USARV

AVIATION OPERATIONAL PROCEDURES GUIDE

EDITION: 1 JUNE 1970

DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY, VIETNAM
OFFICE OF THE AVIATION OFFICER
APO SAN FRANCISCO 96375

AVHAV-AO

SUBJECT: USARV Aviation Operational Procedures Guide

1. The 1st Aviation Brigade Operational Procedures Guide has been updated to include changes resulting from experience gained since publication of the 1 February 1969 issue. Organization and functions of all major US Army aviation elements in the Republic of Vietnam have been added to the Guide and it has been retitled the USARV Aviation Operational Procedures Guide.

2. The Guide is published for two purposes. The first is to familiarize supported elements with the aviation assets available in RVN and how each of the various aviation units may be employed to meet combat and support requirements. Secondly, it will serve to standardize procedures and develop common understanding between supporting and supported elements. The procedures are extensions of published field manuals and have been derived from the experience of eight years of Army aviation combat operations in RVN.

3. Changes to the Guide will be made as experience reveals improved and more efficient methods of operation. Commanders, units, and individuals are encouraged to submit recommendations for improvement of this Guide as new and improved procedures are developed.

GEORGE W. PUTNAM, JR.
Brigadier General, USA
Aviation Officer

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PART ONE
CHAPTER 1
GENERAL

Section I
Introduction

1-1. PURPOSE

Part one of this manual establishes doctrine and tactics for the 1st Aviation Brigade U.S. Army Vietnam (USARV), in the conduct and support of combat operations. Its purpose is to provide commanders and staff officers throught the Brigade with the guidance necessary to plan and conduct operations in the Republic of Vietnam (RVN) involving Army aviation. It also provides the ground force commanders with meaningful information for the planning and conduct of operations by acquainting them with the basic organizational structure, procedures and operational techniques employed by the 1st Aviation Brigade.

1-2. SCOPE

a. Part one of this manual emphasizes the employment of tactical life helicopt of the UH-1 series and armed helicopters of both the UH-1 and AH-1 series. It also covers the employment of other helicopters, fixed wing aircraft, air traffic control units, pathfinders, aircraft maintenance units, and other organizations and equipment associated with the tactical employment of Army aviation in the Republic of Vietnam.

b. The doctrine and tactics set forth in this document apply to combat operations of the intensity and sophistication now being experienced by U.S. and other Free World Military Assistance Forces (FWMAF) in RVN.

c. Aviation and airmobile terms used in this manual are defined in Appendix I. Abbreviations of these terms are also shown. In the interest of clarity and common understanding, locally invented terminology will be avoided in official correspondence, both operational and administrative, and in voice radio communications.

1-3. RECOMMENDATIONS AND COMMENTS

Users of this manual are encouraged to submit recommendations to improve its clarity or accuracy. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to Commanding General, 1st Aviation Brigade, APO 96384, ATTN: AVBAGC-O.

Section II
1st Aviation Brigade

1-4. MISSION

The mission of the 1st Aviation Brigade is to provide command (less operational control) of its organic units; to provide command for those other units that may be attached or assigned by CG, USARV; and to provide aviation support, as directed, to Free World Military Assitance Forces (FWMAF) for the conduct of tactical operations throughout the Republic of Vietnam.

1-5. COMMAND RELATIONSHIPS

The 1st Aviation Brigade commands those units assigned or attached to it by the Commanding General, USARV, and employs those additional units which may be placed under its operational control or in direct or general support. In those specific cases where the Commanding General, Military Assitance Command Vietnam (MACV) or the Commanding General, USARV, passes operational control of organic or attached units to the Brigade, or requires the Brigade to assume operational functions entailing the full or part time tactical employment of organic or attached units, all commanders concerned will be advised accordingly.

1-6. ORGANIZATION OF THE BRIGADE

The 1st Aviation Brigade is organized with four Combat Aviation Groups and one separate Combat Aviation Battalion. The areas of operation of these units are as follows:

a. 12th Combat Aviation Group
III Corps Tactical Zone

b. 17th Combat Aviation Group
II Corps Tactical Zone

c. 164th Combat Aviation Group
IV Corps Tactical Zone

d. 165th Combat Aviation Group
Entire area of RVN

e. 212th Combat Support Aviation Battalion
I Corps Tactical Zone

1-7. RESPONSIBILITIES

a. 1st Aviation Brigade

(1) The 1st Aviation Brigade has command responsibility, less operational control, for three of the Combat Aviation Groups (CAG) and the separate Combat Aviation Battalion (CAB). Staff planning and administrative supervision is provided by the Brigade to these units.

(2) The 1st Aviation Brigade has full command responsibility and provides staff assistance and administrative supervision for the 165th Combat Aviation Group.

b. 12th, 17th, and 164th Combat Aviation Groups.

(1) These Combat Aviation Groups are under operational control of tactical headquartrs as follows:

(a) 12th CAG—II Field Force Vietnam (II FFV)

(b) 17th CAG—I Field Force Vietnam (I FFV)

(c) 164th CAG—Senior Advisor, Delta Military Assistance Command (DMAC)

(2) Selected units provide administrative aviation support to USARV and MACV Headquarters.

c. 212th Combat Aviation Battalion

The 212th Combat Aviation Battalion is under operational control of Headquarters, III Marine Amphibious Force (III MAF).

d. 165th Combat Aviation Group

The 165th Combat Aviation Group provides the Army flight following system, terminal air traffic control and tactical air traffic control in RVN. Additionally, it has a Command Airplane Company and an Assault Helicopter Company which provide aviation support for MACV, USARV, CMAC and JUSPAO.

CHAPTER 2
AIRMOBILE OPERATIONS

Section I
General

2-1. GENERAL

This chapter contains guidance for planning and conducting airmobile operations.

2-2. PRINCIPLES OF AIRMOBILE OPERATIONS

There are a few basic precepts which are essential for every commander and staff officer engaged in airmobile operations to understand in order to apply the airmobile concept to any combat situation in RVN. A thorough understanding of these precepts is essential to success.

a. Tactical Integrity

The whole purpose for the existence of airmobile assaults is to position combat rifle units and supporting troops on or within close assault distance of their tactical objectives. There are two reasons for this: first, airmobile assault makes it possible to deliver fresh riflemen at the decisive point of the battle are unwearied from long and tiring ground approach marches; second, by proper selection of landing zones (LZs) and rapid exploitation of the tactical advantage gained thereby, we compress the time factor of combat in our favor. Therefore, it is imperative, if credence is to be given to airmobility, that rifle elements be landed in the LZ with tactical cohesion so that they may start their combat tasks immediately on exiting their lift helicopters without the requirement for the fatiguing. time-consuming and often dangerous task of reorganizing on or adjacent to the LZ.

b. Attitude

Success in the conduct of any combat operation, especially in airmobile operations, is achieved by a combination of imagination, tactical intuition, discipline, and determination on the part of every commander and staff officer involved. These ingredients for success are equally necessary to the personnel of both lifted and lift units. Intuition is born from a consideration of every aspect of every combat situation, contemplative thought, studious research, effective, meaningful training, and carefully controlled experimentation. Discipline needs no amplification except the reminder that there is no distinction between flying discipline and individual discipline: both are essential. The enemy in Vietnam is tough, skillful and dedicated. It is primarily through individual determination to succeed that the enemy can be defeated. Attitude often determines whether any particular mission is a failure or a success.

c. Mission

All aviation operations are directed toward supporting ground forces in combat. No Army aviation operation is an end in itself; all must be keyed to provide the best possible support that we can to the ground forces. In order to provide this support, all commanders and staff, lift and lifted, must thoroughly understand the mission objective and the impact their individual efforts and tasks will have on its accomplishment. It is not sufficient for the lift commander to know only the lift plan. He must also understand the ground combat mission and the overall concept of operations. It is, likewise, not sufficient for the ground commander to concern himself only with the ground plan. Mutual understanding on the part of both commanders and their subordinates is the only way to capitalize on the advantages of airmobile warfare and to derive the necessary tactical flexibility therefrom.

d. Capabilities and Limitations

Every commander and staff officer must know and understand his unit's full capabilities. He must also be familiar with the capabilities of supporting or supported units. Equally important is a knowledge and understanding of actual limitations. Capabilities must be exploited and limitations minimized by careful planning. There is no place in successful airmobile operations for imagined limitations. The fact that a particular plan or method of operation has not been tried before should not be the reason for discrediting its possible success and must not be considered a limitation. A rudimentary example of adequate planning to overcome a limitation is that of increasing the payload of a lift helicopter by decreasing its fuel load.

e. Flexibility

Flexibility may be defined as the ability to adapt to change in order to successfully accomplish the mission. The skillful commander or staff officer is able to achieve flexibility by proper planning. Any plan which cannot be modified or adapted to meet a changing tactical situation is an inadequate plan. Airmobile operations by their very nature are susceptible to frequent changes in tactical situations and planning. An established pattern or SOP which cannot be changed in reaction to a changing tactical situation is a limitation. In order to exercise the greatest flexibility, airmobile units must have SOPs and battle drills which permit quick response to tactical opportunities and changes in the situation.

f. Accuracy

Accuracy is a mark of professionalism. Reports, armed helicopter fires, and adherence to time schedules and flight routes must all be accurate to have any meaning. The successful commander or staff officer will check computations to insure accuracy before allowing an operation to commence. Failure to insure such accuracy in airmobile operations may lead to failure. Accurate plans for fuel requirements, allowable cargo loads, sling requirements and ammunition loads must be completed prior to their being required. Complete accuracy must be strived for in every task.

2-3. RESPONSIBILITIES

a. Air Mission Commander

The air mission commander commands and controls all aviation elements on a specific mission or operation. The air mission commander is responsible for: technical approval of LZs; coordination of the overall plan with the AMFT commander; making recommendations for artillery fires, air strikes, weather advisories, and other essential information to all aviation elements; and control of airspace over the operational area. The air mission commander is responsible for advising the AMFT commander when the mission requires more than a normal risk. If the risk is prohibitively high and the AMFT commander wishes to continue the mission, the air mission commander will perform the mission and inform his next higher aviation commander of the risk involved.

b. Aircraft Commander

(1) An aircraft commander is an aviator appointed on competent orders. Designation as aircraft commander is a privilege and an award signifying demonstrated skill and leadership capabilities. The designation "Aircraft Commander" carries the same responsibility incumbent upon any other commander: that of assuming responsibility for acts of commission or omission by a subordinate member. He is responsible for the safety of his aircraft and the actions of his crew on all matters pertaining to successful mission accomplishment. This responsibility includes determination of the airworthiness of the aircraft, aircraft loading, compliance with air traffic procedures, decisions concerning weather operations, air crew duties, and evaluation of all factors pertaining to safe operation within the capabilities of the aircraft and crew. On administrative flights providing transportation from point to point, the aircraft commander will select the safest altitude and flight path considering weather, air traffic, artillery fire, possible enemy fire, and forced landing areas. He will inform the tactical commander/senior occupant if his proposed course of action differs from theirs and of the hazards necessitating a change.

(2) Aviation unit commanders will establish a comprehensive training program for aviators who are being considered as aircraft commanders. Those aviators selected as aircraft commanders must be highly qualified, not only in knowledge of the aircraft, but in tactical operations, techniques, and command responsibilities. They must have completed the required unit training, be thoroughly familiar with the unit SOP, and must have demonstrated sound judgment and the ability to meet the responsibilities of an aircraft commander. No requirements exists for the senior officers of a unit to be designated as aircraft commanders unless they meet the established requirements. (For specific requirements for aircraft commanders see App IV.)

c. Airmobile Task force Commander

The AMTF commander is usually the ground force commander. He exercises control of all elements of a airmobile task force. He must make all decisions. other than those outlined in paragraphs a and b above, which relate to the employment of his unit and to the accomplishments of his mission. In cases where his decisions conflict with those of the air mission commander/aircraft commander, the decision of the AMTF commander will be followed. He must be aviation oriented to the extent that he recognizes when such decisions place the aircraft under his operational control in an unsafe or unauthorized condition. On reconnaissance missions, for example, the senior occupant will not require the pilot to descend below what the pilot considers a safe altitude until he has made a thorough evaluation of the mission requirements, risks involved, and the pilot's analysis of risks involved.

Section II
Planning

2-4. GENERAL

Airmobility extends the flexibility and versatility of ground combat units to a degree limited only by the understanding, imagination and ingenuity of the commander and his staff. This section discusses planning considerations and the coordination necessary to the successful conduct of airmobile operations. It is intended to assist commanders and their staffs in acquiring the necessary understanding of airmobile operations.

2-5. THE MISSION

When the mission is received, it must be carefully analyzed by the commander and his staff to determine stated and implied tasks which are to be accomplished. Missions are normally assigned to combat aviation units by the Army Aviation Element (AAE) of the senior headquarters having operational control of those aviation assets. Depending on the magnitude of the requirement, the aviation senior commander will either control the aviation assets or will further assign the mission to a subordinate aviation unit. Missions which can be accomplished by a company size unit are passed from battalion to company for control. Within the company the operations officer or his representative will nomally assign the missions to specific pilots.

2-6. LIAISON

a. Liaison from the supporting aviation unit to the supported ground unit is the key to well-planned and efficiently conducted airmobile operations. The aviation liaison element (LNO) must be constantly aware of the tactical situation: the status, current capabilities, and limitations of his parent unit; and the plans, operational status, and capabilities and limitations of the supported unit. Whenever possible, habitual association should be practiced between supporting aviation units and supported ground units. This association permits closer understanding of methods of operation and desires, leading to mutually advantageous results. Aggressive, habitual liaison with supported units will frequently enable aviation units to gain early knowledge of pending operations. Even sketchy information, received in time, can be used to begin planning and allow reconnaissance and coordination earlier in the planning phases. Waiting for the supported unit to complete its plans before attempting to prepare the aviation plan contributes only to a mutually unacceptable operation.

b. To accomplish the liaison task, each aviation group commander provides an Army Aviation Element (AAE) on a permanent basis to the tactical headquarters that has operational control (OPCON) of that Combat Aviation Group. The AAE participates in planning from the earliest phases until the plan is completed; keeps its own unit informed as the plan develops, and assists the supported commander and staff in the use of aviation resources during the conduct of operations. The AAE must be equally responsive to requirements from its own unit and from the supported unit. In addition, each group, either with resources provided from the group headquarters or from a specified subordinate battalion, provides an LNO team with necessary communications to all supported divisions on a continuous basis. Liaison below these levels is provided on a mission basis by the aviation unit supporting a particular operation. The establishment of an AA5 or LNO team with a supported unit does not preclude the requirement for aviation commanders to accomplish personal coordination with the supported commander and his staff. When an aviation battalion or company is attached to, in direct support of, or under operational control of a supported unit for an extended period of time (more than one day), it should provide an LNO with the supported unit CP to enhance mission planning and expedite response to immediate requirements. This LNO must be able to assemble the aviation unit rapidly in response to any rapid reaction requirement or emergency missions.

2-7. RESOURCES AVAILABLE

Before planning for mission accomplishment can be initiated, both aviation and airmobile task force (AMTF) commanders and their staffs must know what resources are available to accomplish the mission. These resources include combat, combat support, and combat service support elements, as well as the necessary items of supply and equipment to support the operation. The aviation liaison element assists the ground commander and his staff at this point in determining what aviation resources are available. The LNO should be a rated pilot with sufficient rank and experience to lend emphasis to his recommendation and guidance.

2-8. RECONNAISSANCE

Most missions in Vietnam are derived from intelligence which has been obtained from one or more sources. It is extremely important that this intelligence be analyzed to determine its reliability and what measures may be taken to further confirm, develop, or add to it. Verification is normally accomplished by an aerial reconnaissance by the AMTF Commander and selected members of his staff, subordinate and supporting commanders. Whenever possible, the AMTF commander and the air mission commander should reconnoiter the proposed LZs in the same aircraft. This insures that all parties are, in fact looking at the same terrain and understand exactly what is being planned. A reconnaissance using minimum aircraft will reduce operational-area traffic, which might attract enemy attention and increase the possibility of compromising the operation.

2-9. PLANNING SEQUENCE

In airmobile operations, the planning sequence must be in reverse chronological order. This plan is formulated from mission accomplishment back through organization of the LZ to the marshalling area and aircraft rendezvous to include consideration for any mission the aircraft may perform before the operation. The first step is to determine the organization for combat and formations required by the ground element in order to seize the the objective. The air mission commander, or his LNO, works closely with the AMTF commander at this point to select suitable LZs which will allow the ground force to be landed as near as possible to the desired location and in the desired formation. The air mission commander gives final technical approvel of the selected landing and pickup zones. Multiple landing zone reporting points (LRPs) should then be selected in order to provide flexibility during the assault and follow-up lifts, allowing the air mission commander to change from one LRP to another as subsequent lifts arrive so as to avoid repeated flights over the same route, or to facilitate adjusting to changes of the tactical situation. Flight routes from the PZ to the LRPs are then selected by the air mission commander, based on the guidance and desires of the AMTF commander. Multiple flight routes should be selected, whenever possible, for the same reasons that multiple LRPs are selected. Organization of the PZ is the next consideration and should be planned jointly by the air mission commander, or his LNO, and the AMTF commander, Throughout the planning sequence, times must be computed backwards from the desired LZ time to the loading time at the

PZ. If the aviation unit is not located at the PZ, the air mission commander must also plan his time backward from the PZ loading time to takeoff time to start engine time at his base or staging area in order that his elements arrive at the PZ as scheduled.

2-10. FINAL COORDINATION AND ISSUANCE OF ORDERS

a. As a minimum, prior to the conduct of operations, the AMTF commander and the air mission commander must have the following areas thoroughly coordinated:

(1) Number of aircraft required.
(2) Number of sorties and lifts.
(3) Location of PZs and LZs.
(4) Rules of Engagement for the LZs.
(5) Fire support.
(6) Sequence of events.
(7) Communications.
(8) Command and control.
(9) Aircraft cargo load.
(10) Resupply Requirements.
(11) POL Requirements.
(12) Medevac Procedures.

b. Commander must insure that everyone is thoroughly briefed to include rules of engagement. Sample mission briefing checklists for use by both commanders are included in Appendix II.

2-11. TIME LIMITATIONS ON COORDINATION AND PLANNING PHASES

Due to the rapidly changing situations in the war in Vietnam, the coordination and planning phases are frequently limited and often take place enroute to the LZ. All elements listed in preceding paragraphs of this chapter are still considered, although in an abbreviated form. Sound training and complete and detailed SOPs for both the supported ground unit and the supporting aviation unit facilitate the required coordination and planning.

2-12. SPECIFIC PLANNING CONSIDERATIONS

a. PZ/LZ Considerations

(1) PZ (stagefield) considerations.

PZ considerations should include: distance from operational area; adequacy of size and facilities to handle the number of aircraft involved; aircraft line up; loading sequence; air traffic control; landing and takeoff direction; security; obstacles; surface condition; and restriction to visibility.

(2) LZ Considerations.

LZs should be selected to support the ground tactical plan. Specific considerations include: proximity to objective area; size; obstacles; surface condition; restrictions to visibility; landing and takeoff direction; aircraft formation; rules of engagement; and suitability for subsequent lifts and cargo helicopters. Alternate LZs should always be selected in the event that a landing in the primary LZ is not practical. Alternate LZs should be adequately spaced to preclude the same enemy unit from covering both LZs.

b. Communications

Radio communications and prearranged visual signals (colored smoke, flares, and panels) are the primary means of communications during airmobile operations. It is essential that all participants in an airmobile operation understand all prearranged visual signals. Radio communications are discussed in Chapter 9.

c. Fire Support

The fire support means available to the AMTF commander may be artillery, naval gunfire, organic mortars, armed helicopters, and TAC air. During any specific operation, the AMTF commander may be supported by any or all of these means. Airmobile assaults are normally made with preparatory fires utilizing artillery, TAC air, armed helicopters, or any combination thereof.

(1) The fire support plan must include all means of fire support available. During the conduct of an airmobile operation, the command group in the C&C aircraft must be capable of controlling all the fire support elements which are capable of influencing the operation. Fires of the armed helicopters organic to the helicopter unit are normally "on call" under control of the air mission commander. All fires along the flight route may be used to facilitate the safe movement of the lift formations past areas of known or suspected enemy positions. These planned fires should be intense and of short duration due to the speed with which the lift formation may pass a specific location. Preparatory fires on and around an LZ should also be intense and of a short duration, but continuous with no time gaps in the fire from the various sources. Long or stereotyped preparations tend to compromise the intent of the airmobile force and allow the enemy time to ambush the LZ or withdraw before the airmobile assault can be executed. Positive control measures must be established to provide for lifting all fires or shifting them to more appropriate areas and in preventing time gaps in the fire. Fire support should continue and be uninterrupted during the initial landing phase of the operation or until that point at which the tactical situation precludes it. Fire support must also be included in the planning for feints or a diversionary assault. Large munitions, fused for super-quick detonation with fuse extenders (daisy cutters), thereby creating an above the surface overpressure, should be considered for employment during the preparation of an LZ when mines and booby traps are suspected. When using napalm or white phosphorus in landing zone preparation, the effect of fire and smoke and resultant ashes on helicopter operations should be considered.

(2) USAF TAC air is responsible for providing air superiority, restricting enemy movement into or from the area, and providing close air support to neutralize hostile ground targets.

(3) Armed helicopters may be used for direct fire support of ground forces, provided they are carefully planned and controlled and the following requirements are met:

(a) Aircrews must be thoroughly familiar with the tactical situation.

(b) Friendly positions must be positively identified by aircrews.

(c) Armed helicopters must have positive radio communications with the supported ground unit.

