belly Armor. The lightweight belly armor of the M113 is inadequate to defeat many types of antitank mines encountered in RVN. Most of the units line the floor of the driver and squad compartments with sandbags to reduce mine damage and personnel casualties. To further minimize the antitank mine threat, U.S. Army, Vietnam (USARV) has initiated the installation of titanium armor plate kits beneath the driver and squad compartment.

(2) Boom Hoist. A field expedient for this vehicle which has proved successful is an improvised boom hoisting device. This device is mounted on the front of the M113 and is used for removing and installing major automotive assemblies. The entire boom can be mounted or dismounted in approximately five minutes and is used when terrain restrictions prohibit employing the M578 recovery vehicle.

c. ROME FLOW (ROME KG CLEARING BLADE). One of the largest single obstacles for our ground forces in RVN is the dense jungle growth and the vast expanses of head-high native grasses. These jungle areas provide a haven for the enemy in which he is able to move and concentrate forces without detection to conduct large scale attacks or small harassing actions. A logical method of overcoming these obstacles and sanctuaries for the enemy is to physically clear the jungle areas. The Rome Plow, a commercial off-the-shelf item consisting of a shearing blade mounted on a caterpillar-
type tractor, is being used effectively. A long, sharp cutting edge extends across the entire length of the blade and will cut through small to medium diameter growth at ground level. When large trees are encountered, a wedge-like projection at the left end of the blade is used to split and weaken the trees so that they can be felled with the cutting edge. The Rome Plow has been used effectively to clear bivouac areas, helicopter landing zones, perimeters of base camps and large jungle areas. It is described as being twice as effective as the standard U.S. Army bulldozer when used to clear brush and trees from an area.

FIG III - 12. Rome Plow (Rome KG Clearing Blade)

d. PROTECTIVE SANDBAGS. Filled sandbags are being utilized on wheel vehicles to provide protection to personnel from enemy munitions. The sandbags are placed usually on the floor of all wheeled vehicles, front and rear. A double row of sandbags is used in place of the windshield on 1/4-ton and 3/4-ton trucks to provide additional protection from hostile fire. Use of sandbags has caused some degradation in mobility, however, the additional protection provided to personnel more than justifies its loss.

6. CARE AND MAINTENANCE.

a. GENERAL. Certain items of equipment used extensively in RVN are failing to function or are functioning improperly. In most instances the malfunction can be traced to environmental conditions peculiar to Vietnam. The items of equipment, contributing causes of malfunctions and corrective actions are discussed below.

b. HANDSET, H-138/U AND MICROPHONE M-30/U. Experience has shown that these items become inoperable as a result of the accumulation of moisture. Continued cleaning and drying by the operator will reduce greatly the down time of these items.

c. M79 GRENADE LAUNCHER. Moisture accumulation has caused the grenade launcher stock to swell at a point near the trigger. This forces the weapon out of alignment and, on occasion, prevents the weapon from firing. This problem has been solved by shaving away the swollen stock surface.

d. M72 ROCKET ( LAW). Ammunition for this weapon frequently malfunctions because of moisture absorption. In such cases, the increased care and cleaning demanded by exposure to excessive moisture is most important.

e. M16 RIFLE. This weapon will sometimes fail to extract because of an accumulation of moisture and dust. This causes the expended cartridge case to stick in the chamber to a degree that it can not be extracted. Under such conditions, additional care and cleaning is required.

f. TANK GUN, 90MM. Experience has shown that the canister round for this weapon separates occasionally during handling or when being carried in the gun tube. To insure immediate employment of the main armament, special care must be taken in handling, loading and carrying this round.
CONCLUSION

The terrain, the enemy and the nature of area war are dominant factors which differentiate combat in Vietnam from the more familiar forms of warfare encountered during World War II and Korea. Doctrine, organizations and equipment which have evolved as a result of those conflicts are basically sound. Tactics and techniques in application of established doctrine have been altered and points of emphasis have been changed to fit the requirements of area warfare. Mechanized infantry, tank and armored and air cavalry equipment is, for the most part, efficient and capable of accomplishing its intended purpose. Many of the modifications, substitutions and new requirements brought out in this report may have evolved, although more slowly, without the impetus of combat operations in Vietnam. Requirements for changes in organization as a result of this examination are neither drastic nor revolutionary. It is important to understand that changes in doctrine, tactics, techniques, organization and equipment which have evolved and which are collected and evaluated here will continue to improve the fighting capability of mechanized and armor units in this area. Mechanized infantry, tank and armored and air cavalry units have been successful in Vietnam. This publication records this fact and seeks to further enhance the efficiency of these formations, not only in the Republic of Vietnam, but also throughout the Free World.