(d) To insure safe operations during all phases of airmobile operations, all supporting fires, to include demolitions, must be thoroughly coordinated with the air mission commander so that aircraft crews are aware of these hazards to flight.

d. Smoke Employment

Smoke may be employed along the flight route or in the PZ/LZ areas to mask movement of the helicopters from enemy observation and fire. Extreme care must be used to insure that its use does not obscure the vision of pilots or cause undersirable fires in the area. Smoke may be delivered by either indirect fire or a specially equipped helicopter. When employing the smoke helicopter, the air mission commander must insure complete coordination between the flight of the smoke ship, armed helicopters, and the lift formation.

e. Enemy Weapons Considerations

Two of the enemy's most effective antiaircraft weapons are the 37mm antiaircraft gun and the caliber .50 machine gun. The 37mm has a maximum vertical range of 1600 meters and is considered effective against aircraft to 1373 meters. The .50 caliber has an effective antiaircraft range of 1000 meters. The effects of these weapons, as well as the effects of small arms fire, can be minimized by sound and thorough planning in the selection of routes of flight, altitudes, and formations. Experience has shown that most small arms hits occur at an altitude of 500 feet (AGL) and lower. All available intelligence concerning the suspected or confirmed location of enemy antiaircraft weapons should be considered in the planning stages of the airmobile operation. Whenever possible these locations should be avoided by the AMTF. Planning must include provisions for employing all available fire support, to include TAC air and artillery, to suppress or neutralize enemy positions.

f. Physical Security

(1) Special attention must be given to the vulnerability of aircraft on the ground at base camps, PZs and LZs. Physical security measures must be designed to safeguard the aviation assets against espionage, sabotage, damage and theft. Security in depth must be an inherent part of those measures developed and applied to reduce this vulnerability. Aviation companies usually operate from fixed bases and require close coordination with ground elements to maximize security measures and defense of the base camp. Special considerations should be give to defense against infiltration of sapper squads.

(2) Physical security of aviation units in field locations in support of an airmobile operation is the responsibility of the AMTF commander. Aviation units have a very limited means of securing themselves against ground attacks in forward areas. When absolutely necessary, aircrews may be temporarily incorporated in the defensive perimeter. Aircraft operating in forward areas are especially vulnerable to indirect fire weapons. When aircraft are to remain on the ground for extended periods it is desirable to relocate them to secure areas where protective revetments are available. During the hours of darkness, aircraft should always be revetted.

(3) One of the best means of accomplishing physical security for an aviation unit is security through mobility. Frequent displacement of the PZ or base area denies the enemy the reaction time he normally requires to plan and launch an attack.

g. Logistical Support

The AMTF commander must be aware of the large quantities of POL and ammunition required to support airmobile operations. Plans should be made to prestock these items whenever possible. Particular attention must be given to backup means of replenishing fuel and ammunition stocks in the event of disrupted surface travel. A more detailed discussion of logistical requirements is contained in Chapter 9.

h. Weather Considerations

(1) Adverse weather may cause modification or delay of airmobile operations; however, the AMTF can normally conduct operations except in the most severe weather conditions.

(2) During the planning phase, adverse weather may cause modification or selection of alternate:

(a) Altitudes.

(b) Pickup zones.

(c) Formation in the pickup zone.

(d) Routes to the objective.

(e) En route formations.

(f) Fire support plans and escort plans.

(g) Landing zones or objectives.

(3) Although periods of low visibility make navigation more difficult, they also provide concealment from enemy observation and fire, thereby increasing the possibility of achieving surprise.

(4) Fire support will be considerably reduced during adverse weather. TAC air, artillery observers, and armed helicopter support will be less effective. In the event weather conditions deteriorate, the assault element should be prepared to conduct operations without aerial resupply or reinforcements.

(5) Delays, due to adverse weather, should be included as specified increments of time in the planning phase to assure completion of the operation during the time that the aviation assets are allocated to the AMTF commander.

Section III
Types of Airmobile Operations

2-13. TYPES OF AIRMOBILE OPERATIONS

a. General

Airmobility lends itself to employment both day and night in all types of operations. The planning sequence and planning considerations for all types of airmobile operations are essentially the same. Night operations and operations in adverse weather require more detailed planning and briefing than do day operations in favorable weather. In all operations planning must provide for mutual tactical integrity for both the lift and the lifted units. Whenever possible, a battalion should lift the assault elements of a rifle battalion, a company should lift the assault elements of a rifle company, and a platoon should lift the assault elements of a rifle platoon. The AMTF commander should ride with the air mission commander in the command and control (C&C) helicopter. The C&C ship should not normally be included in the tactical formation but should be free to move wherever the air mission commander and the AMTF commander can best control the operation. In an airmoble assult, the AMTF commander should plan to control the ground action initially from the air. A discussion of various types of airmobile operations is presented in the following paragraphs.

b. Offensive Operations

Offensive airmobile operations included movement to contact, envelopment, exploitation, pursuits, raids, ambushes, reconnaissance in force and counter attacks. Due to the mobility provided to the AMTF by the use of helicopters, a frontal attack is seldom required and should be avoided whenever a flanking maneuver or envelopment can be accomplished. The ability to rapidly reinforce a successful attack is a potential which should not be overlooked in planning. The airmobile reserve or reaction force is ideally suited for this mission.

c. Defensive Operations.

The AMTF is capable of executing all forms of defense, but should avoid the area defense whenever possible because it fails to fully exploit the inherent mobility of airmobile operations. The AMTF is ideally suited to employment in a mobile defense wherin additional forces can be rapidly brought to the assistance of any elements under attack.

d. Retrograde Operations

The AMTF is well-suited to all forms of retrograde operations. Withdrawal under fire, however, is quite risky. Generally speaking, reinforcement into an area of contact is a far better solution. If LZs are available, it may be more advantageous to reposition forces against the enemy to force him to fight in several directions. When withdrawal is necessary, the force should attempt to break contact before the helicopter extraction is attempted. In any case, carefully planned and controlled air and artillery fire support is required to support the extraction. The AMTF can best accomplish a delaying action by repositioning forces on the flanks or to the rear of an advancing enemy rather than by occupying successive delaying positions in front of him.

e. Relief in Place

This maneuver can be accomplished rapidly, through the use of helicopters, if it is properly planned and executed to make maximum use of the helicopter lift available. The same helicopters which deliver the relieving unit should be used to extract the relieved unit.

f. Feints

The feint, when properly executed, has proven to be a valuable tool of the AMTF in Vietnam. The basic consideration in planning a feint is to determine what enemy reaction is desired and to "paint the picture" for him by use of the feint. The feint may take many forms. When it is believed that the enemy may withdraw from an actual assault, it may be wise to feint a landing along his logical withdrawal route before or during the actual airmobile assault. This type of feint may fix the enemy for the actual assault force. In placing patrols in enemy areas, several diversionary landing may be made to confuse the enemy as to the actual patrol LZ. A feint extraction to cause the enemy to believe friendly forces have withdrawn may well set the stage for a successful ambush in a specific area. These and other possibilities are limited only by the imagination of the AMTF commander.

g. Long Range Reconnaissance Patrols (LRRP)

Obtaining information of enemy movements and locations is often the most difficult and frustrating part of any operation in Vietnam. Because of the enemy's inclination to withdraw from and avoid contact with U.S. forces, short range reconnaissance patrols are frequently unproductive. This situation presents many lucrative opportunities for the employment of LRRPs operation 25 to 50 km from friendly units. The enemy, thinking himself safe from immediate contact with U.S. forces, tends to use less caution than normal and can be more readily observed and subsequent action can be planned to destroy him. In addition to specialized reconnaissance teams, U.S. infantrymen, with limited additional training and using organic resources, have successfully conducted long range reconnaissance patrol operations. The use of helicopters to infiltrate LRRPs has proven highly successful, and in most cases, the helicopter has been the sole means by which patrols could be emplaced or extracted.

h. Surveillance

The Sniffer mission is used to add to intelligence reports already obtained. It is an operation employing two airlift helicopters and two armed helicopters. One airlift helicopter is used as a C&C ship for the operation. It directs the operation by doing the map work and vectoring the low airlift ship through the area of operation, and designating targets. The other airlift helicopter operates low, at tree top level, with the instruments that pick up readings of ammonia and smoke in the area. The two armed ships are used for protection and direct fire support of any visual contact of the enemy or his activities. The commanders of the supported units compile all gathered data and plan for further actions.

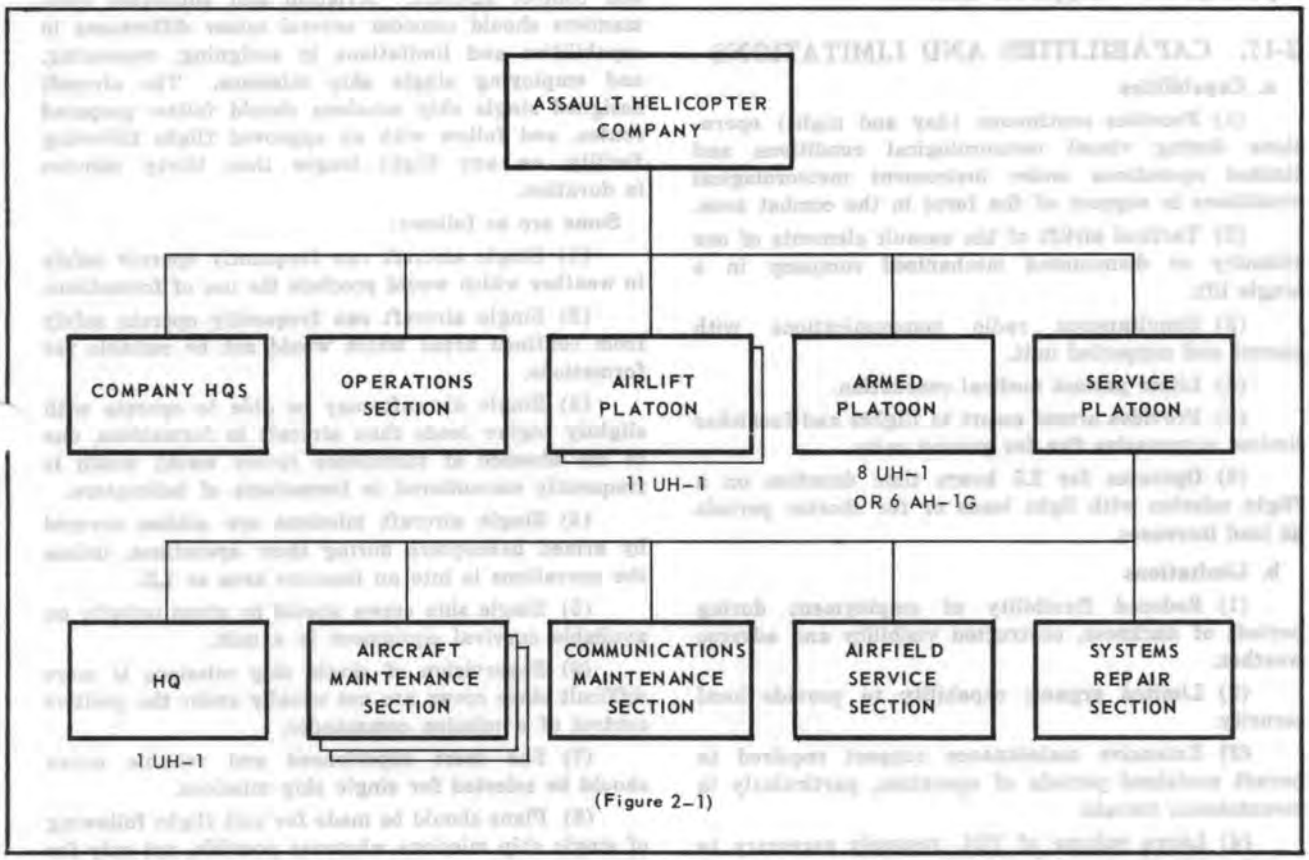
Section IV
Assault Helicopter Company

2-14. GENERAL

The purpose of this section is to provide information and guidance which will assist commanders and their staffs in the successful planning for employment of the assault helicopter company (AHC).

2-15. ORGANIZATION

The assault helicopter company is organized as follows (Figure 2-1):



(Figure 2-1)

a. Headquarters section which contains command, administration, supply, and messing personnel and equipment.

b. Two airlift platoons of lift helicopters in each AHC with a total authorization of 22 UH-1D/H helicopters. Normally, however, there will be only 18 to 21 assigned due to combat losses, aircraft transferred to maintenance units for extended maintenance, or other reasons. Approximately 70-75% of the assigned aircraft (13-14) will nomally be available for operations each day. Of the available aircraft 10-12 are committed to support combat operations with the remaining available aircraft used as replacement and augmentation aircraft as required.

c. One armed platoon with eight UH-1B/C helicopters or six AH-1G Cobras authorized. Normally seven or eight UH-1B/C helicopters or five or six AH-1G helicopters will be assigned. Of the assigned armed helicopters 70%of the UH-1B/C (five) or AH-1G (four) helicopters will normally be committed for operations on a daily basis.

d. A service platoon that services and performs direct support maintenance on all aircraft assigned to the AHC.

2-16. MISSION

The assault helicopters company provides tactical air movement of combat troops, supplies, and equipment in airmobile operations. Typical mission assignments are as outlined below:

a. Tactical airlift of troops.

b. Air movement of supplies and equipment.

c. Augmentation of Army Medical Service aeromedical evacuation units.

d. Search and rescue operations.

e. Provide command and control (C&C) aircraft capability to the supported unit.

2-17. CAPABILITIES AND LIMITATIONS

a. Capabilities

(1) Provides continuous (day and night) operations during visual meteorological conditions and limited operations under instrument meteorological conditions in support of the force in the combat zone.

(2) Tactical airlift of the assault elements of one infantry or dismounted mechanized company in a single lift.

(3) Simultaneous radio communications with parent and supported unit.

(4) Litter patient medical evacuation.

(5) Provides armed escort to flights and furnishes limited suppressive fire for ground units.

(6) Operates for 2.5 hours time duration on a flight mission with light loads or for shorter periods as load increases.

b. Limitations

(1) Reduced flexibility of employment during periods of darkness, obstructed visibility and adverse weather.

(2) Limited organic capability to provide local security.

(3) Extensive maintenance support required to permit sustained periods of operation, particularly in mountainous terrain.

(4) Large volume of POL resupply necessary to sustain operations.

2-18. EMPLOYMENT

a. The assault helicopter company is normally employed as a company when conducting airmobile assaults. Additionally, the company may be tailored for a specific mission and employed utilizing a lift platoon, a light fire team and a C&C aircraft. This smaller element can be very effective if the AMTF commander realizes its limitations, and the tactical situation permits. Employment of separate airlift platoons will fragment the armed helicapter support available in the company; for this reason, the company will normally be given one mission and the efforts of the entire company will be directed toward that mission. General support missions where armed helicopter support is not required may be conducted using elements of less than platoon size. The armed helicopters may then be assigned mission supporting CH-47 or CH-54 lifts, or retained as standby as a reaction element.

b. Frenquently assault helicopter companies will be tasked to provide single aircraft for missions which do not require formations of helicopters to accomplish the task assigned. These are commonly referred to as single ship missions. Examples are aircraft which are used for couriers, liaison visits, some resupply missions, emergency medical evacuation missions, command and staff visits and senior commander's command and control aircraft. Aviation and supported commanders should consider several minor differences in capabilities and limitations in assigning, requesting, and employing single ship missions. The aircraft assigned single ship missions should follow prepared routes, and follow with an approved flight following facility on any flight longer than thirty minutes in duration.

Some are as follows:

(1) Single aircraft can frequently operate safely in weather which would preclude the use of formations.

(2) Single aircraft can frequently operate safely from confined areas which would not be suitable for formations.

(3) Single aircraft may be able to operate with slightly higher loads than aircraft in formations, due to the absence of turbulence (rotor wash) which is frequently encountered in formations of helicopters.

(4) Single aircraft missions are seldom covered by armed helicopters during their operations. unless the operations is into an insecure area or LZ.

(5) Single ship crews should be given priority on available survival equipment in a unit.

(6) Supervision of single ship missions is more difficult since crews are not usually under the positive control of a mission commander.

(7) The most experienced and reliable crews should be selected for single ship missions.

(8) Plans should be made for unit flight following of single ship missions wherever possible, not only for crew safety but to retain the ability to reassemble aircraft on single ship missions quickly if a requirement arises for a formation of aircraft for combat assault operations.

(9) Aircraft assigned single ship missions should follow preferred routes, and flight follow with and approved flight following facility, for any flight more thirty minutes in duration.

Reason: When flying single ship missions there is always a chance that the aircraft may be forced down without communication of its location. Unless flight following and preferred routes are in use there would be no way of locating the downed aircraft.

Section V
Conduct of Operations

2-19. GENERAL

Thorough planning prior to the conduct of operations is a major factor in determining the degree of success achieved. To insure thoroughness, avoid confusion, and instill self-confidence during the critical stages of operations, each commander and his subordinates must understand, in detail, their roles in preparing and executing the mission. (See Appendix II, AMTF commander checklist.) They must also understand the sequence and timing of actions to achieve maximum effectivenss. This section describes actions in sequence from receipt of an airmobile order until the completion of the mission. This description is for a deliberate, preplanned operation. Frequently very little planning time will be available; however, operating principles and considerations are nevertheless valid. The ability to organize and conduct a successful airmobile operation on short notice is a requirement met by adhering to standard operating procedures.

2-20. MISSION NOTIFICATION

The mission notification normally comes from one of two sources, the AAE or the liaison officer. The Army Aviation Element (AAE) at the Senior Corps Tactical Headquarters will notify the aviation unit up to 72 hours in advance of a planned operation. Normally, the notification is received by the aviation unit 12-8 hours prior to the mission. The mission notification may also come from the aviation unit's liaison officer who is normally located with the division habitually supported by the aviation headquarters. The main objective is to furnish notification and all available information to the supporting aviation unit as far in advance as possible of a pending mission. Aviation battalion operations normally have adequate time to effect full coordination between the air mission commander, the airmobile task force commander and their respective staffs. Aviation company, platoon and section operations normally have less time available for required coordination and often this coordination is effected late in the evening prior to the mission. This usually prohibits a reconnaissance of the LZs and PZs. When these time limitations exist, every source of information is exploited to include experienced crews from the supporting aviation unit, large scale maps, photographs, sketches, and a complete and thoroghly understood SOP. Upon return from the coordination meeting with the supported unit, a briefing for the air crews is conducted and the operation is ready to be launched. When time limitations exist, all essential items are covered in the briefing but in a much abbreviated form.

2-21. LIAISON

After receipt of the mission, the aviation unit is responsible for establishing liaison with the supported unit. For a lift involving one or more aviation companies, initial liaison is normally made by the battalion commander and his planning representative (liaison officer).

2-22. RECONNAISSANCE

Normally the conmmanders of both the aviation and supported units, with their staffs, air liaison officer and fire support coordinator conduct a reconnaissance. The reconnaissance aircraft will generally carry commanders, staffs, and the armed platoon leader who will be responsible for the armed helicopter portion of LZ preparatory fires. The AMTF commander and AMC may conduct a separate reconnaissance depending on the time available and the magnitude of the mission. Armed escort may be required; however, the situation will dictate the necessity. The reconnaissance consists primarily of the selection of: flight routes, control points, landing zones, and determining high or low level en route altitudes. The procedures used for aerial reconnaissance should permit good selection of positions without allowing the enemy to determine intentions. This is accomplished primarily by deceptive flight patterns and by looking over several possible areas of operation. In many cases a high-level reconnaissance will be sufficient to fulfill all requirements for planning. A lowlevel reconnaissance is accomplished only when necessary to determine landing conditions and suitability for troops and equipment deployment. Excessive air traffic over a particular area is a sure means of compromising the planned operation and should be avoided. When aerial reconnaissance is precluded by security considerations or weather conditions a detailed study of maps and aerial photographs may constitute the reconnaissance.

2-23. PLANNING

Many airmobile operations require multiple lifts for mission accomplishment. Because of this, turn-around time between the final PZ and the LZ is a critical planning factor. Every effort should be made to minimize turn-around time. Long time durations between lift elements arriving at the LZ results is a higher risk for forces in the objective area. Where long distances are involved, consideration should be given to using forward staging areas. The AMTF commander and air mission commander should agree on a concept of AMTF movement. Given the concept, and with the knowledge gained on the reconnaissance, the staff can then formulate a detailed plan.

2-24. MISSION BRIEFING

A detailed air crew briefing, to include the ground commander's tactical plan, is esential to successful mission accomplishment. Rapidly changing conditions on the ground create situations which can properly be coped with only if everyone concerned is thoroughly familiar with all aspects of the plan, both in the air and on the ground. To insure that personnel have all

essential information, the same mission briefing sequence should be used for each briefing by all units. Check list items, which are not applicable to a specific mission, may be ommitted. See mission briefing check list and format, Appendix II.

2-25. FLIGHT LINE ACTIVITIES

Adequate time must be allowed for thorough preflight inspections and last minute checks prior to take-off.

a. Starting of Engines

A time is established for starting engines to preclude premature starts resulting in long periods of idling or delayed starts resulting in incomplete and hurried checks. Maintenance personnel must be standing by to correct any deficiencies found which can be corrected in a short period of time. A spare aircraft with crew should be available to replace any aircraft unable to preceed on the mission.

b. Radio Check

A radio check is used to determine if all aircraft radios are functioning. It is initiated by the flight leader prior to the first flight each day.

c. Line Up

Line up is the procedure used to physically move aircraft to their designated formation positions. It must be completed prior to troop loading to insure tactical integrity between the supported unit and the aviation element. Line up may be accomplished on the ground or in the air prior to arriving at the PZ.

(1) Ground line up involves hovering helicopters from their parking positions to a designated line up area in proper formation sequence. It requires an area relatively free of obstacles and debris, smooth enough and large enough to hold the entire formation. This method of lineup must be precisely planned and executed to avoid confusion and save fuel.

(2) Air line up consists of taking off in proper sequence and achieving the desired formation in the air.

2-26. MOVEMENT TO THE PICKUP ZONE

a. General

The pickup zone is an area where the supported unit will load personnel and equipment into supporting aircraft. The PZ is organized and controlled with resources on hand in a manner best suited to the mission. Planning principles and consideration for the PZs are given in Section II. Movement of the aviation element to the PZ is accomplished by following flight routes which avoid enemy positions, minimine enemy observation, and allow ease of navigation. Successful arrival of aviation elements in the PZ is dependent to a large degree upon the following factors:

(1) Flight routes that afford maximum security by avoiding major enemy positions and providing concealment from observation. These routes may be described as a prescribed path above the terrain or the use of a simple checkpoint system to allow ease of in-flight changes.

(2) Control and coordination of supporting fires from artillery, naval gun fire, armed helicopters and USAF tactical fighter/bombers.

(3) Security. Aircraft are most vulnerable to ground fire while approaching and departing the PZ/LZ. On the ground in the PZ, aviation elements and ground units must spread out as much as possible to present the least lucrative target for enemy ground, artillery, or mortar attack. The best security is provided by the helicopter's mobility. Aircraft remain in a PZ only long enough to perform the required loading.

b. Movement

Movement to the PZ may be accomplished in single unit formation or as separate sub-unit formations. The movement must be conducted along planned primary or alternate flight routes to the PZ. Start points (SPs), aircraft control points (ACPs), and pickup zone release points (PRPs) are points on the ground that may be used to control and monitor progress of the aviation elements en route to the PZ. It is essential that elements pass over established check points on time to insure coordination with friendly artillery and air units. Timely arrival and reporting of check points also insures successful orderly arrival at the pickup zone.

c. Covering Forces

(1) During movement, enemy anti-aircraft fire may be encountered. It is frequently desirable to precede the lift formation with air cavalry elements or armed helicopters to locate enemy positions prior to the arrival of the lift formation. Escort must be responsive to the AMTF elements by radio call on prearranged FM or UHF frequency. A crew member of any aircraft receiving fire must immediately throw out a smoke grenade to mark the area for escort reference. The escort should suppress or neutralize enemy fire sufficiently to permit the lift formation to pass through or around the danger area, but shuld not become so decisively engaged that proper fire support for the landing phase or other portions of the operation is not available.

(2) Armed helicopters are organic to AHCs and AWCs. The present UH-1 armed helicopters have air speed and fuel limitations which must be given planning considerations. Sufficient armed helicopters located along the flanks of the lift formation will permit continuous target engagement. Target engagement is passed from front to rear with the front aircraft ceasing fire as the following aircraft commences firing.

(3) Speed of high performance aircraft gives them the capability of engaging numerous targets along the flight route, and then joining the lift formation. To obtain maximum use of close air support aircraft, the forward air controller (FAC) is airborn in the vicinity of the main body in a position to control close air support when needed. He must be in radio contact with the C&C ship at all times.

(2) Escort is not always required. It is scheduled after consideration has been given to:

(a) Flight routes.

(b) Flight altitudes.

(c) Security of the takeoff point and the PZ.

(d) Known friendly and enemy situation.

(e) Weather.

(5) Escort aircraft may be assigned a particular area of responsibility over which airlift flights are routed. This is preferred to continuous escort from point of orgin to PZ or LZ in cases where the lift aircraft are not overly unerable to enemy fire en route.

d. Formations

Formations selected by the aviation element en route are dictated by terrain, weather, and hostile AA fire. The formation may be varied at any time by the air mission commander or his representative. It is imperative that aviation elements arrive in the PZ in the formation mutually agreed upon for loading. This will minimize the possibility of confusion during loading. The most desirable en route formation will allow the maximum number of aircraft to pass over a given point or phase line at one time. This allows easier escort cover and reduces exposure time to enemy AA fires.

e. Terminal Guidance

Terminal guidance is used to assist the formation in navigating from the PRP to landing touchdown in the PZ. It may consist of any one, or a combination of the following:

(1) Pathfinder radio control in the PZ.

(2) Panels, with prearranged colors, designating lead aircraft parking points.

(3) Personnel wearing vests, jackets or helmet liners of prearranged colors to guide lead aircraft of platoons or companies. A particularly effective and convenient method is to have several individuals in each ground unit paint their helmet liners a prescribed color to correpond with standard helicopter platoon colors. These individuals can then be used to position helicopter platoons in the desired locations in the PZ or LZ.

(4) Non directional beacons (NDB) at the PRP, PZ or both.

(5) Smoke grenade thrown in the PZ on call from the air mission commander. To avoid compromise, personnel on the ground announce when they throw the grenade and the air mission commander announces the color he sees, using the following procedures:

(a) A/C transmits, "Request Smoke."

(b) Ground unit displays smoke and transmits, "Smoke is out."

(c) A/C identifies smoke and acknowledges, ""Roger, identify (color) smoke.

(d) Ground unit replies, "Roger, (color) smoke."

(6) Aviation formation flight leaders may use "dead reckoning" to locate the PZ. This is done by flying a heading, time/distance from the PRP to the PZ.

(7) Armed helicopters may be sent ahead by the air mission commander to locate the PZ, as they have more freedom of movement than the AMTF lift formation. After location the PZ, the armed helicopters can mark with smoke or lead the lift ships in by making a low pass over the PZ, as directed by the air mission commander.

(8) When the formation flies low-level, the C&C helicopter or an O-1 aircraft may fly at altitude to vector the formation and assist in navigation.

2-27. ACTION IN THE PICKUP ZONE

a. General

For lifts involving one or more aviation units, the aviation LNO or pathfinder element must be present in the PZ to assist the supported unit implementing the loading plan. At the PZ the ground force and aviation units are joined into a tactical airmobile force. Last minute planning adjustments are made, if necessary, by coordination between the AMTF commander and air mission commander. From the PZ to the LZ the air mission commander, in response to the desires and instructions of the AMTF commander, controls the air movement operation until the last lift has been accomplished and aircraft are released.

b. Refueling and Rearming

The air mission commander is responsible for coordinating refueling and rearming time, place and facilities with the AMTF commander. If available in other areas in the vicinity, refueling and arming is normally not accomplished at the PZ. Since the fuel load has a direct effect on allowable cargo load (ACL), it is beneficial to have forward refueling area (FRA) facilities located at secure areas along the flight route for excessively long flights or multiple lifts.

(1) The FRA should be secure. Refueling units can be transported forward by vehicle, helicopter, fixed-wing aircraft or can be air dropped. Fuel may be in collapsible containers, tanker trucks, or fuel drums.

(2) Refueling requires detailed planning and control measures to insure a smooth, safe operation. Flight crews must know details of the refueling plan and execute it as planned.

(3) FRA security is provided by th supported unit.

c. Final Coordination

Plans and orders for the AMTF must be simple and flexible. All leaders must be prepared to overcome unforeseen difficulties and to exploit opportunities that may arise during the operation. To maintain flexibility, the air mission commander and AMTF commander must do the following:

(1) Insure that the success of the operation does not depend completely on the arrival of any one serial or tactical unit.

(2) Use land marks that are easy to locate and identify from the air.

(3) Prepare alternate plans.

(4) Maintain tactical integrity of both lifted and aviation units in loading plans. When it is not possible, sacrifice the integrity of the aviation units in favor of the lifted units.

(5) Make allowances for operational delays in take-offs and landings, and plans for corrective action.

(6) Prepare a simple plan for the disposition of aircraft, with troops and equipment, at the departing area.

(7) Prepare alternate plans for the movement of troops and equipment by phases in the event of a shortage of lift helicopters.

(8) Insure that all plans are coordinated with artillery, mortar, TAC air, naval gun fire and armed helicopter elements.

(9) Establish priorities of loads in the event that maintenance difficulties or higher priority missions reduce the total number of lift aircraft available for the operation.

d. Loading

(1) The air mission commander insures that loads are within the capability of the helicopters and that they are properly secured so as not to create a hazard in flight. In planning, time must be allowed for proper securing of cargo loads.

(2) It must be recognized that loading is not always accomplished under ideal pre-planned conditions. Many situations will require loading without plans, requiring that loads be made up on site. The following basic principles apply:

(a) Lift units load tactically. All individuals carry only minimum essential combat equipment unless the specific mission dictates otherwise. Ammunition accompanies each weapon in the minimum amounts necessary for mission accomplishment.

(b) Aviation units provide a standard number of helicopters for the lift of a given type of supported unit.

(c) Key personnel and equipment are distributed throughout several aircraft.

(d) Each load is safely balanced and secured.

(e) Items of equipment, with all parts and accessories needed to make them operational, are loaded in the same aircraft.

(f) Crews accompany crew-served weapons.

(3) Sling Loads.

(a) The unit to be lifted provides all essential equipment and personnel for sling loading, including trained hookup teams, ground guides and signalmen. The sling, endless nylon webbing, will be used for all loads execpt those on the CH-54. The metal clevis must be used on CH-54 helicopter loads to insure proper release of the load. Sling loads are normally located at the rear of formations. In other situations, all helicopters of the formation may pick up sling loads, if simultaneous arrival of internal and sling-loaded helicopters is desired, the slingloaded helicopters hookup and depart prior to the remainder of the formation. (Reference TM 55-450-11)

(b) The following are factors to be considered when planing external loads:

(1) Advantages to sling loading:

a. Out-sized equipment can be carried.

b. Landing in the area of operation is not required.

c. Precise placement is achieved.

d. Rapid turn around.

(2) Disadvantages to sling loading:

a. Sling loaded aircraft are more vulnerable to enemy fire while en route.

b. UH-1 helicopters are capable of lifting heavier loads when loaded internally.

c. Due to varying shapes and weights of loads, it is not feasible to fly UH-1 helicopters with sling loads in normal assault formations.

(c) The sling load signalman is responsible for assisting in guiding the helicopter, by hand and arm signals to a point and height over the load which will permit hookup. Prevailing winds and obstructions should be taken into consideration in the PZ. After hookup he is responsible for signaling the pilot to lift the load a few inches above the ground to determine if secure, and then after enough altitude has been obtained to clear all obstacles on the departure route, he signals the pilot for takeoff.

(d) The hookup man moves to the load when the helicopter is over it. He gives the signalman appropriate hand and arm signals to reposition the aircraft, if required, to make the hookup.

(e) The crew chief should have a head set extension, long enough to permit him to lie down inside the helicopter, hang his head over the side, and direct the pilot over the load.

(f) When hooking up loads the following procedure is recommended:

1. A/C commander takes initial signals from the sling load signalman.

2. Once the aircraft is positioned over the load, further instructions to complete the hookup are given to the A/C commander by the crewchief.

2-28. PICKUP ZONE TO LANDING ZONE

a. General

(1) The air mission commander controls the AMTF enroute as directed by the AMTF commander. When possible their C&C aircraft is console-equipped to provide a multiple-channel FM capability.

(2) Loading, takeoff from the LZ, and assembly of the helicopter formation are according to a mutually planned time schedule that will place the lead elements of the first lift in the LZ at H-hour, the time the

AMTF commander has designated as touch down time in the LZ.

(3) Control Points

(a) IP—Initial Point. Point over which AMTF flies to initiate timing, establish flight route heading and altitude.

(b) ACP—Air Control Point. Point on the ground along the flight route, easily identified from the air, used as reference point to monitor the progress of AMTF. ACPs may be assigned code numbers or names.

(c) LRP—Landing Zone Release Point. A readily identifiable point on the ground over which individual flight elements are released to proceed to their LZs. Flight from the LRP to touch down in the LZ is known as the terminal guidance phase.

(4) A flight route is a control measure that permits more precise timing, and insures that the AMTF does not overfly undersirable areas. Each lift on a multiple lift assault should use a different flight route.

(5) TAC air provides strikes against known enemy ground positions which could adversely affect the AMTF formation progress. Organic aircraft are used for route reconnaissance, protection against ground fires, assistance in controlling the AMTF, and for LZ reconnaissance immediately prior to landing.

b. En Route

(1) Lift off may be by individual aircraft, section, platoon, company, or battalion formation. Under some conditions, such as an extremely dusty PZ, a restricted LZ, or a high density altitude no-wind condition, it is advisable to break the formation into small increments for take off. Simultaneous lift off from the PZ is normally desirable for the following reasons:

(a) Ease of escort and fire support provided offers more effective cover.

(b) AMTF control is more positive when aircraft are in formation.

(c) The AMTF presents itself as a target to ground fire from a given point for a shorter period of time.

(d) A prolonged takeoff from the PZ may permit the enemy to reposition automatic weapons in sufficient time to take the remaining aircraft under fire.

(2) Join Up

(a) The flight leader adjusts the speed and rate of climb of his flight to insure that all elements of the flight close the formation at the required altitude. Trail aircraft will report when all aircraft have closed into formation. The lead aircraft then establishes the en route flight speed. The air mission commander monitors the aircraft in his flight, and is continually prepared to take necessary corrective action.

(b) When a takeoff is made in increments less than the total AMTF formation, a forming turn can be made to allow all elements of the flight to assemble in formation. The forming turn is not required during a simultaneous takeoff.

(c) The flight is closely regulated by varying air speed and making minor course deviations so that the AMTF formation passes over the IP at the precise time scheduled.

(3) Flight Altitudes

Despite the fact that many of the aircraft that have been hit received their hits at low altitudes, experience indicated that there are times when the best means to successfully accomplish a mission is to fly at a low-level en route altitude (tree top). Since navigation is extremely difficult at this altitude, the use of vector aircraft or other aids should be considered. Dead reckoning which complements all other methods of navigation, day and night is mandatory. Situations which favor using low-level en route assault altitudes are:

(a) Relatively short distances to LZs.

(b) Weather limits altitude to less than 1500 feet absolute.

(c) Minimum restriction to frindly support fire is desired, i.e., flight across gun target lines below artillery trajectory paths.

(d) Maximum surprise or secrecy is desired.

(e) Proposed flight routes over heavily foliated areas, such as dense jungle and mangrove swamps.

(4) Flight Control

(a) ACPs define the flight routes. They may be either visual reference or electronic navigational facilities operated by pathfinders.

(b) The flight leader reports passing each ACP to the air mission commander unless otherwise instructed.

(c) The air mission commander insures that the fire support coordinator (FSC), and the air liaison (ALO) are always aware of the AMTF location.

(d) The air mission commander changes the en route formation as required and implements emergency and crash procedures when necessary.

(c) When a significant threat arises along the flight route, such as a heavy concentration of enemy AA fire, the air mission commander will give the order to switch to previously designated alternate flight routes. If the LZ is to be changed, the AMTF commander will make the decision and inform the air mission commander.

(5) Fire Support En Route

(a) Armed helicopters provide security for the AMTF formations, security for downed aircraft, route reconnaissance, and other assistance en route as desired by the mission commander.

(b) Fighter aircraft may provide security to both flanks, the front, and rear of the formation. They will normally be on air alert rather than with the formation.

c. Landing Phase

(1) Landing Zone Release Point

Over the landing zone release point (LRP) the AMTF may be divided into sub-elements, which proceed to assigned landing zones. The LRP is normally 5 to 7 kilometers away from the landing zone. This allows the formation time to descend and decelerate for landing. The LRP is also a reference point used to time the lifting of artillery and TAC air strikes. Heading from the LRP to LZ is generally the same as the direction of landing. Alternate LZs are designated to allow flexibility in the event of wind changes, hostile fire, or a change in the ground tactical situation.

(2) LZ Preparation

The LZ may be prepared by artillery, naval gun fire, TAC air, armed helicopters, or any combination of the four.

(a) Napalm and other incendiary ordnances are not normally used in the LZ and its immediate vicinity just prior to landing. They may be used when required against appropriate targets, provided the AMTF commander has considered the possible undersirable fires and reduced visibility from smoke which may result from their use.

(b) Armed helicopters may be employed in many different methods during airmobile assaults. They are capable of:

1. Preceding the lift element into the LZ for reconnaissance and suppressive fire, the include preventing a time gap in the fires provided by other fire support elements.

2. Making recommendations for final landing instructions and marking LZs.

3. Providing area cover and neutralizing known enemy positions.

4. Escorting the AMTF into and out of the LZ, thereby providing close-in support to the front, rear, and flanks of the formation. After the initial pass, armed helicopters may enter a continuous fire pattern, providing cover around the LZ as needed.

5. In addition to fire team direction, the armed platoon leader is a readily available traffic controller for the other aircraft arriving and departing the LZ area until the primary control means are established.

(c) Fire support preparations and tactics should be varied frequently. Because of the limited station time for TAC Air, the sequence of employment for all fire support means must be carefully considered to obtain maximum continuous response in case of weather delays or other unscheduled postponements. Preparations should be short and intensive.

(3) Landing

(a) Prior mutual planning must include the AMTF commander's desired course of action to be taken in the event the AMTF received effecttive ground fire just prior to landing. The decision to abort the landing rests with the AMTF commander, upon recommendation by the air mission commander.

(b) Preparations should be shifted rather than lifted as the assault formation approaches. An effective method of continuing the fire support during the assault is to shift artillery to one flank, conduct a simultaneous airstrikes on the opposite flank, and use armed helicopters on approach and departure lanes. When using such a plan, assault formation navigation must be precise in order to avoid flight paths of other aircraft and artillery gun target lines. Rigid fire control is necessary and can only be accomplished if the ALO or FAC and the artillery LNO or FO are in the C&C ship with the AMTF commander and the air mission commander and each representative has positive communication with his own element.

(c) A simultaneous landing is desired to place the maximum number of troops on the ground, in a given area, in the shortest possible time. Except when cogent reasons dictate contrary actions, the airmobile assault should be accomplished by a minimum number of multiple lifts, scheduled into the LZ at the maximum rate that the LZ will accommodate. This greatly reduces the exposure time of aircraft, maintains unit integrity, assures having maximum combat power in the minimum time and provides the enemy with the least chance to react during the landing phase. When separate element landing are dictated because of LZ size, time intervals should be held to a minimum. The ultimate in timing would be to have the trail element land immediately after the preceding element has taken off.

(d) LZ size and shape, or enemy action may dictate a change from an en route to a landing formation. Flights should be in landing zone formation at the RP.

(e) Upon landing, troops disembark as rapidly as possible (this is the most vulnerable period of the airlanding operation), crouch low to the ground upon departure of the helicopters and immediately move into tactical formation.

(f) If the ground force has casualties to evacuate while the build-up is still in progess, they should be moved to a designated air evacuation location. This procedures permits uninterrupted continuation of the lift.

(g) Off-loading heavy internal loads is time-consuming and slows troop build-up. Heavy loads should not be programmed in the initial lift.

(h) Ground commanders must insure that off-loaded personnel and equipment are quickly moved out of the LZ. Speed is essential in a restricted LZ. It must be remembered that LZ means "Landing zone" not "supply base." Base camp supplies, tentage, etc., should be well removed from the LZ to prevent tent blow-down by low flying helicopters and to provide an unrestricted safe LZ to support the operation.

(i) The armed helicopters may be used to reconnoiter approach routes to the LZ, screen and block enemy movement, and provide on-call fire

support for the ground force elements. Their activity is limited by the amount of fuel and ammunition they have remaining after escorting the AMTF lift. Close coordination by radio is essential for this type of operation.

(j) Medical evacuation helicopters should follow major troop lift formations during the initial assault to determine the LZs being used and to become terrain oriented. In addition, the presence of medevac aircraft on the initial assault echelon greatly speeds evacuation at the critical time.

2-29. DOWNED AIRCRAFT OPERATIONS

a. General

Any individual aware of a downed aircraft will notify his headquarters by the most expeditious means available. Intitial notification should include type aircraft, location, status of personnel aboard (if known) and whatever action is already under way to rescue personnel, evacuate injured and secure or recover the aircraft. Additional information, such as type and model aircraft, aircraft serial number, assigned unit, extent of personnel injuries and damage to aircraft and other pertinent information should be relayed when it is obtained. Aviators, airborne at the time of such an emergency, should contact the nearest flight following or terminal facility and relay the required information and also notify their Battalion Operations Center.

b. Crew Action

In the event an aircraft emergency occurs in flight, resulting in a forced landing in an insecure area, the aircraft commander will, if time permits, switch his transponder to emergency, transmit a Mayday message over UHF guard channel announcing his identification, heading, position, nature of emergency and intentions, The remaining crew members should alert passengers of the emergency and secure loose equipment. Once the aircraft is on the ground, the senior qualified occupant will assume command and direct the defense and rescue effort or initiate evasive action if the aircraft must be abandoned. A perimeter defense should be established in close proximity to the aircraft, taking advantage of the terrain as much as possible, since the initial search operations will be conducted near the aircraft.

c. Policy

(1) When a downed aircraft is part of an airmobile force, the mission of the supported unit has prioirity over rescue and recovery operations.

(2) Rescue operations must always be initiated as quickly as possible, to include evacuation of personnel and sensitive items of equipment in the following priority:

(a) Personnel
(b) Classified material
(c) Weapons and ammunition
(d) Radios
(e) Medical kit
(f) Other valuable equipment which can be removed quickly.

(3) A maintenance aircraft, equipped with sling and rigging accessories, should accompany an airmobile force on all combat assaults. Whenever possible, a recovery aircraft should be included in the plans to remain on alert status throughout the operation in order to launch recovery operations without delay.

d. Destruction of Downed Aircraft

Destruction of downed aircraft will be avoided when a reasonable possibility of later recovery exists. Every reasonable effort will be made to effect recovery. Unnecessary risks will not be taken in the recovery attempt. Aircraft recovery will normaly not be attempted during the hours of darkness. Aircraft may be destroyed only if it is determined that capture of the SOIs, weapons, ordnance or radios is imminent and that capture of those items will seriously affect the friendly situation or materially assist the enemy. Authority to destroy downed aircraft will not normally be delegated below the aviation battalion commander. Authority may be delegated no lower than the aviation company commander when a company is operating independently from the battalion in remote areas and reliable communications with the battalion cannot be maintained. When a downed aircraft is not immediately recovered and is not destroyed, the recovery team will include an EOD team to determine whether the aircraft has been booby trapped and to disarm any booby traps discovered. A reasonable possibility of recovery at a later date should preclude destruction of downed aircraft.

e. Security of Downed Aircraft

Every effort must be made to provide air cover for surveillance of the site and the protection of personnel on the ground until a security force arrives or recovery operations are sufficiently underway to permit release of the air cover.