APPENDIX - GLOSSARY

This glossary is provided as a ready reference for the NACOV report. Most of the terms and abbreviations are not contained in AR 320-5, Dictionary of United States Army Terms, or in AR 320-50, Authorized Abbreviations and Brevity Codes. Some of the terms are explanations as well as definitions and when the reader finds a term or phrase which is not clear in the report, he should consult this glossary. Terms and abbreviations not included here should be adequately defined in appropriate Army Regulations or an English dictionary.

ACAV—See "Armored Cavalry Assault Vehicle."

AO—See "Area of Operations."

AREA OF OPERATIONS (AO)—An area established for a particular operation. Normally the AO is assigned to the command exercising overall control and is larger than is required to satisfactorily complete the assigned mission. In addition, an AO may be assigned to a subordinate command as a control device. An AO may be within, a part of, or completely separate from a unit TAOR. (See TAOR)

ARMAMENT SUB-SYSTEM—

1. Any vehicle or aircraft armament system which is a sub-system of the vehicle or aircraft of which it is a part.
2. Utilized by DA to signify modification for upgunning the M113. The "A" model or kit is an FMC Corporation armament sub-system, and it consists of hatch armor and gun shield for the commander's caliber .50 machine gun, two M60 machine guns, two elbow pintle mounts with gun shields for mounting the M60's located on both sides of the M113, and a removeable pintle mount on the rear of the M113 in which either of the M60 machine guns with shield may be mounted. The "A" kit is being procured to modify all M113 in RVN not presently so equipped. The "B" model or kit consists of hatch armor and gun shield for the commander's caliber .50 machine gun only and is used on mortar carriers.

ARMORED CAVALRY ASSAULT VEHICLE (ACAV)—An armored vehicle with armament for assaulting enemy positions and carrying soldiers who may either fight from the vehicle or who may dismount and fight on foot. At the present time the ACAV is an M113 modified by the addition of the "A" kit, the FMC Corporation armament sub-system. The term originated with the 11th Armored Cavalry Regiment which equipped its M113 with armament sub-systems before arriving in Vietnam. Some M113 in mechanized infantry units are so modified; and, although they are the same vehicle with the same configuration and although the mechanized infantry assault enemy positions in the M113 as well as fight on foot, the term ACAV is seldom applied to these vehicles.

ARMORED VEHICLE LAUNCHED BRIDGE (AVLB)—Currently there is only one such standard type bridge and launching vehicle in RVN. It is a class 60 folding bridge which is carried on and launched from a modified M48 tank hull. There is also, however, an AVLB under development which is mounted on an M113 and designed for use by M113 to cross short spans.


AVLB—See "Armored Vehicle launched Bridge."

BASE Area—A section of terrain which contains installations, defensive fortifications, or other physical structures used by the enemy for the following purposes: the basic or advanced training of personnel and units; a permanent or temporary location for political, military or logistical headquarters; the storage and distribution of medicine, ordnance, food, FOL, and other war materials; and as a site used by combat units to rest, reequip, retrain, evade friendly operations, and/or initiate preparatory phases of offensive operations.

BASE Camp—The location which provides a semi-permanent home for tactical organizations stationed in the Republic of Vietnam (RVN). Depending on their functions, organizations may operate in, in the vicinity of, or totally away from their base camps.
BLACK LIGHT—A source of infrared emission. While this term is a
mismomer in the sense that such emissions are invisible and
therefore not light and although black light is frequently
used to mean ultraviolet emissions in many applications, the
term "black light" has gained wide acceptance in the field
as meaning infrared emission or a source of infrared emission.