(1) During Airmobile Operations

(a) Aircraft carrying troops. Troops aboard an aircraft forced down will be used to establish a defensive perimeter and to secure the aircraft, as prescribed by the senior individual aboard. The air mission commander will coordinate with the AMTF commander to obtain additional security forces, as required, and will request maintenance and recovery aircraft as prescribed by unit operations plans.

(b) Empty aircraft. The air mission commander will designate an aircraft or light fire team to remain on station with the downed aircraft and coordinate through the AMTF commander as to the source and number of security personnel to be provided. In addition, he will request maintenance and recovery aircraft as prescribed by unit operations plans.

(2) Other than Airmobile Operations

(a) The aircraft commander or his representative will initiate (on guard frequency or any com-

munication means available), the appropriate distress call as outlined in DOD FLIP prior to ground contact (time permitting).

(b) Any aircraft acknowledging the emergency and relative location of downed aircraft will proceed (if mission permits) to the downed aircraft location and at the same time, the aircraft commander or his representative, using any communication means available, will contact the nearest aviation operations center and alert them of the downed aircraft. Upon sighting the downed aircraft and after determination has been made as to the status of crew and aircraft, the following should be accomplished:

1. Notify the nearest aviation operations center and request security, maintenance and/or recovery aircraft as applicable.

2. If ground security is required, contact the nearest allied force facilities and request that security forces be provided. If authority to commit security forces from these sources is not immediately available, then notify the nearest aviation operations center, who, in turn, will immediately inform AAE (ie., III MAF AAE, I or II FFV, or IV Corps AAE) of the situation.

(c) In all cases, whether or not security forces are immediately available, the appropriate AAE will be expeditiously notified. Where security forces have not been immediately provided, AAE will coordinate the matter with the G-3 or G-3 advisor at that echelon who will direct units under his control to provide same. In these cases, it is essential that all personnel involved closely monitor progress and keep each other informed of events as they occur.

f. Responsibility

(1) Procedures established herein are not intended as a substitute for sound judgment, but constitute basic guidance. Variations must be adopted as the situation dictates.

(2) The aviation battalion commander is ultimately responsible for coordination the security, maintenance and recovery of crew and aircraft assigned, attached or OPCON to his command. At any time his command received an initial request for downed aircraft support from any other aircraft, he will initially assume responsibility for that support. Once support is in progress, he may then coordinate the transfer of responsibility for support to the appropriate command providing time and circumstances permit.

(3) Ground commanders having aircraft of this command supporting his operations that are forced down for any reason should make all reasonable efforts to provide security forces as required.

(4) Commanders will insure that all personnel are thoroughly familiar with these procedures and that detailed implementing instructions as pertain to their area of operations are published. Further, they should insure that crews of attached or OPCON units that do not normally fly in a particular area of operations are thoroughly briefed on procedures applicable to that area.

2-30. SUBSEQUENT OPERATIONS

a. Reorganization

Upon completion of the AMTF assault, elements will rejoin their respective parent units to reform for subsequent operations. Units will normally proceed to prearranged rendezvous points for reassembly in the air or on the ground. Tnere assembly should be away from the immediate battle area, yet close enough for responsive employment due to changes in the situation. The reorganization phase is completed upon arrival in this area and after situation reports have been rendered to higher headquarters.

b. Security

Security in ground assembly areas (larger areas) may be provided by the armed helicopters screening approach routes to the area. Armed helicopters may not be able to prevent enemy movement toward the larger area but they can alert the main body in time to react. Aircraft engaged in screening may also provide radio relay as required, although this is not a normal mission for armed helicopters. The use of armed helicopters as a screening force is not to imply that ground security forces are not required. Ground security will be established using available forces in a manner prescribed by the commander responsible for the larger area. Armed helicopters are thus used to supplement the ground security force, serve as an early warning force and serve as a quick reaction team.

c. Refueling and Rearming

Aircraft are refueled and rearmed at the earliest possible opportunity. When possible, fuel and ammunition should be available in the larger area.

2-31. ALLOCATION OF AIRSPACE

a. General. For all lift operations the airspace through which an AMTF will be operating must be free from any interference which may adversely affect the accomplishment of its mission.

b. There are several ways of controlling airspace. It must be kept in mind that controls should not hinder the performance of the mission. The air space is best controlled by the air mission commander with concurrence of the AMTF commander.

c. In order to keep air traffic in the operational area to a minimum, only those aircraft directly involved in the AMTF operation should be permitted into the area. Observers and commanders who are not directly involved in the conduct of operations should remain clear until the airmobile movements has been completed.

d. To minimize possible mid-air collisions, altitude separation must be established for all aircraft en route as well as in the objective area. Additionally, all aircraft orbiting over the operational area must orbit in the same direction with altitude separation. This procedures applies to troop lift aircraft, medical ambulance aircraft, maintenance aircraft and observers. Prior to entering an operational area, it is imperative that all participants be briefed on the operation.

2-32. EXTRACTIONS

a. Extractions are normally employed to terminate an operation or a phase of an operation, to reposition units, to remove long range patrols, and to evacuate casualties and downed aircraft crew members from remote areas.

b. The planning process for an extraction is identical to that for an assault: The entire process must be considered. Extraction operations should be completed as rapidly as possible. This goal can be accomplished by shortened flight routes, planned type aircraft loads to minimize the number of lifts and professional execution of the extraction plan.

c. Extractions under fire are particularly hazardous and should be carefully planned. The last element to be lifted should be large enough to defend itself until extracted, and sufficient lift must be made adailable to effect a simultaneous lift of the entire rear guard if at all possible. All combat support troops and miscellaneous are extracted before the last combat troops are removed. Normally, a platoon size security force is the last element evacuated. This force should remain in its defensive positions as long as possible before extraction. The use of claymore mines emplaced around the perimeter and fired at the last moment is highly effective in discouraging enemy infiltration during the last phases of extraction.

d. Flight routes should be varied from lift to lift. This variation is especially important on the last lifts into and out of the PZ.

e. Supporting fires should be carefully planned and coordinated in the same manner and detail as preparatory fires. Special precautions must be taken to preclude armed helicopters from coming under friendly artillery fires. The use of smoke to screen movement should be considered. An artillery concentration can be planned in the extraction site and fired after the last friendly troops have departed. Such techniques will discourage hostile force from moving into pickup zones during extractions.

2-33. NIGHT OPERATIONS

a. General

Night airmobile operations, when properly planned and executed, give friendly forces a tactical and psychological advantage over the enemy. The enemy relies on the cover of darkness to provide him with the freedom of action necessary to conduct and support combat operations. Night airmobile operations give friendly forces the capability of disrupting, disorganizing, and demoralizing the enemy's night effort. Night operations are very similar to day operations, but require more attention to detail in planning and minor variations in techniques. Liaison between the aviation unit and the supported unit should be initiated as soon as possible after the support commander decides to plan a night operation. Early liaison and mutual planning will save time and develop a mutual understanding of requirements. This section discusses the additional planning considerations and techniques required for night airmobile operations.

b. Reconnaissance

Preplanned night operations require day and night reconnaissance.

(1) Day reconnaissance is necessary to provide the AMTF and air commanders, and their staffs, with the basic knowledge of the terrain with which they are concerned.

(2) Night reconnaissance should be conducted at the same time and under similiar light conditions anticipated for the actual operation. Control points tentatively selected during daylight must be verified to determine if they are visible from planned formation altitude at night. Time, distance, and headings between control points should be checked. Night appearance of the LZ should be observed, and its characteristics noted. A suitable orbit area for flare aircraft which can be indentified during darkness must be selected. This area should be in close proximity to and upwind from the LZ. Prominent terrain features or navigational aids can be used to identify orbit areas.

c. Planning Considerations

(1) Inherently, more time is required to operate at night.

(2) Pathfinders, with the devices they have at their disposal, can provide highly essential services at the aviation base, in the PZ en route to the LZ, and terminal guidance at the LZ. Generally speaking, these services are provided through the use of obstruction lights, glide slope lights, landing lights, nondirectional becons, radio voice control, and light guns.

(3) PZs and LZs should be larger than in daylight, if possible to reduce the possibility of tree strikes.

(4) Navigation at night is more difficult than daylight navigation.

(5) Better weather conditions are required at night to permit flying at altitudes that will insure positive terrain clearance.

(6) Areas heavy with dust must be avoided in night operations.

(7) A positive, detailed aircraft control plan must be used at the aviation base, in the PZ, and in the LZ. Flight crews must be thoroughly familiar with planned control procedures, and no deviation can be permitted except in an emergency.

(8) Hostile AA fire is not as effective at night.

(9) Flare aircraft should be on station over the selected orbit point prior to arrival of the AMTF. If illumination is necessary the C&C aircraft or fire team leader can vector the flare aircraft on target. An illuminated preparation by armed helicopters will also assist in orienting the lift elements to the LZ. Due to its effect on aviators' night vision, once illumination is started, it must be maintained throughout the landing phase. A standby flare aircraft should be on station and be immediately responsive to the air mission commander in the event of a malfunction of

the primary flare aircraft. This standby aircraft may also be used for diversionary illumination.

(10) Searchlight helicopter (Fire Fly) missions include, but are not limited to, the following:

(a) Illuminated reconnaissance of the approaches to areas occupied by friendly troops.

(b) Illumination of enemy targets for armed helicopters.

(c) Diversionary illumination.

d. Night Fire Support

(1) Accurate air to ground fire without illumination at night is very difficult. Target illumination may be provided by Fire Fly aircraft or illumination flares from mortars, artillery, or aircraft.

(2) Artillery should be used more extensively at night to compensarte for the reduced effectiveness of aerial firepower.

(3) Fire support elements must rely on prearranged communications and visual signals which are known to be effective at night in identifying friendly troop locations.

e. Operation Considerations and Techniques

(1) Aviator training will overcome most difficulties encountered during night operations.

(2) Extensive illumination and artillery fire during night operations, particularly when little or no wind is present, will result in reduced visibility due to smoke and intermittent loss of night vision in the vicinity of the LZ due to artillery flashes. These factors increase vertigo problems and requirements for proficiency in instrument flight.

(3) Night formation training is essential to successful night airmobile operations.

(4) Standard formation and proper positioning are essential for control at night.

(5) Fueling, arming, preflight and similar aircraft preparations should be completed during daylight if possible.

(6) If ground line-up of the aircraft is necessary, it should be completed during daylight.

(7) Rotating beacons are not used.

(8) Formation lights, if installed, will be used instead of navigation lights.

(9) Navigation lights will be on steady-dim if used for formation flying.

(10) Adverse weather should be avoided during night operations; however, aviators must be trained to maintain their formation position if bad weather is encountered. Clouds will avoided. If there is doubt about cloud clearance the air mission commander will send a weather ship ahead to scout the route and insure that it is passable. The aircraft best employed for this purpose is the maintenance or flare aircraft.

f. Night Training

Requirements will continue to increase for night aviation support for ground units. On-the-job training while performing these night missions is usually not sufficient to keep all aviators proficient in night operations. Continuous night unit training must be accomplished in order to safely conduct company and battalion size night airmobile assaults. In order to maintain pilot proficiency it is recommended that units conduct at least four hours of night training per month.

g. Marginal Weather

(1) Marginal weather and formation flying continue to be an extremely difficult operation in RVN. It is imperative that Commanders insure that all flight commanders and aviators are thoroughly briefed on marginal weather and inadvertent instrument meteorological condition (IMC) procedures.

(2) Unit SOPs should include, but are not limited to the following:

(a) Insure all flight crew members are briefed and familiar with unit SOPs concerning formation flight.

(b) Insure at least two radio communication sets (FM and UHF/or VHF) are operational in each aircraft. Naviational equipment should be tuned to the nearest non-directional beacon and the transponder should be on stand-by.

(c) Insure that a predetermined formation break-up procedure and retrieving procedure is established by flight commander prior to flight.

(d) Insure all aircraft have the necessary maps, charts, including DOD/FLIP low altitude approach booklet.

(e) Insure an adequate weather briefing is received by all air crews.

(f) Insure the most qualified and competent aviators are utilized on difficult night missions.

(3) Presently, formation flying under instrument conditions is beyond the capability of rotary-wing aircraft and crew members and should not be attempted.

2-34. FORMATIONS

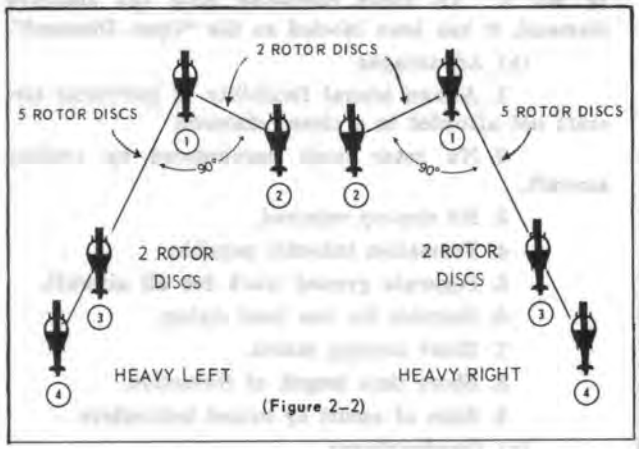
a. General

(1) The purpose of this paragraph is to prescribe certain standard formations which may be used by aviation elements in the conduct of airmobile operations. These standard formations are not the only ones which may be used but should be standardized in all Brigade units.

(2) The formations discussed are designed for ease of flight escort and control and are used for en route movement and assault landings. When deemed necessary because of PZ/LZ configuration, any formation that meets the AMTF deployment requirements may be used. Variations and changes in formation can be made safely and rapidly when air crews are properly briefed. Whenever repositioning of aircraft is required for formation change, these movements are made in numerical sequence by position number information.

b. Basic Formations

(1) Heavy Left/Right



(Figure 2-2)

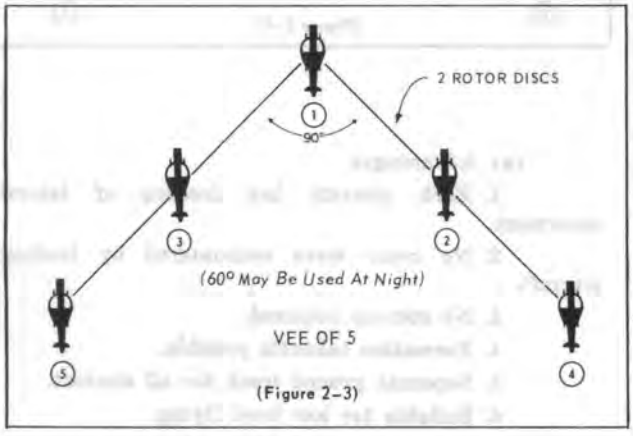
(a) The heavy left/right are the basic formations used for most areas of operations. They provide a basis for all other formations. When only three aircraft in the section (as with augmented UH-1 companies) the number 4 position is left vacant.

1. Each aircraft has freedon of lateral movement.
2. No rotor wash encountered by trailing aircraft.
3. No step-up required.
4. Formation takeoffs possible.
5. Separate ground track for all aircraft.
6. Suitable for low level flying.
7. Short turning radius.
8. Short time length of formation.
9. Ease of escort by armed helicopters.

(c) Requires relatively large landing zones.

1. Requires relatively large landing zones.
2. Some restrictions to inboard door gunners.
3. Difficult to line up troops in PZ to conform to formation.

(2) VEE of 5.



(Figure 2-3)

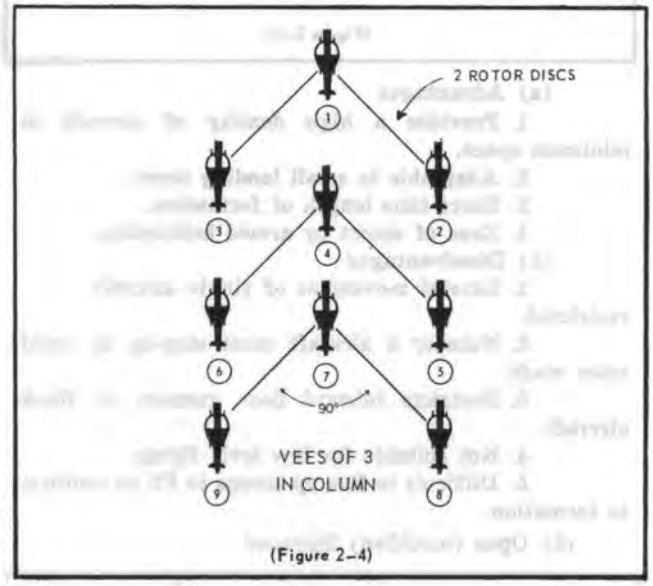
(a) Advantages

1. No rotor wash encountered by trailing aircraft.
2. No step-up required.
3. Formation takeoffs possible.
4. Separate ground track for all aircraft.
5. Short time length of formation.
6. Ease of escort by armed helicopters.

(b) Disadvantages

1. Requires a wide landing zone.
2. Lateral movement of single aircraft restricted.
3. Not suitable for low level flying.
4. Large turning radius.
5. Restrictions to inboard door gunners.
6. Difficult to line up troops in PZ to conform to formation.

(3) VEE's of 3 in Column.



(Figure 2-4)

(a) The numerical sequence of aircraft is: lead, right, left; lead, right, left; lead, right, left, All pilots must be thoroughly briefed on their respective numerical designation and position or results can be disastrous when changing to other formations.

(b) Advantages

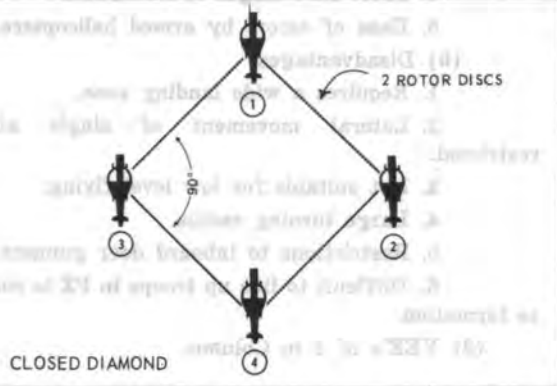
1. Provides a high density of aircraft in minimum space.
2. Provides a good aviator training base for formation flying.
3. Ease of escort by armed helicopters.

(c) Disadvantages

1. Lateral movement of single aircraft restricted.
2. Requires step-up due to roter wash:
3. Severely restricts door gunners.

4. Difficult to line up troops in PZ to conform to formation.
5. Formation takeoffs hazardous.
6. Use of identical ground tracks.
7. Not suitable for low level flying.
8. Requires large turning radius.

(4) Closed Diamond



(Figure 2-5)

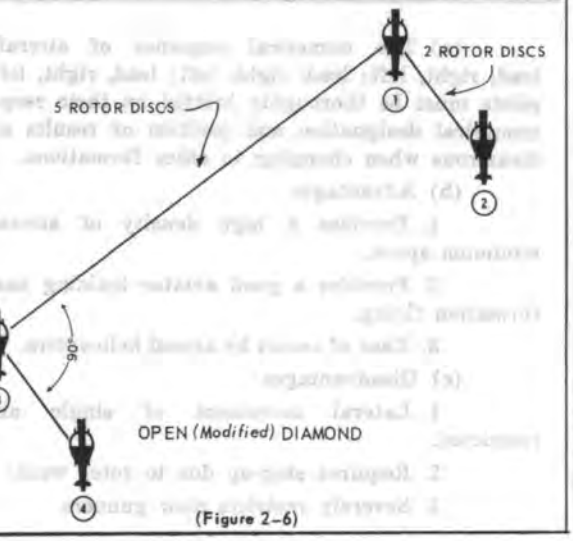
(a) Advantages

1. Provides a high density of aircraft in minimum space.
2. Adaptable to small landing zones.
3. Short time length of formation.
4. Ease of escort by armed helicopters.

(b) Disadvantages

1. Lateral movement of single aircraft restricted.
2. Number 4 aircraft must step-up to avoid rotor wash.
3. Restricts inboard door gunners of flank aircraft.
4. Not suitable for low level flying.
5. Difficult to line up troops in PZ to conform to formation.

(5) Open (modified) Diamond.



(Figure 2-6)

(a) This formation is basically a heavy left with No. 4 aircraft in free cruise position to the right of No. 3. To avoid confusion with the standard diamond, it has been labeled as the "Open Diamond".

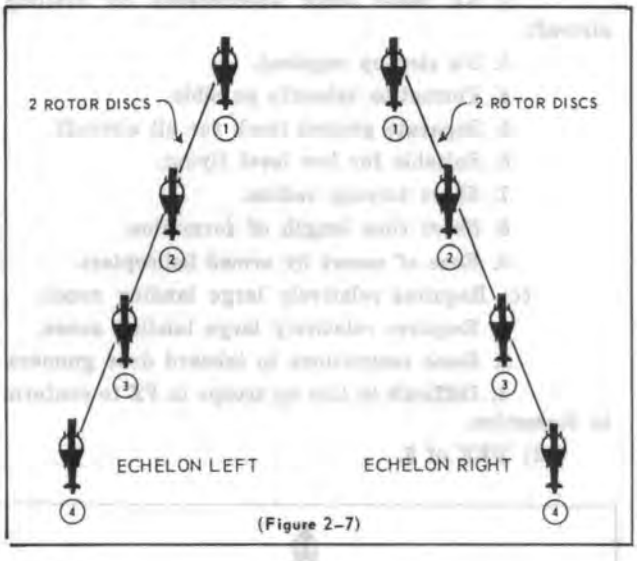
(b) Advantages

1. Allows lateral flexibility of individual aircraft not afforded in a closed diamond.
2. No rotor wash encountered by trailing aircraft.
3. No step-up required.
4. Formation takeoffs possible.
5. Separate ground track for all aircraft.
6. Suitable for low level flying.
7. Short turning radius.
8. Short time length of formation.
9. Ease of escort by armed helicopters.

(c) Disadvantages

1. Some restriction to inboard gunners of flank aircraft.
2. Difficult to line up troops in PZ to conform to formation.

(6) Echelon Left/Right



(Figure 2-7)

(a) Advantages

1. Each aircraft has freedon of lateral movement.
2. No rotor wash encountered by trailing aircraft.
3. No step-up required.
4. Formation takeoffs possible.
5. Separate ground track for all aircraft.
6. Suitable for low level flying.
7. Allows unrestricted fire by door gunners.

(b) Disadvantages

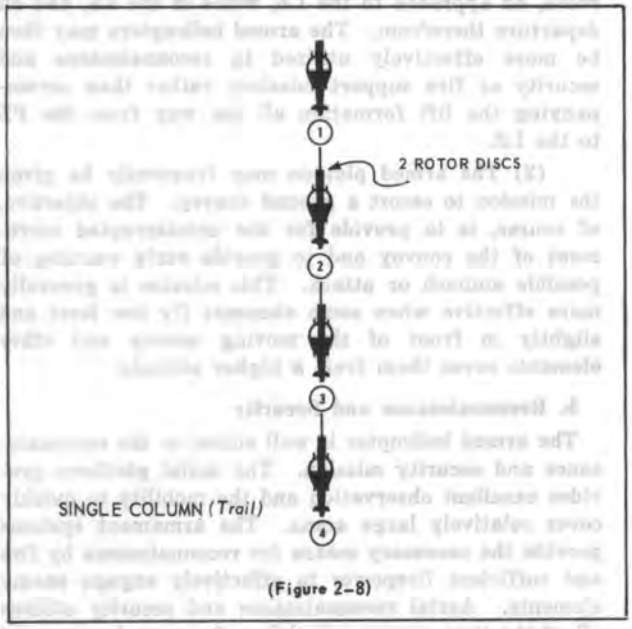
1. Requires relatively large landing zones.

2. Difficult to hold position in turns.

3. Difficult to line up troops in PZ to conform to formation.

4. Difficult for armed helicopters escort.

(7) Single Column (Trail).



(Figure 2-8)

(a) Advantages

1. Suitable for long, narrow landing zones.

2. Each aircraft has freedom of lateral movement.

3. Allows unrestricted fire for door gunners.

4. Simplifies troops line up in PZs.

5. Allows infantry assault element to depart aircraft in line formation.

6. Ease of maintaining formation during direction changes.

(b) Disadvantages

1. Highest vulnerability to enemy fire of any formation.

2. Long time length of formation.

3. Use of identical ground track by all aircraft.

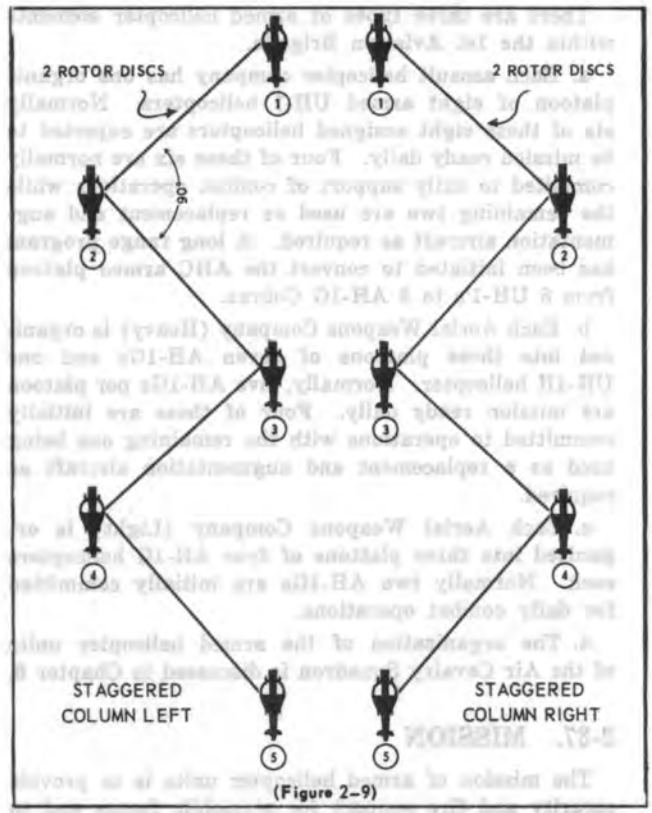
4. Requires step-up due to rotor wash.

5. Hazardous on takeoffs unless each aircraft waits until aircraft in front enters translation.

6. Difficult for armed helicopters escort to cover entire formation.

7. Causes stacking onlanding in PZ.

(8) Staggered Column (Trail) (Left/Right)



(Figure 2-9)

(a) Advantages

1. Provides a shorter linear disposition of aircraft and less vulnerability to enemy fire as compared to a single column.

2. Provides for simultaneous positioning of troops on both flanks of the LZ.

3. Offers good flexibility. Each aircraft has freedom of lateral movement.

4. Simplifies troop line up in PZs.

(b) Disadvantages

1. Long time length of formation.

2. Requires step-up due to rotor wash.

3. Use of same ground track by following aircraft.

4. Hazardous on takeoff unless separation is maintained until aircraft in front enters translation.

5. Restriction to inboard door gunners.

6. Highly vulnerable to enemy fires.

7. Causes stacking on landing in PZ.

Section VI
Armed Helicopter Operations

2-35. GENERAL

This section discusses employment of armed helicopters assigned to Assault Helicopter Companies' armed platoon, and Aerial Weapons Companies. Employment of armed helicopters in the Air Cavalry Squadron is discussed in Chapter 6.

2-36. ORGANIZATION

There are three types of armed helicopter elements within the 1st Aviation Brigade.

a. Each assault helicopter company has one organic platoon of eight armed UH-1 helicopters. Normally six of these eight assigned helicopters are expected to be mission ready daily. Four of these six are normally commited to daily support of combat operations while the remaining two are used as replacement and augmentation aircraft as required. A long range program has been initiated to convert the AHC armed platoon from 8 UH-1's to 6 AH-1G Cobras.

b. Each Aerial Weapons Company (Heavy) is organized into three platoons of seven AH-1Gs and one UH-1H helicopter. Normally, five AH-1Gs per platoon are mission ready daily. Four of these are initially committed to operations with the remaining one being used as a replacement and augmentation aircraft as required.

c. Each Aerial Weapons Company (Light) is organized into three plattons of four AH-1G helicopters each. Normally two AH-1Gs are initially committed for daily combat operations.

d. The organization of the armed helicopter units of the Air Cavalry Squadron is discussed in Chapter 6.

2-37. MISSION

The mission of armed helicopter units is to provide security and fire support for airmobile forces and to participate in offensive, defensive and delaying actions as part of a highly mobile combined arms team.

2-38. ARMED HELICOPTER MISSIONS

a. Escort

(1) Escort missions may be further classified into aerial escort (for lift helicopter formations) and ground escort (for vehicle convoys). The aerial escort mission is most common and may be accomplished by a variety of methods which are limited only by the imagination and ingenuity of the platoon leader. The fire teams may fly on the flanks or slightly ahead of the lift formation and may be at any altitude. They may be at a lower level, at the same altitude as the formation, or above the formation. Flying low level, the armed helicopters have the advantage of better observation of ground targets, however, their field of fire is greatly reduced. Maximum effective coverage by AH-1G is behind and on the same level as the lift formation. Armed helicopter unit leaders must judge each situation individually and determine the altitude or combinations of altitudes for the specific mission. While escorting lift formations, the mission of the armed helicopters is to suppress or neutralize enemy ground fire sufficiently to allow the lift formation to pass through or around the danger area. Destruction of enemy positions or personnel, while desirable, is not required by the escort mission. The limited speed differential between lift and armed helicopters does not always allow the armed helicopters time to engage and restroy a target while enroute. Once the lift formation is clear of a particular danger area, the armed helicopters attempt to regain their position with the lift formation in order to continue the escort mission to its destination. There is no requirement for armed helicopter escort of a lift formation when the formation is flown at high enough altitude to avoid ground fire. In such instances the armed helicopters should join the lift aircraft only at critical points along the flight route, on approach to the LZ, while in the LZ, and on departure therefrom. The armed helicopters may then be more effectively utilized in reconnaissance and security or fire support missions rather than accompanying the lift formation all the way from the PZ to the LZ.

(2) The armed platoon may frequently be given the mission to escort a ground convey. The objective, of course, is to provide for the uninterrupted movement of the convoy and to provide early warning of possible ambush or attack. This mission is generally more effective when some elements fly low level and slightly in front of the moving convoy and other elements cover them from a higher altitude.

b. Reconnaissance and Security

The armed helicopter is well suited to the reconnaissance and security mission. The aerial platform provides excellent observation and the mobility to quickly cover relatively large areas. The armament systems provide the necessary means for reconnaissance by fire and sufficient firepower to effectively engage enemy elements. Aerial reconnaissance and security utilizes all of the time-proven principles of reconnaissance and security used by ground elements.

c. Fire Support

(1) The fires of the armed platoon may be integrated into the fire plan of the ground force along with organic mortars, supporting artillery and Air Force fires, or it may be the only non-organic fire available to support the ground maneuver. Area and point target fires are basically the two types of fires which can be provided by any of the systems in the armed platoon. fire is placed on a rather large target area, in which specific targets have not been identified, and is intended to suppress possible enemy fire by causing the enemy to remain immobile or to seek cover. With the advent of the flechette rocket, excellent anti-personnel damage can be inflicted on a hidden enemy over a fairly large area. Flechette rounds however connot be used in close support of ground troops. Point target fires are fires directed at a point target with intent to destroy. Point taget fires are, by their very nature, much effective and should be the preferred type fires whenever a target can be identified. The most effective method of attaining point target accuracy with current armament systems is to maneuver the aircraft as close to the target as possible commensurate with safety, prior to firing. The AH-1G system is more stable than the UH-1B/C therefore can place accurate fire on point

targets at a greater stand off distance. Firing at targets beyond effective small arms range as a means of reducing vulnerability of the aircraft will always result in area fire. It must be pointed out that point target fires are possible only with well trained and knowledgeable gunners using properly installed and boresighted weapons systems. This is especially true with rockets, which can be used effectively against point targets when fired by well trained gunners using proper techniques. Close-in protective fires are possible in support of friendly troops provided; first, that the aircraft crew is familiar with the tactical situation; second, that they have positively identified friendly positions; third, that they have raido contact with the supported forces; and fourth, that point target firing methods are used. Area fires are too inaccurate for use in close support of friendly elements. Whenever possible, the friendly units should mark their forward elements or perimeter by some means identifiable from the air (smoke, panels, flares, etc). All participants in the airmobile operation must understand all prearranged signals. Smoke for marking will not be used except as prescribed in the operations order, supported unit SOP, or SOI.

(2) When providing close fire support for friendly ground forces, gun ships should break toward the friendly positions whenever possible because this will give the co-pilot/gunner a small safety zone should the pilot make an abrupt maneuver during his break. Any deviation of the round away from the target because of the maneuver would go beyond the enemy; whereas, if the break was in the other direction they would be directed toward the friendly position. Also, since a break is the most vulnerable position a gunship is normally in, a forced landing to a friendly area is more desirable. Another technique to minimize the possibility of firing into friendly positions is to execute the firing run from a closer distance and parallel to the friendly position. If no other direction is available, the firing run may be made over the heads of the friendly elements holding fire until directly above them. When this technique is used, the supported force must be advised so that they will not become concerned that the gunships are firing at them and will be aware of the possibility of falling expended cartridge cases in and around their positions. Closein support of friendly troops must be carefully coordinated and controlled.

(3) The effectiveness of armed helicopters is substantially reduced in heavy jungle terrain because of the inability to detect targets and deliver accurate supporting fires through the jungle canopy.

2-39. AIRCRAFT AND ARMAMENT

a. Aircraft

(1) UH-1B/C is a utility helicopter equipped with armament subsystems which provide accurate and variable fire power.

(2) AH 1G. The AH-1G, "Huey Cobra," is a high speed, two place, tandem seated attack helicopter possessing a fully integrated weapons system which, when coupled with external wing stored armament, provides highly accurate and variable fire power.

b. Armament Systems

(1) M-5 system. This system consists of a fully automatic 40mm grenade launcher mounted on a flexible mount in the nose of the helicopter. The gun has a maximum effective range of 1200 meters and a cyclic rate of fire of 220 to 240 rounds per minute. The ammunition capacity of the standard system is 150 rounds. This system, like the M-16, may be fired as a flexible weapon from the co-pilot's seat or it may be fired in the stowed position by the pilot. The system is reliable, accurate and very effective against personnel. Most malfunctions which are experienced result from failure to feed. Occasionally, the linked belt will break in the feed chutes causing a failure. Most aircraft mounting the M-5 system also have a 2.75" rocket system mounted for added firepower.

(2) VM-21 system. This system consists of an externally mounted 7.62 millimeter machine gun M-134 GAU-2B/A and a seven-round rocket pod on each side. The standard system is capable of a cyclic rate of fire of 2,400 rounds per minute per gun. This rate will increase to 4,000 rounds per minute on one gun when the other is traversed to its inboard limit and stops firing. The system has a 3 second maximum firing time with a momentary delay between firings. The ammunition capacity of the system is 6,400 rounds. The system may be controlled by the co-pilot/gunner from a sighting station mounted above the co-pilot's seat, or it may be fired by the pilot. The sighting station limitation is from +10 degrees to −90 degrees, 70 degrees outboard and 12 degrees inboard. The pilot may fire only from the stowed (fixed) position and must maneuver the aircraft to adjust the strike of the rounds. CAUTION: Due to the high noise level, aircrews must wear ear plugs when firing this system.

(3) XM-18 and XM-18E1 systems. At present, these systems are mounted only on the AH-1G. They are electrically fired weapons, with 1500 rounds of delinked 7.62mm ammunition and all electrical equipment necessary to fire these systems. One XM-18 pad is mounted on the inboard store of each wing. pods are rigidly mounted and are fired by aiming the aircraft at the target. The guns may be fired by either the pilot or co-pilot/gunner, but are normally fired by the pilot. The cyclic rate of fire is 4,000 rounds per minute with the XM-18 system and either 2,000 or 4,000 rounds per minute with the XM-18E1 system. The XM-18EI system is normally fired at 2,000 rounds per minute.

(4) XM-157, 158, 158A1 and 159 rocket launcher systems. The XM-157, 158A1 and 159 are employed on the AH-1G. Due to the separate tube construction of the XM-158, it is not adaptable to the AH-1G system.

(5) XM28 subsystem. This system is also on the AH-1G. The XM28 utilizes any one of the following

combination of weapons: One left-hand 7.62 millimeter machine gun M134 (GAU-28/A), and one right hand 40 millimeter grenade launcher XM129; one left-hand 40 millimeter grenade launcher and one right-hand 7.62 millimeter machine gun; two 7.62 millimeter machine guns; or two 40 millimeter grenade launchers. The XM28 subsystem is normally controlled by the co-pilot/gunner through the floor mounted sighting station, but can be fired by the pilot in the stowed position. The turret can traverse 107.5 degrees left or right, elevate from 10 to 12.5 degrees.

(6) The armament subsystems XM35 is designed for use on the fixed wing of the AH-1G Huey Cobra Helicopter and provides a cyclicate of fire of 750 rounds per minute. The XM35 consists of a six barrel 20 millimeter automatic gun, XM 195, a gun drive assembly, a gun mount assembly, ammunition feed and storage components, a gun firing control unit, and two control panels. Normally the pilot fires the gun; however, the gunner/co-pilot can fire the weapon by using the existing override on the gunners control panel. The weapon is rigidly mounted to the wing of the aircraft with no on board elevation or traverse capability. Fire control is accomplished by use of the M73 Sight which is optically alligned with the bore center of the weapon.

The on board ammunition storage capability is 950 rounds which is carried in two ammunition storage boxes. One each on the left and right side of the aircraft.

The weapon installation is on the out board position of the left fixed wing of the aircraft. The wide selection of ammunition for the weapons system makes is particullary adaptable to nearly all type targets which are engaged by armed helicopters.

For more detailed information on this weapons system refer to TM 9-1005-299-12.

(7) The high rate 7.62 millimeter machinegun helicopter armament subsystem XM27E1 (minnigun) is for use on OH-6A and OH-58A helicopters. It is installed on the left side of the aircraft. The main components of the armament subsystem are: the 7.62 millimeter automatic gun, M134; delinking feeder, MAU 56/A; drive assembly; mount; and the sight reflex, helicopter XM70E1.

Ammunition is carried on board the aircraft in two 1000 round ammunition box assemblies and is fed to the main gun through the delinking feeder assembly which conveys the ammunition from the chute, strips and ejects the links, and feeds the cartridges into the gun.

The drive assembly has a two speed capability; which enables the operator to select either a 2000 or 4000 round per minute rate of fire.

The helicopter reflex sight XM70E1 is on optical sighting instrument synchronized with the movement of the weapon in elevation and depression. The sight and the gun are fixed in azimuth. The weapons system has 10 degrees of elevation and 24 degrees of depression. The weapon is electrically fired from a firing switch on the cyclic control grip in the aircraft.

Normal employment of this weapons system is in the offensive scouting role when installed on OH-6A or OH-58A helicopter. For more detailed information on this weapons system, refer to TM 9-1005-281-15 or TM9-1005-298-12.

c. Capabilities

In addition to the capabilities listed above, armed helicopters possess the following characteristics:

(1) Rapid delivery of relatively large volumes of fire on selected point or area targets.

(2) Selective fires on point targets.

(3) Wide assortment of munitions.

(4) Flexible employment of munitions.

(5) Responsive to changing missions or situations.

d. Limitations

In addition to the limitations already discussed, armed helicopters possess the following limitations:

(1) Night and Weather. The pilot must be able to see the target area. With the advent of target acquisition radar and IR equipped recon planes, targets can be found and engaged at night.

(2) Range and Payload. Range or time on station must be traded to obtain the maximum payload which the helicopter can carry.

(3) Crew on AH-1G. The only crew member on the AH-1G are the pilot and co-pilot/gunner. Rearming and refueling requires a service crew on the ground to optimize turn-around time. Reconnaissance missions are less effective due to fewer persons available to observe during the mission.

2-40. RULES OF ENGAGEMENT AND BORDER RESTRICTIONS

MACV Directive 525-13 sets forth both the Rules of Engagement and Border Restrictions for armed helicopters. This directive is classified confidential and therefore not included in this manual. However, the directive must be on hand in each unit and will be required reading for each newly assigned aviators. Units will schedule periodic classes to reiterate and explain the contents of the directive.

2-41. ARMED HELICOPTER OPERATIONS

a. Tactics

(1) There are few "iron clad" gunnery tactics for helicopters. Tactics and techniques are basically an application of common sense principles and a thorough understanding of the machine and its weapons systems. Variables such as mission, enemy situation, terrain and equipment affect gunnery tactics. Helicopter fire can generally be categorized into two types: point target fires and area fires.

(a) Point target fires are those fires directed at a specfic point with the intent to destroy the target. The two methods used to engage point targets are

diving fire and low level fire. Diving fire has the advantage of producing a relatively small beaten zone and range error. The primary disadvantage is the increased exposure time. Low level fire has the advantage of minimum exposure time provided the hostile forces are confined to the area of the point target and not dispersed along the approach route. A primary disadvantage is that the pilot and gunner have minimum time in which to acquire the target and fire, and the increased possibility of range errors.

(b) Area fires are directed at less restricting strike zones in which specific targets have not been identified. These fires are intended more for suppression than for destruction. Area fires may be accomplished either by diving or low level fire as the situation demands. With the advent of flechettes warheads destruction of an area is greatly increased. Diving fire from a high altitude is required with the advantage of keeping the aircraft out of small arms range during the entire run. Flechette warheads cannot be used near friendly forces.

b. Employment Considerations.

The armed helicopter was conceived to augment and supplement the fire support available to the ground commander. Generally, armed helicopters are employed similarily in all tactical areas of operation. Due to terrain and climatic variations, armed units have developed distinct techniques which increases their effectiveness in their particular areas of operation. Adherence to the following considerations will increase the effectiveness and efficiency of armed helicopter operations:

(1) Avoid flying the deadman's zone for extented periods of time. The deadman's zone is generally considered to be between 50 and 1500 feet over wooded terrain, and 0 to 1500 feet over open terrain. When flight through this altitude is required aviators should attempt to fly over secure areas.

(2) Avoid overflying the target: Over-flight of a target area normally results in the aircraft being within effective range of the enemy's weapons. An exception to the over-flight consideration would be the high altitude (2,500 feet and above), steep attack angle (30 degrees to 40 degrees) firing pass frequently used by the AH-1G when a compact beaten zone is desired.

(3) Avoid flying in the trail position. Flying directly behind the lead aircraft, particularly at low altitudes, places the trail ship in a very vulnerable position. The vulnerability has been increased because the enemy has been alerted by the lead aircraft.

(4) Avoid flying parallel to terrain features. Normally the enemy moves and bivouacs along the tree lines and rivers. Parallel flight increases visibility and fields of fire.

(5) When possible make a high reconnaissance. Many times a high reconnaissance will attain the desired results without exposing pilots and aircraft to effective enemy fire.

(6) Always assume the area to be hostile. Alertness can easily be the deciding factor of success or failure.

(7) Expend ammunition only on worthwhile targets. Conserve your ordnance. The tactical situation can quickly change.

(8) Locate all friendly elements. Friendly elements must be located prior to firing to insure against accidential casualties.

(9) Know the situation. Knowledge of the situation will increase efficieney and effectiveness.

(10) Brief all elements involved. Sound briefings enable aircrews to better estimate the tactical situation.