CAPSTAN KIT—a device to help a mired NVA extract itself from
places where it has become stuck. It consists of two drums
(the capstans) which attach to modified drive sprockets of
the NVA; two anchors (Danforth anchors designed for naval
use), and two 100 foot lengths of 1-inch nylon rope.

CENTRAL OFFICE SOUTH VIETNAM (COSVN)—See “Viet Cong Infrastructure.”

CHARLIE—a slang term for Viet Cong or North Vietnamese soldier(s).

CHIEU NOI—The Government of Vietnam open arms program developed
to induce the VC/NVA military, political and civilian
populace in South Vietnam to return to, or come over to
Government of Vietnam controls. The term has gained wide
acceptance in the field to mean an individual who responds
to the program, but this is not proper usage. Such a person
is properly called a "Hoi Chanh." See "Detainee."

CIKG—See “Civilian Irregular Defense Group.”

CIVIL DEFENDANT—See “Detainee.”

CIVILIAN IRREGULAR DEFENSE GROUP (CIKG)—A paramilitary force
locally recruited, clothed, fed, armed, trained, and led
by ARVN Special Forces personnel and advised by U.S. Speci-
cial Forces personnel.

CLEAR AND HOLD—Same as "Clear and Secure" which is the pre-
ferred term.

CLEAR AND SECURE—The mission of a military force which is to
find and capture or destroy all enemy forces within a
specified area and then prevent any enemy force from enter-
ing or seriously harassing persons within the area.

COMBAT YOUTH—Youths of military age and below organized within
a hamlet or village for security of that hamlet or village.
Such forces are no longer authorized under current RVN law;
however, in some locations they are still used. No ray or
equipment is authorized for them. Local officials arrange
funds for them, as well as weapons to a limited degree,
from their own resources. Most of the combat youth will
be found in IV Corps and parts of III Corps where popula-
tion is heavy. Their primary mission is early warning.
When the current RVN law came into effect, these personnel
were supposed to be integrated into the popular force or
drafted for regional force or ARVN duty.
CONVOY SECURITY—The mission of a military force which is to accompany a convoy to either discourage enemy attacks or, if attacked, to defend the convoy so as to minimize damage and to get the convoy to its destination.

CORDON AND SEARCH—A military operation in which an area is first sealed by a military force and then searched by another force (or part of the sealing force). It normally implies an operation in and around a village or hamlet.

CORPS TACTICAL ZONE (CTZ)—A major Vietnamese military and political subdivision of the Republic of Vietnam (RVN). There are four CTZ covering the entire area of South Vietnam. The corps commander is the senior Government of Vietnam (GVN) representative in his CTZ.

COSVN—Central Office South Vietnam. See "Viet Cong Infrastructure."

CTZ—See "Corps Tactical Zone."

DESENDER—Any individual absent from his unit with no apparent intention of returning.

DETAINEE—A person who has been detained but whose final status has not yet been determined. The following categories designate final status of a detainee:

Prisoner of War (POW)—A person who qualifies under Article 4 of the Geneva Convention. In addition, the following persons are extended the protection of the Geneva Convention in Vietnam:

Persons who are captured while actually engaging in combat or a belligerent act other than an act of terrorism, sabotage or spying against the Republic of Vietnam, the U.S. or other Free World Military Assistance Forces.

Any captured member of the North Vietnamese Armed Forces or of the Viet Cong, whether captured in combat or not, except a terrorist, saboteur, or spy.

Civil Defendent—A person who is suspected of being a spy, saboteur, terrorist, or criminal and who does not qualify as a prisoner under Article 4 of the Geneva Convention or the paragraphs above.

Returnee—A person who voluntarily returns to Government of Vietnam control under the Chieu Hoi Program after having actively supported the Viet Cong in some form of political or military activities.

Military Hoi Chanh—The military returnee under the Chieu Hoi program.

Political Hoi Chanh—The political returnee under Chieu Hoi program.

Innocent Civilian—A person who does not qualify as a detainee under the provisions above.