(11) Take your time. Many times, results are reduced by hurried decisions.

(12) Adhere to the Rules of Engagement. Mission accomplishment is jeopardized when the Rules of Engagement are violated.

c. Missions

(1) Reconnaissance: The basic difference between reconnaissance techniques used in the various Corps areas evolve from the difference in the terrain being reconnoitered. In open Delta regions a high reconnaissance may suffice; however, when a low reconnaissance is required, descent from altitude is accomplished over open terrain and away from wood lines. In areas that are heavily wooded a low reconnaissance may be a necessity; rapid, high rate descents may be made over heavily wooded terrain to reduce vulnerability. In all areas the flight path should be a weaving one with air speeds in excess of 70 knots. In mountainous areas, it may be necessary to reconnoiter adjacent hill masses prior to entering valley areas. Reconnaissance by fire is made with the wing man to the rear, above and to one side of the team leader. This tactic permits the wing man to provide instant cover when hostile fire is received. When extremely detailed reconnaissance is required air speed is reduced. Airspeed should never be reduced, however, to the point of hovering flight. As the aircraft slows vulnerability increases; because of the slow acceleration of the heavily loaded armed or attack helicopter the additional reconnaissance achieved through slow flight may not compensate for the added vulnerability to the armed helicopter.

(2) Security missions

(a) Aerial escort: Aerial escort techniques are similar throughout all Corps areas. The number of fire teams committed for a specific escort mission will vary based upon armed helicopter availability, size of the lift formation and the existing tactical situation. Normally a platoon (two or more fire teams) of UH-1C's will be considered a minimum escort force for an assault helicopter company. When utilizing AH-1G's, generally a heavy fire team is considered sufficient. Escort formations are dictated by unit standard operating procedures and an analysis of METT in the area of operation. The use of AH-1G Cobras with armed UH-1B/C helicopters during assaults has proved effective. AH-1G Cobras have the speed dif-

ferential and armament capability to conduce a prestrike prior to the lift's arrival at the LZ, then rapidly joining the UH-1B/C for escort into the LZ.

(b) Surface escort: Normally one fire team is sufficient to perform surface escort. However, if the time and distance to be traveled exceeds the endurance of one fire team, two or more teams may be employed to effect relief on station to provide continuous escort. This mission calls for low level flight if the column requires scouting ahead for security. If the column provides a point, then a high orbit would allow the fire team to react faster to an attack at any point on the column.

(c) Overhead cover: The procedures for providing overhead cover will normally be didtated by the support force commander. Under some tactical situations, overhead cover may be provided by orbiting above the ground maneuver force at a relatively low altitude. This procedure essentially performs the mission of an aerial screening force. Under other conditions, it may be desired to orbit at a location away from the ground maneuver force and respond only on call of the supported force commander. Commanders should weigh their requirements for overhead cover against the availability of armed helicopters. During sustained operations the availability of armed helicopters will decrease when continuous air cover is afforded the ground commander. Armed helicopters should normally be staged from an area that is within short range of the operation in order to reduce response time to the minimum.

(d) Rapid reaction: The rapid reaction mission is similar in all corps areas. This force is normally one fire team and is designated to support any contingency arising in the area of responsibility. Tactics used will be based upon the condition to which reaction is required.

(e) Night interdiction: Night interdiction will vary primarily in the composition of the force.

1. Firefly: Normal team composition is two armed helicopters and one transport aircraft for command and control which may be equipped with a search light (Fire Fly). Altitude separation is normally achieved in the following manner:

a. Low ship, armed—100-700 feet.

b. Cover ship, armed—700-1200 feet.

c. Command and Control ship at an altitude sufficient to observe and control the operation, and illuminate the target. Once a target is identified a suitable orbit is established by the light ship to allow constant illumination of the target. The target is then attacked by the armed element using appropriate tactics demanded by the situation. When employing armed helicopters in the night interdiction role, commanders should strive to avoid set patterns which will compromise the element of surprise. When possible, night interdiction by armed helicopters should be coordinated with supporting artillery fires and tactical air support. When using M-24 flares, care must be taken not be silhouette the armed aircraft between the flare and suspected enemy locations. The parachute flares can also constitute a flight hazard to the lower ships and must constantly be kept in mind.

2. Nighthawk: The nighthawk system is designed to detect and engage the enemy during the hours of darkness. The system has two basic configurations. One configuration uses one UH-1D/H equipped with a night observation device (NOD) coaxially mounted to a Xenon Searchlight. The operator finds a target with the NOD, turns the searchlight on and the gunner engages using either a door mounted minigun or 50 Cal MG. The second configuration utilizes 2 aircraft. One is equipped with NOD, searchlight and minigun to engage and mark the target for the second aircraft which is a gunship without NOD. The gunship flys behind the NOD equipped aircraft; when a target is marked, the gunship engages. Nighthawk can be expanded to three aircraft with the third aircraft providing C&C and flare drops if required. This team can be further expande to include an OV-1 IR or SLAR aircraft to initially locate targets for the nighthawk team.

3. Direct fire support mission

The landing zone prestrike: The LZ prestrike can be conducted by either a light or heavy fire team. A prestrike, by armed helicopters, which are also providing aerial escort, will normally be conducted by a light fire team. The strike is timed so that the prestrike is terminated as suppressive fire begins. Fire team mutual support can be achieved by establishing a "race track" pattern to allow continuous fire to be placed on the landing zone. Command is retained by the element leaded and fire tactics are used. The technique and duration of prestrikes may be varied to preclude establishing a tactical pattern that can be interpreted by the enemy. Ammunition conservation must be closely monitored to allow adequate prestrike fires plus adequate reserve firepower for the remainder of the mission. Normaly the lift helicopters will enter the "race track" pattern established by the armed helicopters as the last prestrike run is being made. This will allow the lift helicopters to touch down immediatelly after the prestirke and it will also allow the armed helicopters to shift immediately from aerial fire support to a suppressive fire mission.

(b) Suppressive fires: Suppressive fire can be conducted by one fire team; however, it is more effective when two fire teams are employed. Two team employment permits simultaneous fires to be placed on both flanks of the approaching lift helicopters. In order to provide continuous fire, the fire teams normally fly race track patterns on either flank Fire is placed on known or suspected enemy positions and is continued until the lift helicopters depart the LZ and reach a safe altitude. When only one fire team is available the procedure is simular, except the armed helicopters escort the lift ships to touch down and then execute at a circular pattern around the LZ. This procedure will permit fire to be placed 360 degrees around the LZ. The circular pattern is terminated as the lift ships depart the LZ and normal escort is resumed at a safe

altitude. The most effective method of providing suppressive fire is by using a heavy fire team on each flank of the lift helicopters. Maximum continuous firepower can be maintained around the landing zone, with no time gaps in the fire. Additionally, a three ship pattern affords the attacking helicopters maximum continuous mutual support. Time gaps in suppressive fire should be avoided whenever possible.

(c) Preplanned fires: Based upon accurate intelligence, preplanned fire missions may be assigned to armed elements as a means of achieving surprise on the target. A thorough map reconnaissance and detailed briefing is mandatory to achieve success for this type of attack. Normally, fire teams using standard fire team formations, will approach the target area and commence attack without further reconnaissance, expending maximum ordnance in minimum time. It is best to expend the desired amount of ordnance in a minimum number of firing passes, then rapidly depart the area before the enemy can react.

(d) Targets of oportunity and on call fires: Methods of engaging targets in this category may vary between corps areas depending upon the control methods used. Prior to engaging targets in this category, coordination must be established with the appropriate control agency. Standard tactics previously discussed for area and point type targets will be used.

d. Standard Fire Command

To issue an attack order, armed element leaders must strive to achieve brevity, clarity and accuracy, as well as standardization. Initial fire commands can be issued in the following sequence:

(1) Alert

(2) Target location

(3) Target description

(4) Direction of attack

(5) Ordnance to be expended

(6) Method of control to include the break

Subsequent fire commands may not require the complete sequence, but should contain items 4, 5 and 6 as a minimum.

e. Summary of fire team tactics:

(1) Attacks should be conducted at optimum airspeeds.

(2) Firing begins at maximum effective range of the weapons system.

(3) Targets should be kept under continuous fire throughout the attack and disengagement.

(4) Firing runs should use more than one ground track.

(5) Avoid over-flying the target.

(6) Expend only the ammunition required to accomplish the mission.

(7) The wingman must cover the lead ship during the break and then break at a greater distance to reduce his own vulnerability.

2-43. HELICOPTER GUNNERY

a. General

Effective armed helicopter gunnery is achieved by helicopter crews who are knowledgeable, trained, alert and properly motivated. Effective gunnery must be a team effort. Teamwork must be developed within the individual aircraft crews, between aircraft crews in the team, between teams in the platoon, between the armed platoon and the lift aircraft and between the armed platoon and the supported ground unit. The knowledge required includes a thorough technical understanding of the mechanical, electrical and ballistic characteristics of the various weapons systems and flight characteristics, capabilities and limitations of the armed platoon. Training must include supervised practice in boresighting, firing, arming and disarming the systems. The platoon leader is responsible for training his armed platton and for maintaining a high standard of proficiency.

b. In employing armed helicopters, there are several basic considerations which tend to maximize the effectiveness of the helicopter weapons systems and minimize the vulnerability of the armed helicopter elements. The more important considerations are discussed below:

(1) Nature of target. The target to be engaged will dictate the amount and type of ammunition to be used for maximum effectiveness.

(2) Attack patterns and formation. Use a pattern and formation that will result in best target coverage. The pattern and formation will vary with the type subsystems and aircraft employed.

(3) Terrain. Terrain should always be used to reduce aircraft vulnerability. In many cases terrain features can be effectively used to mask the enemy's fires.

(4) Enemy disposition and capabilities: Always attack to the enemy's weakness. Enemy use of heavy caliber weapons will require a greater standoff distance to reduce vulnerability.

(5) Efforts of weather: When possible, attack out of the sun and into the wind. This affords higher ground speed when executing a break and facilitates elimbing back to altitude for subsequent firing passes.

c. The Helicopter as a Weapons Platform

Currently, the primary aircraft being used for aerial gunhery are the UH-1B/C and the AH-1G helicopters. All, when equipped with any of the standard weapons, operate at or very near maximum weight limitations. Due to frequent high density altitude conditions found in Vietnam, this weight problem must be constantly considered by the aviator. In many cases, there will be a requirement to reduce ammunition, or fuel, or both, to safely accomplish a mission. Coordinated flight is extremely important in effective helicopter gunnery. The helicopter is an especially agile and relatively stable gun platform. When flown correctly, the pilot can maneuver his aircraft to that point from which he and his crew can place maximum, effective fire on the target.

d. Boresighting and Zeroing

(1) Probably no single factor, with the possible exception of gunner proficiency, contributes more to the accuracy of helicopter weapons than the proper bore sighting of the weapons systems. The procedures for bore sighting are the same for helicopter weapons as for any other weapon. Essentially, bore sighting is making the axis of the sight and the bore of the weapon parallel. From this parallel sight-bore condition a sight setting can then be determined for any desired range. Since most weapons systems involve multiple guns and/or rocket launchers, each gun and/or rocket launcher must be individually adjusted so that the axis of its bore is parallel to the axis of the sight. Zeroing a system is the obtaining of a sight setting for the range at which the weapons system is normally fired. This procedure can be done on the ground for flexibly mounted weapons by firing at a target at the desired range; then, by prescribed procedures, converge the strike of the bullet and the sight "pipper" onto the target. On stowed weapons systems this zeroing must be done, after bore sighting, while in the air. The weapon is fired at a target from the desired range. The sight "pipper" is adjusted onto the burst. The weapon is fired again and the pipper is readjusted onto the burst again. This is repeated as necessary to obtain a sight setting that will insure target hits at the range. Each firing run must be exactly alike in airspeed, altitude, range, coordination and direction so that these factors do not affect the sighting procedure. While acceptable, this method is a field expedient and appropriate publications should be referred to for exact procedures.

(2) Rockets (all systems). Rockets are fired by the pilot who must aim the weapons system by aiming his aircraft at the target. Coordinated flight is particularly important when firing rockets. If they are fired when the aircraft is not properly streamlined into the relative wind, accuracy is seriously degraded. It is this factor, the proper alignment of the aircraft and therefore the rocket system into the relative wind, that is perhaps the single most important factor in rocket gunnery techniques; it is, at the same time, the most misunderstood factor in rocket gunnery procedures. Factors affecting rocket gunnery are explained below.

(3) Relative wind: Relative wind is produced by the aircraft or rocket moving through the air. Relative wind has nothing to do with, and is not related to, "surfacewind." This differentiation must be clearly understood in order to understand rocket firing techniques. Relative wind is associated with movement through he air.

(4) Wind drift: Wind drift is the movement of an airborne object with the air. A good example is a cloud. A cloud moves with the air it is in. Wind drift is therefore associated with movement with the air.

(5) Surface wind: Surface wind is nothing more than air moving over the earth's surface. This wind can only be measured or felt in relation to the earth. Therefore, when an object is in the air there is no wind on the object. If the object moves through the air, the wind created is relative wind. Therefore, an aircraft or rocket moving through the air is encountering relative wind and not surface wind.

(6) Coordination: Proper coordination results in the aircraft always being aligned or streamlined into the relative wind. (See Fig 2-10). When the aircraft is out of trim or uncoordinated and the "ball" is not centered; the aircraft is not aligned or streamlined into the relative wind and is slipping sideways through the air. The relative wind is then coming from the right or left front rather than from directly in front of the aircraft (Figs 2-11, 2-12). Accurate rocket fire cannot be made when the aircraft is in an uncoordinated condition.

(7) Airspeed: Airspeed has as much affect on the accuracy of rocket fire as does coordination. Whereas coordination affects the way the aircraft meets the relative wind in a horizontal plane, i.e., from the left, center, or from the right; airspeed affects the way the aircraft meets the relative wind in a vertical plane, i.e., from above or below. An example of this would be when an aircraft is flying level at 100 KTS the relative wind is meeting the aircraft at a certain angle (Fig 2-13). This same aircraft flying level at 60 KTS would have a slightly nose high tail down attitude (Fig 2-15). The relative wind would then be meeting the aircraft from slightly below. This same aircraft flying level at 140 KTS would have a slightly nose down, tail high attitude (Fig 2-14). The relative wind would then be meeting the aircraft from slightly above. When rocket pods are attached to an aircraft, the pods are set at a certain angle. Therefore at a certain airspeed, say 100 KTS, and in coordinated flight, the relative wind is meeting the launcher tubes head on and not from above, below or from either side. It must be noted that at that airspeed of 100 KTS, and only at that airspeed, is the relative wind flowing directly down the tubes of the launcher. At slower airspeeds the relative wind would be meeting the launcher from slightly below. At higher airspeeds the relative wind would be meeting the launcher from slightly above. Therefore, depending on how the rocket launcher is mounted on the aircraft, there is only one airspeed at which the relative wind flows directly down the launcher tubes.

(8) Range: As with any weapons system, proper use of the sight will enable accurate fire at all effective ranges. With the well-known "battle sight" setting used by most armed helicopters, targets at varying ranges can be effectively compensated for by aiming over or under the target. For example, if the battle sight setting enables target hits to be made at 750 meters when aiming at the target, for targets at a range of less than 750 meters the aim must be made at a point below the target. When firing at a target which is at a greater range than 750 meters aim must be made at a point over the target.

(9) Altitude and dive angle: Because of the rocket system's natural probable error characteristics, firing altitude and dive angle play an important part in the accuracy of rocket fire. Because rockets have a relatively large range probable error and a relatively small deflection probable error, the impact area or beaten zone of rocket fire will vary with firing altitude and dive angle. At low firing altitudes the beaten zone will be very long and narrow. At a high firing altitude the beaten zone will become shorter, more oval shaped. Higher firing altitudes mean steeper dive angles and smaller beaten zones. Low firing altitudes mean shallow dive angles and large beaten zones.

(10) Rocket Temperature: Rockets that have been sitting in the sun or exposed to high temperatures will have a greater range than normal. Rockets that are cool will have a shorter range than normal.

(11) Aiming Point: Under ideal conditions and with well trained and knowledgeable pilots, the aiming point should naturally be at the target. However, because of many variables, the aiming point sometimes must be at a point away from the target. Examples are listed below showing how the aiming point must be shifted away from the target, when compared to a fixed situation. The fixed situation is: Firing altitude 1000′ above the ground, no surface wind, range from firing point to target is 1000 meters; airspeed 100 KTS, rockets are of the same type, age and temperature (80°F); weapons system installed properly and boresighted; combat sight setting which enables hits at the 1000 meter range. Compared to the above fixed (normal) situation the aim point must be shifted as indicated when other than normal conditions, as specified, exist.

(a) If the airspeed is higher than normal the aim point must be short of the target because at the higher airspeed the relative wind is meeting the rocket launcher from slightly above, the rockets will streamline into this relative wind and go above the launcher axis resulting in hits beyond the aim point (Fig 2-14).

(b) If the airspeed is slower than normal the aim point must be beyond the target because at lower airspeed the relative wind is meeting the launcher from slightly below. The rocket will streamline into this relative wind and go below the launcher axis resulting in hits below the aim point (Fig 2-15).

(c) If the aircraft is uncoordinated, with the ball to the left, (too much right pedal) the aimpoint must be to the right of the target (Fig 2-11). Too much right pedal causes the relative wind to meet the launcher slightly from the left. The rocket will streamline into this relative wind and go to the left of the launcher axis resulting in hits to the left of the aim point.

(d) If the aircraft is uncoordinated, with the ball to the right, (too much left pedal) the same thing will happen except in the other direction (Fig 2-12). The aimpoint therefore must be to the left of the target.

(e) If the aircraft is closer to the target than normal when firing rockets, the aim point must be slightly below or short of the target. This is necessary because the combat sight setting is adjusted for 1000 meters and the rocket trajectory will be over the sight pipper if placed on a target at less than 1000 meters range.

(f) If the aircraft is further from the target than normal when firing rockets, the aim point must be somewhat above or beyond the target. This is necessary because the combat site setting is adjusted for 1000 meters and the rocket trajectory will be below the sight pipper if placed on a target at greater than 1000 meters of range.

(g) If a surface wind exists the aim point must be shifted to a point up wind of the target. Usually, with surface wind of less than 10 KTS, the shifting of the aim points is not necessary. Surface winds of 10 KTS or more will, however, necessitate a shift of the aim point to a point upwind of the target. If there is a surface wind of 15 KTS coming from the west, then the aimpoint must be shifted to the west or upwind, regardless of the direction of attack. This shift is necessary because, regardless of the direction of attack, when the rockets are fired at this upwind aim point they will drift down onto the target. Experience will dictate how far the aim point must be shifted with a given surface wind condition. Contrary to popular but erroneous opinion, rockets do not weather vane into the surface wind but do weather vane into the relative wind.

(h) If the rockets fired are warmer than normal the aim point must be under or short of the target. Rockets that are warmer than normal will burn faster, resulting in increased velocities, which flattens the are of the rocket's trajectory, rocket to go beyond or above the aiming point. Rockets fired that are cooler than normal will burn slower resulting in decreased velocity which increases the arc of the rocket trajectory, there by causing the rocket to fall short of the aiming point.

e. Techniques of Fire

(1) Machine gun: Techniques used when firing the machine gun have been developed and proven through years of experience. The flexible weapon systems, when properly used, are capable of a high degree of accuracy through their limits of travel. Deflection and elevation angles constantly change throughout the firing pass. Therefore, the co-pilot/gunner must determine the lead or lag for targets at varying angles from the line of flight and for varying ranges and airspeeds. The amount of lead or lag required is only learned through experience and practice. The flexible minigun system of the AH-1G has a built-in lead compensator in the sighting station that assists the co-pilot/gunner in placing accurate fire in high angle deflection shots. All gunners should strive to achieve first-burst target hits. When this not accomplished, sensings should be made after the frist

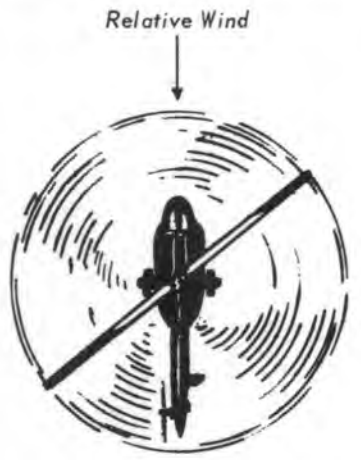
burst and subsequent bursts should be adjusted on target.

(2) Rockets: Rockets are fired by the pilot utilizing a fixed sighting station. Rockets are normally fired in one or more pairs. Burst-on-target adjustments are made by a change in aircraft attitude. Coordinated flight and firing up or down wind enhances the accuracy of rocket gunnery. Pilots should be aware of the fact that when firing in a crosswind the rocket tends to drift with the airmass. Sighting adjustments should be made for this fact.

(3) 40mm: The velocity of the 40mm round is relatively slow. This slow velocity tends to make the "Burst on Target" method of fire adjustments more difficult. However, a satisfactory degree of accuracy can easily be obtained with practice.

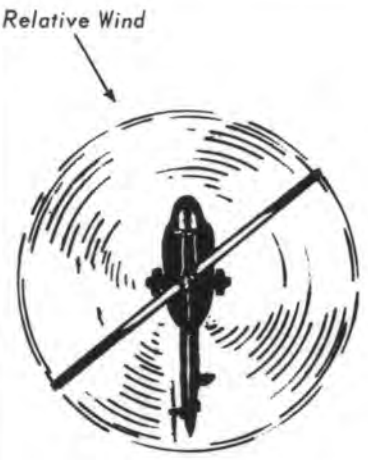
(4) Ammunition and Restrictions: The 2.75 inch rocket is utilized by the UH-1B/C and AH-1G aircraft. The different types of warheads, that are available, are the 10 and 17 pound high explosive, with 10 and 17 pound proximity fuze, 10 pound smoke and flechette. The proximity fuze will not be fired in heavy rain. The flechette and proximity fuzed rounds should not be fired over the heads of friendly troops. A single UH-1B/C aircraft will be armed with only one type fuze and/or one type warhead. The AH-1G will not mix XM 429 (VT) with M423 (PD) fuzed warheads in launchers firing from the same circuit. Additionally, the AH-1G will not mix XM 229 (HE) with M151 (HE) warheads in launchers firing from the same circulit.

(5) General: The information provided above will enable every pilot to gain a better understanding of certain techniques and problems associated with air to ground gunnery. The better the understanding and knowledge of these factors a pilot has, the more confidence he will have in himself and the weapons systems. His first round accuracy will be greatly improved, his ammunition will go further because of less wasted rounds used in adjustment, and the ground troops will be safer because of the resulting more accurate fire. Fast developing tactical situations do not allow time to think about what one should do or where one should aim. It is therefore imperative that these factors are understood thoroughly and practiced continually.



COORDINATED FLIGHT
BALL IN THE CENTER

(Figure 2–10)



UNCOORDINATED FLIGHT
BALL TO THE LEFT

(Figure 2–11)

UNCOORDINATED FLIGHT
BALL TO THE RIGHT

(Figure 2–12)

Relative Wind ——————→

LEVEL FLIGHT 100 KTS

(Figure 2–13)

Relative Wind ——————→

LEVEL FLIGHT 140 KTS

(Figure 2–14)

Relative Wind ——————→

LEVEL FLIGHT 60 KTS

(Figure 2–15)

COORDINATED FLIGHT
BALL IN THE CENTER

(Figure 2–10)

UNCOORDINATED FLIGHT
BALL TO THE LEFT

(Figure 2–11)

UNCOORDINATED FLIGHT
BALL TO THE RIGHT

(Figure 2–12)

LEVEL FLIGHT 100 KTS

(Figure 2–13)

LEVEL FLIGHT 140 KTS

(Figure 2–14)

LEVEL FLIGHT 60 KTS

(Figure 2–15)

CHAPTER 3
SUPPORT OPERATIONS

Section I
General

3-1. GENERAL

a. This chapter provides information and guidance for commanders and their staffs concerning the missions, organization, and control of Assault Support Helicopters Companies (ASHC), Heavy Helicopter Companies (HHC), Utility Airplane Companies (UAC), Corps Aviation Companies (CAC), and the Command Airplane Company,

b. Mission Requests: Coordination for aviation support begins with the ground unit commander (company, battalion, or brigade) submitting requests for aviation support through channels. Initial requests are normally submitted in terms of cargo or personnel to be moved from one location to another. All requests are consolidated at the next higher ground unit command. Cargo movement requests are normally submitted through S-4 (logistics) channels, monitored by S-3. and personnel movement requirements are submitted through S-3 (operations) channels. When all requests for aviation support are received by the division or separate brigade, the level maintaining an aviation officer or section, the requests are computed in terms of aircraft loads and the total number by type aircraft required to perform the requested missions. The requests for aviation support, both routine and emergency, are forwarded by the aviation officer to the G-3 Field Force or Corps Senior Advisor Army Aviation Element (AAE). The status of aviation assets available for operational missions is submitted through aviation unit channels to the AAE. The AAE matches requirements with available aircraft. The G-3 establishes the priorities for supported units to receive mission aircraft. The AAE then assigns aircraft by type and total numbers to the supported units for the next day's missions and assigns missions through aviation channels to the aviation units. Coordinates of PZs and LZs, radio call signs, frequencies and type loads are submitted by each ground unit when requesting aviation support.

Section II
CH-47 Operations

3-2. GENERAL

The purpose of this section is to provide information and guidance in the employment of the Assault Support Helicopter Company (ASHC) equipped with the CH-47 helicopter.

3-3. ORGANIZATION

a. The ASHC is organized with a company headquarters, operations platoon, two helicopter platoons, a service platoon and a systems repair platoon (Figure 3-1).

b. The two helicopter platoons are each authorized eight CH-47 aircraft. The company is normally tasked to provide eight mission ready aircraft on a continuing basis of which six are committed daily to support combat operations. The remaining two are used as replacement and augmentation aircraft as required.

c. The service platoon consists of three aircraft maintenance sections and an airfield service section.

d. The systems repair platoon provides the direct support maintenance for the Assault Support Helicopter Company.

3-4. MISSION

To provide tactical and logistical airlift for the movement of troops and supplies.

3-5. CAPABILITIES AND LIMITATIONS

a. Capabilities

(1) Operation of one helicopter with facilities for visual (VFR) air traffic control.

(2) One hundred percent mobility using organic vehicles and aircraft.

(3) Day and night operations under visual flight conditions (VFR) and reduced operations under weather conditions requireing instrument flight (IFR).

(4) Simultaneous radio communications with parent and supported unit.

(5) Transportation of loads internally externally or a combination of both.

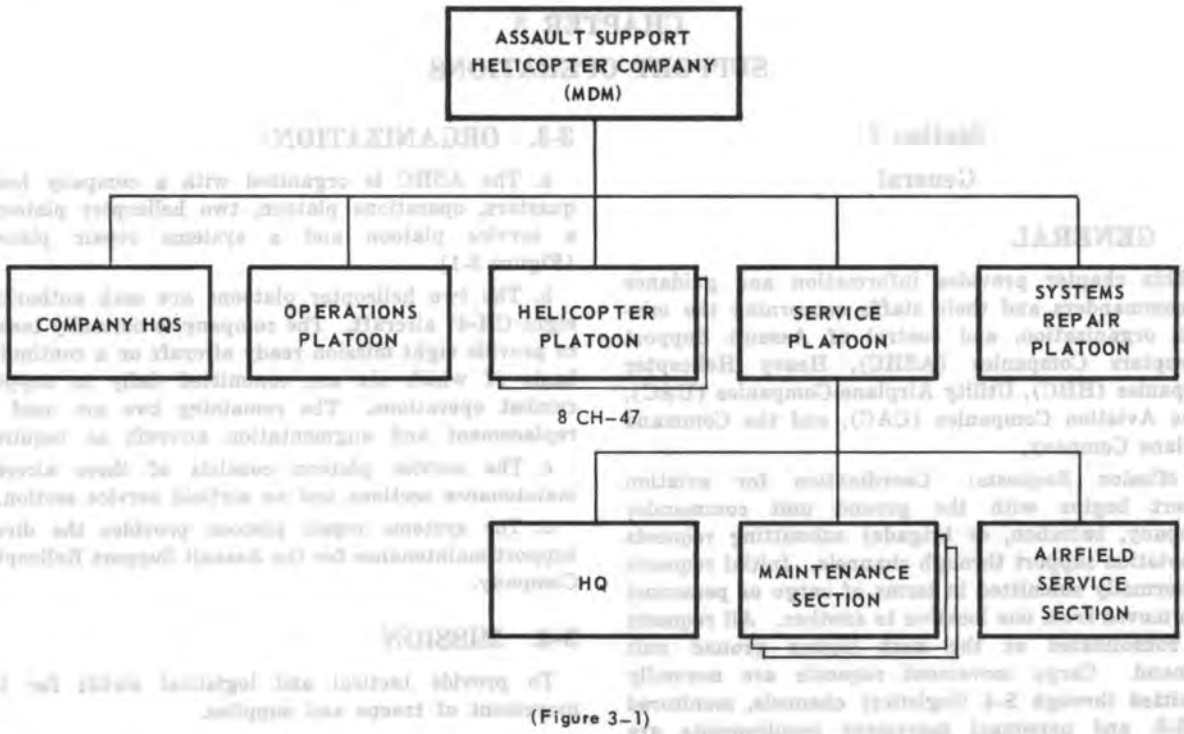
(6) Medical evacuation (24 litter patients per sortie).

(7) The ability to discharge or extract troops in heavy jungle by the use of the troop ladder (a flexible ladder which is deployed from the rear loading ramp of the aircraft).

(8) Raising or lowering of up to 600 pounds from a height of 125 feet by use of an internal hoist.

b. Limitations. Effective utilization of the ASHC requires commanders and their commanders and their staffs to understand the CH-37's limitations and to minimize these effects on operations. The most significant limitations are:

(1) Reduced flexibility of employment during periods of darkness, obstructed visibility and severe weather.



(Figure 3-1)

(2) Inadequate organic capability to provide local security.

(3) Extensive maintenance support required to permit sustained periods of operations.

(4) The large volume of POL resupply necessary to sustain CH-47 operations.

(5) No organic capability to provide armed escort for its own operations.

3-6. EMPLOYMENT

a. General

The CH-47 can be employed in numerous roles requiring the aerial delivery of loads weighing up to 13,000 pounds, depending on the fuel load and series of aircraft. The carying capabilities are different for the CH-47A, CH-47B, and CH-47C aircraft. The immediate establishment of liaison between the supporting and supported units is the most important factor to insure maximum aircraft utilization and successful mission accomplishment.

b. Missions

(1) Tactical airlift of artillery units.

(2) Tactical troop movements.

(3) Air movement of supplies and combat service or support units.

(4) Augmentation of Army Medical Service aeromedical evacuation elements.

(5) Aircraft recovery and rescue operations.

(6) Aerial delivery of CS.

c. Responsibilities

Maximum utilization of the limited CH-47 resources in RVN can only be realized when each area of responsibility is well planned, coordinated and executed. The following is a list of tasks that must be performed by the supported and the supporting units to insure that each mission is accomplished with ultimate effeciveness:

(1) Supported unit:

(a) Selection and management of PZ anl LZ to include:

1. Adequate size PZ and LZ.

2. Ground security.

3. Radio communications with supporting aircraft at both the PZ and LZ.

4. Current intelligence briefings for aircrews prior to their landing at location within a tactical area of operations.

5. Adequate markings, such as smoke or panels for LZ, PZ and load indentification.

6. Cargo nets, slings and other rigging equipment and rigging of all external loads. (Ref TM 55-450-11).

(b) Provisions for POL.

(c) Armed helicopter escort when operating into insecure areas.

(2) Supporting unit:

(a) Effect liaison (LNO) upon request from supported unit.

(b) Provide technical assistance (Pathfinders) to aid PZ/LZ management and inspection of loads for proper rigging.

d. Planning Considerations

Due to its unique versatility and capabilities, the Assault Support Helicopter Company can perform a wide variety of tasks; however, care should be exercised to insure that this valuable asset is not wasted through misuse. Guide lines for the tactical employment of medium helicopters are outlined below. This guidance is provided to establish a basic criteria by which operational missions are assigned and conducted.

(1) PZ/LZ selection and management.

(a) Medium helicopters are normally employed between secure areas.

(b) Rotor wash, resulting from hovering operations of the CH-47, exceeds 80 miles per hour. Care should be exercised in selecting PZ/LZ areas to avoid dusty or sandy areas, when possible, and to avoid operations near tents, bamboo or thatch huts, mess areas, etc.

(c) All PZs and LZs must be continually policed of loose items such as empty sand bags, tarpaulin, plywood or any other items which may be blown about by the rotor wash of a hovering helicopter. Flying debris in the LZ or PZ area is not only hazardous to the aircraft but is also dangerous to personnel on the ground. Canvas, or other debris ingested into the CH-47 rotor system, would almost certainly cause a major accident.

(d) Minimum clearance of the CH-47 from the ground is 18 inches. Care must be taken in the selection of landing areas to insure the area is free of stumps or foreign objects that would puncture the bottom of the aircraft.

(e) PZs should be selected as near to the LZ as feasible to reduce turn-around time.

(f) Helicopters should not be used in lieu of fixed wing aircraft for conducting airlifts from one fixed wing landing strip to another. When long distances are involved, consideration should be given to utilizing cargo airplanes or vehicles to preposition the loads at the nearest secure area to the LZ.

(g) The supporting aircraft must have radio contact with U.S. personnel on the ground at the PZs and LZs.

(h) Supported units must provide adequate marking, such as smoke or panels, for PZ/LZ and load indentification.

(2) Loads

(a) The lift capability of one CH-47B is equal to approximately five UH-1D's.

(b) The CH-47A can carry 8,000 pounds externally (sling load), internally or in combination, with a radius of action of 75 nautical miles. The CH-47B has an increased capability to carry a 10,000 pound load over the same radius of action. The CH-47C can carry an 8,000 pound load with a radius of 150 nautical miles. The CH-47C also has the load capability as the CH-47B when the fuel load is reduced. Installation of the T55-L-11 engines on the CH-47C will increase payload capabilities to approximately 15,000 pounds.

(c) 11,000 pounds can be carried by the CH-47A and 13,000 pounds by the CH-47B and C models by decreasing fuel and radius of action, but detailed prior planning with the supporting helicopter company must be accomplished.

(d) Figures quoted above are general guidelines and will be reduced as density altitude increases.

(e) Light loads which could be more readily transported by smaller and more economical aircraft should be assigned to another type unit.

(f) The ability of the CH-47 to transport loads both intenrnally and externally makes it ideally suited for transporting artillery units. For example, one CH-47 can carry a 105mm Howitzer with a basic load of 60 rounds of ammunition externally while carrying the gun crew internally. This unique capability allows the gun crew to begin a fire mission almost immediately upon landing at a new location.

(g) Determination of which type of loading (external or internal) to be used will be based on several variables. External loading will be dictated when the loading is too bulky to be loaded internally. Most heavy items of engineer equipment which require fork lifts and other material handling equipment for internal loading can be readily transported externally and positioned by the helicopter at a precise location within the LZ. Except when security or special cargo makes it desirable to prevent the load from being seen in flight, maximum utilization of external loading should be considered. Hookup and delivery of a properly prepared and positioned sling load can be accomplished in seconds while internal loading of cargo is normally a time-consuming operation. Frequently a combination of both methods will be desirable. For long hauls (one hour), internal loading may be desirable since the reduced drag will allow increased airspeed in flight.

(h) Preparation and positioning of loads in a PZ to expedite loading or sling hookup are requirements for efficient operations. Material and external loads should be positioned a sufficient distance apart to permit simultaneous loading operations. Since the CH-47 consumes fuel at a relatively constant rate, time lost during loading in a poorly organized loading area can seriously affect total unit mission capabilities.

(i) Unit commanders are responsible for the training of rigging teams. Slings, cargo nets, and

other rigging equipment must be provided by the supported unit through logistical channels. A list of equipment required for each type external (sling) load, the proper rigging procedures, storage, inspection and maintenance criteria for cargo sling equipment used in RVN are outlined in TM 55-450-11. It is of utmost importance that all slings be properly inspected prior to use to preclude failure during flight resulting in loss of valuable supplies and equipment and endangering the lives of personnel on the ground.

(j) The supporting helicopter company will provide a training team to give technical assitance when requested by the supported unit. This team will give formal instruction in CH-47 operations to include:

1. Aircraft capabilities and limitations.
2. Responsibilities of supporting unit.
3. Responsibilities of supported unit.
4. Charactestics and use of sling equipment.
5. Rigging procedures.
6. Equipment inspection criteria.
7. Management of PZs and LZs.
8. Hookup procedures and safety precautions.

The training team should be requested by any unit that is anticipating medium helicopter support, especially units with new personnel.

(3) Pathfinders

Pathfinders support is desirable during all operations involving CH-47 helicopters.

(4) POL Requirements

(a) POL consumption of the assault support helicopter company is a consideration which cannot be over-emphasized. The average fuel consumption of the CH-47 is approximately 300 gallons of JP-4 fuel per hour. Hydraulic fluid and engine oil consumption rates will vary. The company LNO should be consulted to assist in computing POL requirements.

(b) POL refueling points should be equipped with 350 GPM pumps to minimize the time required for refueling.

(c) Refueling points should be located near the LOC's in an open area easily accessible to the CH-47 and away from bunkers, buildings and etc. If possible, separate refueling points should be provided for CH-47's.

(5) Armed Helicopter Escort

Due to its size and reduced maneuverability, the medium helicopter is somewhat more vulnerable to enemy fire than utility helicopters. An armed helicopter escort is necessary when operating in areas threatened by enemy fire. When operating in areas that are susceptible to enemy fire or attack, the medium helicopter should remain at a secure area until the armed helicopter crews are briefed on the enemy situation and the supported unit is prepared to immediately load the helicopter upon its arrival.

(6) Mountainous Areas

Elevation and density altitude of mountainous terrain reduce the lift capability of helicopters operating in the central highlands by approximately 1000 pounds. Turbulence caused by winds blowing over mountainous terrain also reduce the mission capability of the helicopter. When planning cargo transporting missions in mountainous terrain it is imperative that detailed planning be accomplished with an LNO from the supporting helicopter company.

(7) Night Operations

The CH-47 has reduced flexibility of employment during periods of darkness or other conditions of reduced visibility. LZs and PZs must be large enough to preclude any possibility of rotor blades striking trees or other obstacles such as radio antennas or stumps. Radio contact with U.S. personnel on the ground is essential. The LZ mast be marked with easily identified lights. Navigation with reference to normal landmarks such as roads, streams and other terrain features readily seen during daylight becomes extremely difficult during hours of darkness.

e. Cargo Data and Management (CH-47)

(1) Maximum bulk load data for the CH-47 cargo compartment:

(a) Length 366 inches.

(b) Width 90 inches.

(c) Height 78 inches.

(d) 228 square feet of cargo space.

(e) 1,474 cubic feet of cargo space.

(f) The cargo ramp is hydraulically operated and its primary purpose is to bridge the cargo compartment to the ground for vehicle loading and off loading. In addition, the cargo ramp can be lowered and used as an extension of the cargo compartment. By using the cargo ramp in this manner the cargo compartment is lengthened by 8 feet 2 inches, while the width remains the same. This procedure gives an additional 61.8 square feet of cargo space.

(2) The cargo tie down straps and chains for internal cargo are furnished by the helicopter unit. The supported unit must provide trained personnel for loading and lashing.

f. Coordination

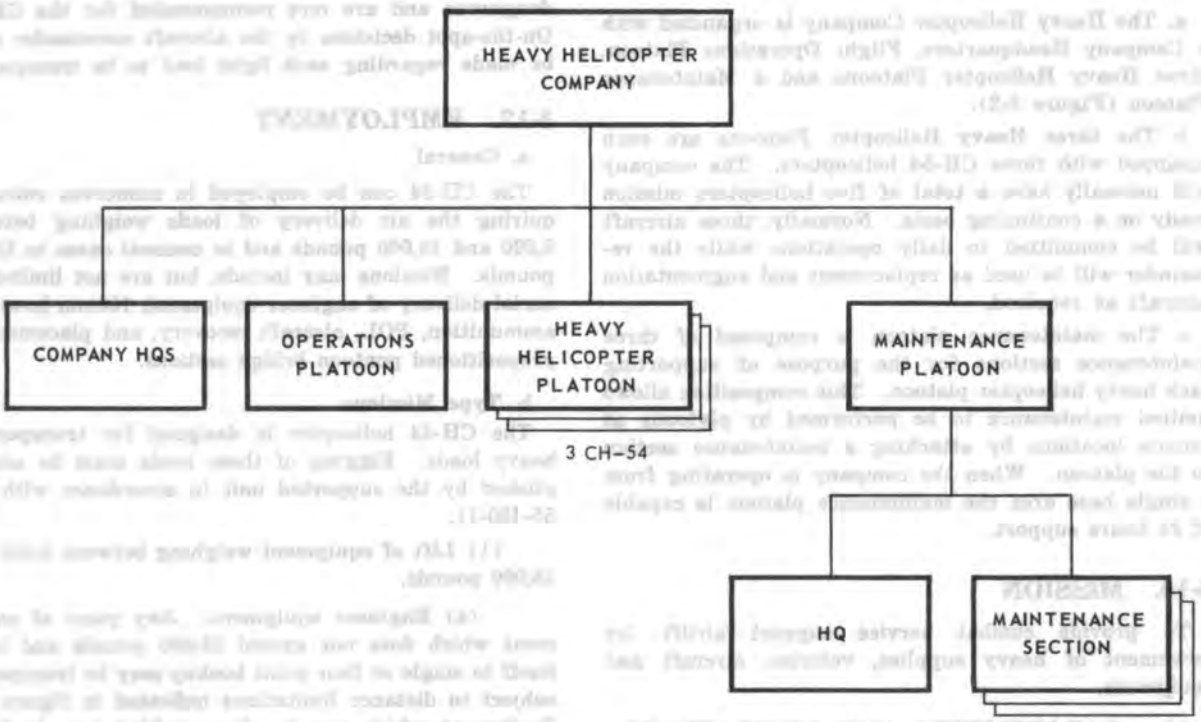
The successful completion of an operation involving the assault support helicopter company, as with any other aviation unit, is based on sound planning and coordination with each element involved in the operation.

(1) Ground controllers at both PZ and LZ must begin radio monitoring 30 minutes prior to the expected arrival of the CH-47 helicopter.

(2) Each controller should know where each load is located and the exact drop off location. This is particularly important when several ground units are to receive supplies in different locations of a large LZ.

(3) Radio frequencies, call signs and coordinates must be furnished to the aviation unit in advance of the operation.

(4) Before landing at locations within a tactical area of operation, flight crews must have had a cur-



(Figure 3-2)

rent intelligence briefing and must be able to make radio contact with U.S. personnel located at the landing site.

(5) The immediate establishment of liaison between the supporting and supported unit is an important factor in insuring successful operations.

3-7. SAFETY PRECAUTIONS

The design and inherent characteristics of the CH-47 differ remarkably from other helicopters; therefore, all personnel must be aware that these differences can create potentially dangerous and unsafe conditions.

a. Personnel should not approach or depart the CH-47 from the direct front or rear. Preferred route is ninety degrees to the side of the aircraft because the front rotor blade could flex to less than six feet from the ground and the engine heat cone to the rear generates temperatures to 200 degrees Fahrenheit at fifty-five feet and over 900 degrees Fahronheit at ten feet.

b. The high noise level of the CH-47 can cause permanent damage to the inner ear and a cumulative hearing loss. Troops working in the vicinity of the CH-47 should be provided ear plugs or cotton.

c. No exposed personnel, tents, loose equipment or vehicles with canvas should be within sixty meters of a CH-47 landing or pickup zone. Also the PZ/LZ area must be free of debris and foreign objects to prevent engine and rotor systems damage. It cannot be over-emphasized that the rotor down wash from the Chinook may cause damage to any structure within sixty meters of the aircraft.

d. All vehicles and back pack radios must have whip antennas removed or tied down when used near the CH-47.

e. Hookup crews are to wear goggles and ear plugs.

f. A grounding rod must be used to discharge any static electricity from the cargo hook before hooking up a load. Hook up personnel should not touch the aircraft during hook up unless a ground static line has been used to discharge the static electricity. Only the nylon donut should make contact with the cargo hook and hookup personnel should clear the aircraft a distance of fifty (50) feet immediately after hookup.

g. When feasible, highly explosive or volatile material should be carried externally to facilitate jettisoning of loads during emergency situations.

Section III
CH-54 Operations

3-8. GENERAL

The purpose of this section is to provide information and guidance in the employment of Heavy Helicopter Companies (HHC) equipped with the CH-54 helicopter.

3-9. ORGANIZATION

a. The Heavy Helicopter Company is organized with a Company Headquarters, Flight Operations Platoon, three Heavy Helicopter Platoons and a Maintenance Platoon (Figure 3-2).

b. The three Heavy Helicopter Platoons are each equipped with three CH-54 helicopters. The company will normally have a total of five helicopters mission ready on a continuing basis. Normally, three aircraft will be committed to daily operations while the remainder will be used as replacement and augmentation aircraft as required.

c. The maintenance platoon is composed of three maintenance sections for the purpose of supporting each heavy helicopter platoon. This composition allows limited maintenance to be performed by platoons at remote locations by attaching a maintenance section to the platoon. When the company is operating from a single base area the maintenance platoon is capable of 24 hours support.

3-10. MISSION

To provide combat service support airlift for movement of heavy supplies, vehicles, aircraft and equipment.

3-11. CAPABILITIES AND LIMITATIONS

a. Capabilities

(1) The CH-54 has the design capability of lifting 20,000 pounds. Due to the addition of armor plate and other essential equipment the lifting capability is reduced to 18,000 pounds.

(2) The CH-54 with the cable and winch assembly (single point suspension) is capable of emplacing loads with precision. This enables loads to be placed on prepared bases or in restricted locations.

(3) Using single point suspension, loads may be rapidly hooked up and dropped off.

b. Limitations

(1) Loads greater than 14,000 pounds require a reduction of fuel load on the CH-54. A trade off between weight of load and weight of fuel must be made (Figure 3-3).

(2) Dusty soils or loose objects in the pickup zone or landing zone create a hazard to both air crews and ground personnel. The downwash of the CH-54 approaches 120 knots and will create dust clouds which obscure vision and cause damage to aircraft components.

(3) Instrument flying conditions limit the CH-44 to loads which can be hooked up with four point suspension system Although some single point suspension loads can be carried safely under instrument conditions, unstable loads oscillate and it is rarely possible to damper or stop the oscillation solely by reference to flight instruments.

(4) Loads weighing less than 8,000 pounds have a tendency to be unstable when transported by the single point suspension method. Light loads may be dangerous and are mot recommended for the CH-54. On-the-spot decisions by the aircraft commander must be made regarding each light load to be transported.

3-12. EMPLOYMENT

a. General

The CH-54 can be employed in numerous roles requiring the air delivery of loads weighing between 8,000 and 16,000 pounds and in unusual cases to 18,000 pounds. Missions may include, but are not limited to, aerial delivery of engineer equipment, 155mm howitzer, ammunition, POL, aircraft recovery, and placement of prepositioned pontoon bridge sections.

b. Type Missions

The CH-54 helicopter is designed for transporting heavy loads. Rigging of these loads must be accomplished by the supported unit in accordance with TM 55-450-11.

(1) Lift of equipment weighing between 8,000 and 18,000 pounds.

(a) Engineer equipment. Any piece of equipment which does not exceed 18,000 pounds and lends itself to single or four point hookup may be transported subject to distance limitations indicated in figure 3-3. Equipment which can be disassembled into loads of less than 18,000 pounds may be transported and reassembled at destination.

(b) Artillery Weapons (155mm howitzer). Artillery weapons (155mm) may be lifted with section equipment secured to trails. Total weight of the 155mm Howitzer plus equipment should be approximately 14,000 to 15,000 pounds.

(2) Ammunition. Ammunition may be transported in A-22 bags, cargo nets or on pallets.

(3) POL in collapsible drums. For normal operations four 500 gallon collapsible drums are transported. Five drums may be transported over reduced distances.

(4) Aircraft recovery. Aircraft weighing less than 18,000 pounds may be recovered subject to distance limitations. The 100 foot hoist cable gives the CH-54 the capability of recovering downed aircraft from areas with limited accessibility; however, the load lifting capability of the CH-54 is reduced when it is operated out of ground effect.

(5) Ship to shore. High priority cargo may be unloaded from vessels and transported directly to inland locations.

(6) Bridge emplacement. Preconstructed bridge sections as long as 55 feet may be transported and emplaced on prepared sites.

(7) Passenger and cargo transport—special purpose module. Personnel and cargo may be transported in the special purpose module. Two modules are available, one seating 67 passengers (currently restricted from passenger use except for tactic emergency) and one seating 45 passengers. The following disad-

vantages of the special purpose module limit the H-54 helicopters' versatility:

(a) The weight of the modules, 3,500 and 3,000 pounds, reduce the pay load capability of the helicopter.

(b) Approximately 30 minutes are required for attachment or detachment of the module which must be accomplished on level ground.

(c) Ground clearance of the module, 12 inches, restricts landings and takeoffs to smooth, level areas.

(d) The CH-54 helicopter cannot transport other external loads when the module is attached.

(e) Manual loading and unloading of the module is required.

c. Planning considerations

Numerous factors must be considered to achieve maximum utilization of the CH-54.

(1) The distance from pick up to drop off should be as short as possible. Ground transport or Air Force cargo planes should be used to preposition loads in order to shorten distances and reduce fuel consumption enabling a larger number of sorties to be flown per fuel load.

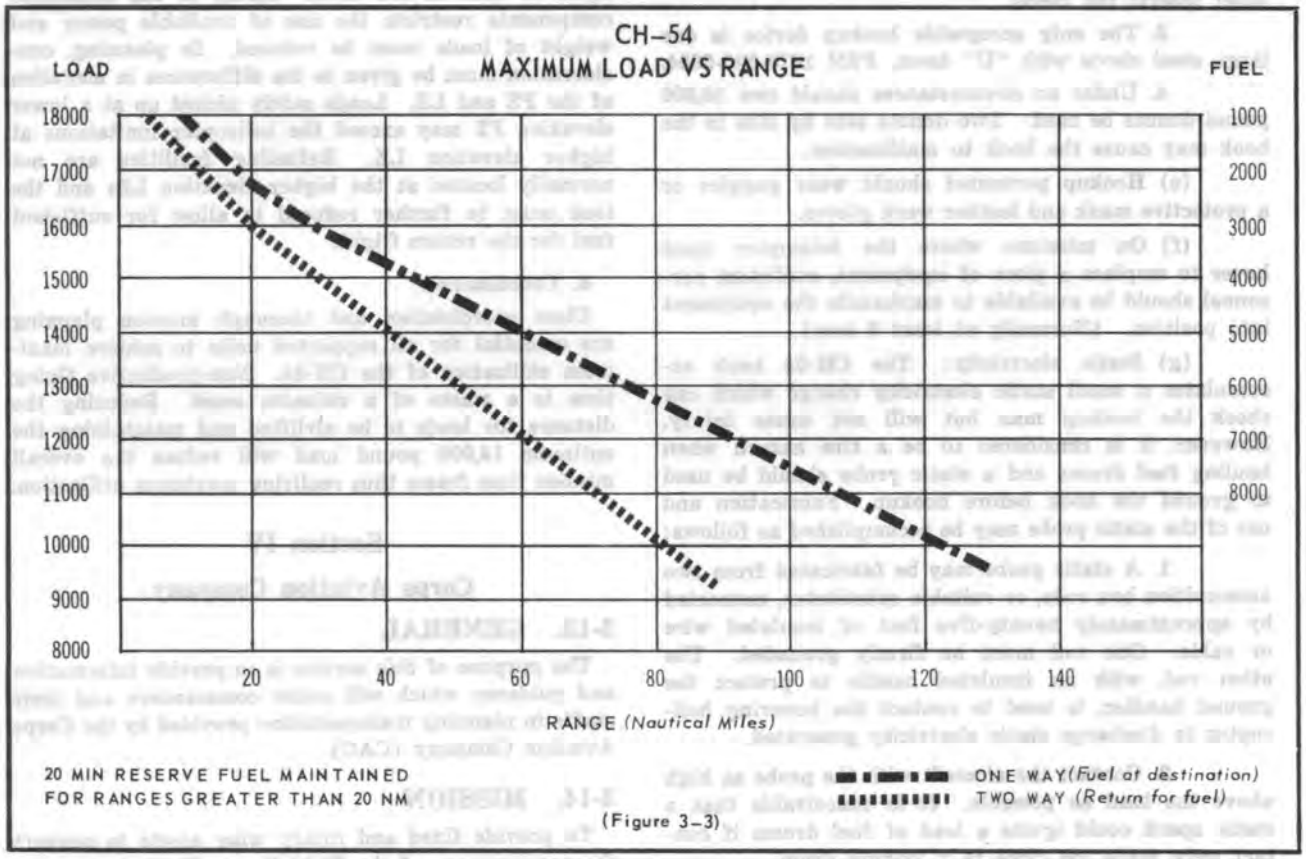
(4) External loading is accomplished by one of two methods; single point suspension or four point suspension.

(2) Although the CH-54 is capable of airlifting equipment up to 18,000 pounds, the optimum load is 14,000 pounds, due to the high fuel consumption of the aircraft. With a maximum payload of 18,000 pounds the CH-54 is limited to approximately ten to fifteen minutes flight time. Using the optimum payload of 14,000 pounds the CH-54 can carry sufficient fuel for approximately 40-45 minutes flying time. Therefore, in a given time frame more cargo tonnage can be transported using the 14,000 pound optimum load because of the time lost in refueling when carrying maximum loads. It is strongly recommended that optimum loads be used in lieu of maximum loads.

(3) Sufficient fuel must be located in close proximity to the pickup and drop off zone due to the high fuel consumption.

(a) Single Point Suspension. This is the normal means of external loading. It takes full advantage of the cable and winch assembly capabilities which may be used to extract loads from inaccessible areas. It provides the quickest hookup procedures and is generally used when transporting bulky loads.

(b) Four Point Suspension. The four point suspension system may be used to lift loads which lend themselves to four point hookup such as trucks, conex containers, and items of engineer equipment which have lifting eyes installed. Disadvantages of using the



(Figure 3–3)

four point suspension system instead of the single point suspension system are.

1. The CH-54 must be able to land at pickup and drop-off sites.

2. An average of five minutes is necessary to make a four point hookup or release.

3. The jettison capability during flight does not have an emergency backup system.

(5) Rigging. Rigging of loads and providing trained hookup crews is the responsibility of the unit being supported. Rigging material should be inspected to determine serviceability and age in accordance with TM-55-450-11. Ground crew duties are also discussed in TM-55-450-11.

(a) Rigging of loads must be accomplished by the supported unit prior to the arrival of the CH-54.

(b) Rigging of loads must be in accordance with TM-55-450-11.

(c) It is imperative that the supported unit use proper strength and serviceable rigging materials.

(d) Considerations peculiar to the CH-54 are:

1. Rigging straps should be as short as possible commensurate with the proper rigging techniques. (Short straps provide for low hover and therefore more effective power utilization of the helicopter).

2. The hookup men must be available to hook each load. One man must catch the hook while the other inserts the clevis.

3. The only acceptable hookup device is one large steel clevis with "U" down, FSN 1670-090-5354.

4. Under no circumstances should two 10,000 pound donuts be used. Two donuts side by side in the hook may cause the hook to malfunction.

(e) Hookup personnel should wear goggles or a protective mask and leather work gloves.

(f) On missions where the helicopter must hover to emplace a piece of equipment, sufficient personnel should be available to manhandle the equipment into position. (Normally at least 8 men).

(g) Static electricity: The CH-54 hook accumulates a small static electricity charge which can shock the hookup man but will not cause injury. However, it is considered to be a fire hazard when hauling fuel drums and a static probe should be used to ground the hook before hookup. Fabrication and use of the static probe may be accomplished as follows:

1. A static probe may be fabricated from two ammunition box rods, or suitable substitutes, connected by approximately twenty-five feet of insulated wire or cable. One rod must be firmly grounded. The other rod, with an insulated handle to protect the ground handler, is used to contact the hovering helicopter to discharge static electricity generated.

2. Contact the aircraft with the probe as high above the load as possible. It is conceivable that a static spark could ignite a load of fuel drums if contact were made too close to a leaking drum.

(6) Qualified pathfinders, experienced and knowledgeable concerning airlift of supplies and equipment, should inspect loads prior to hookup to preclude dropping loads due to improper rigging.

(7) The LZ and PZ must be free of debris and located away from the tents and buildings because the rotor down wash from the CH-54 approaches a velocity of 120 knots. During the day season, dusty areas must be avioded due to this down wash and the possibility of the crew losing ground reference at a hover. The down wash pattern of the CH-54 tends to pick up dust and debris and pull it through the rotor blades causing damage to the helicopter and hazards to personnel. The LZ and PZ must be free of debris and, during the dry season, located in a grassy area or PSP/neneprime area.

(8) Armed helicopter escort is necessary for the CH-54 when conducting missions in high threat areas or in areas where weather or other factors require the helicopter to fly at low altitude. Armed helicopter escort is necessary due to the lack of defensive weapons on the aircraft which makes the CH-54 vulnerable to enemy ground fire.

(9) The CH-54, when operated in mountainous areas, will not be able to lift the loads normally transported at lower elevations. The less dense air at the higher altitudes reduces the efficiency of the rotor system and more power is required for performance equal to that at sea level. Stress to the helicopter components restricts the use of available power and weight of loads must be reduced. In planning, consideration must be given to the differences in elevation of the PZ and LZ. Loads safely picked up at a lower elevation PZ may exceed the helicopter limitations at higher elevation LZ. Refueling facilities are not normally located at the higher elevation LZs and the load must be further reduced to allow for sufficient fuel for the return flight.

d. Coordination

Close coordination and thorough mission planning are essential for all supported units to achieve maximum utilization of the CH-54. Non-productive flying time is a waste of a valuable asset. Reducing the distance for loads to be airlifted and maintaining the optimum 14,000 pound load will reduce the overall mission time frame thus realizing maximum utilization.

Section IV

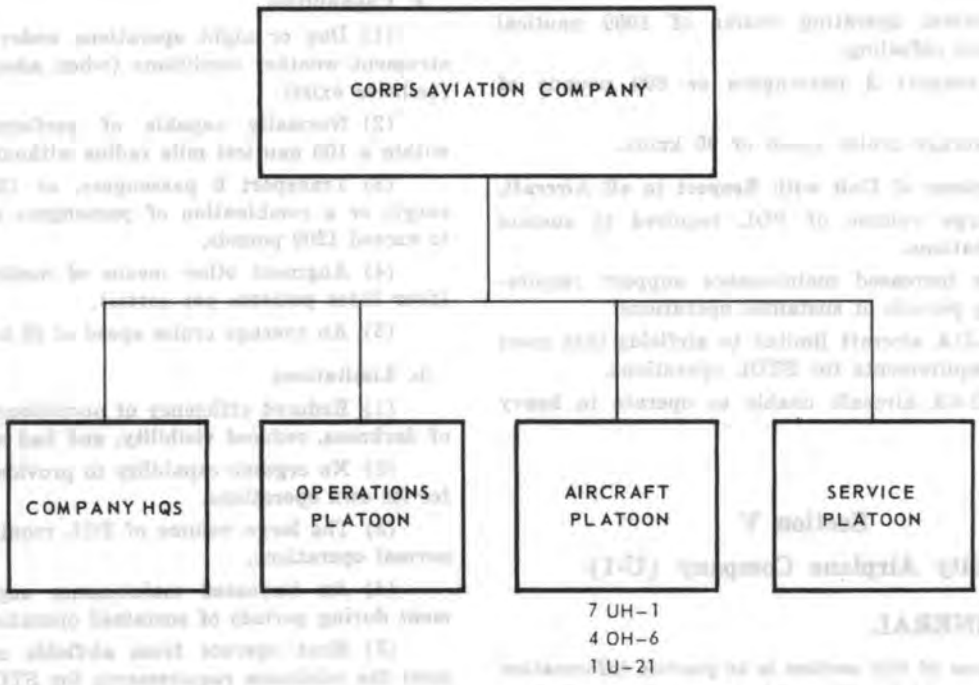
Corps Aviation Company

3-13. GENERAL

The purpose of this section is to provide information and guidance which will assist commanders and their staffs in planning transportation provided by the Corps Aviation Company (CAC).

3-14. MISSION

To provide fixed and rotary wing assets to support the requirements of the Field Forces Headquarters.



(Figure 3-4)

3-15. ORGANIZATION

A typical Corps Aviation Company is organized as follows (Figure 3-4):

a. The company headquarters which includes the administrative and supply elements.

b. An operations platoon.

c. A service platoon which includes the maintenance an airfield service section.

d. One aircraft platoon which has a helicopter section and a utility aircraft section.

The Corps Aviation Companies provide the same support to the Field Forces Headquarters as the Command Airplane Companies provides the Headquarters MACV, USARV, and U.S. Agencies in the Saigon area. Figure 3-4 shows a typical Corps Aviation Company (TOE 1-127D). The three Corps Aviation Companies assigned to the 1st Aviation Brigade have been modified to meet the requirements of the terrain and size of the geographical area of operation of the respective supported headquarters.

3-16. CAPABILITIES AND LIMITATIONS

The Corps Aviation Companies, with their variety of aircraft, have many capabilities and limitations which should be considered by commanders and their staffs in planning and directing airmobile support. Some of the most significate are:

a. Capabilities of the U-21A

(1) Day and night operations under visual and instrumental conditions when adequate terminal facilities exist.

(2) Capable of missions within 450 nautical miles radius without refueling.

(3) Transport 8 passengers or 1450 pounds of cargo or any combination equal to 1450 pounds.

(4) For use in transporting VIP's the aircraft is limited to 5. And 4 is recommended number for optimum comfort.

(5) Augment other means of medical evacuation (3) litters, 2 ambulatory patients and 1 attendant.

(6) Average speed 180 knots.

b. Capabilities of UH-1H aircraft.

(1) Day or night operations under visual conditions with a limited capability for operation under instrument weather conditions because of limited number of instrument qualified pilots.

(2) Capable of operating within 100 nautical mile radius without refueling.

(3) Transport 2000 pounds of cargo or 9 passengers or any combination to equal 2000 pounds.

(4) May be used for medical evacuation transport of 6 litter patients.

(5) Average cruise speed of 90 knots.

c. OH-6A Capabilities.

(1) Day or night operations under visual weather conditions only.

(2) Normal operating radius of 1000 nautical miles without refueling.

(3) Transport 3 passengers or 600 pounds of cargo.

(4) Average cruise speed of 90 knots.

d. Limitations of Unit with Respect to all Aircraft.

(1) Large volume of POL required to sustain normal operations.

(2) An increased maintenance support requirement during periods of sustained operations.

(3) U-21A aircraft limited to airfields that meet minimum requirements for STOL operations.

(4) OH-6A aircraft unable to operate in heavy rain.

Section V
Utility Airplane Company (U-1)

3-17. GENERAL

The purpose of this section is to provide information and guidance which will assist commanders and their staffs in planning operations which will be supported by the utility airplane company (U-1).

3-18. MISSION

The following are missions normally performed by the utility airplane company (U-1):

a. The movement of combat and combat support elements.

b. Air movement of combat supplies and equipment within the tactical zone.

c. Aeromedical evacuation.

d. The movement of airborne and pathfinder elements to their drop zones.

3-19. ORGANIZATION

The utility airplane company (U-1) is organized as follows (Figure 3-5):

a. The company headquarters, which includes the administrative and supply elements, and the operations platoon with a communications section.

b. Two flight platoons of eight U-1 aircraft each. Each platoon will normally have six of its assigned aircraft mission ready on a continuing basis.

c. The service platoon includes a maintenance section, airfield service section and a systems repair section.

3-20. CAPABILITIES AND LIMITATIONS

The utility airplane company (U-1) has many capabilities and limitations which should be considered by commanders and their staffs in planning and conducting airmobile operations. Some of the most significant are:

a. Capabilities

(1) Day or night operations under visual or instrument weather conditions (when adequate terminal facilities exist).

(2) Normally capable of performing missions within a 100 nautical mile radius without refueling.

(3) Transport 6 passengers, or 1200 pounds of cargo, or a combination of passengers and cargo not to exceed 1200 pounds.

(4) Augment other means of medical evacuation (four litter patients per sortie).

(5) An average cruise speed of 90 knots.

b. Limitations

(1) Reduced efficiency of operations during hours of darkness, reduced visibility, and bad weather.

(2) No organic capability to provide armed escort for its own operations.

(3) The large volume of POL required to sustain normal operations.

(4) An increased maintenance support requirement during periods of sustained operations.

(5) Must operate from airfields or strips that meet the minimum requirements for STOL operations.

(6) Wind velocities in excess of 10 knots will dictate landing or takeoff into the wind.

(7) The size of the cargo door and compartment restrict the size of packaging for loads to be carried. The company's LNO can provide information on package sizes which are acceptable. (See Annex A this section).

3-21. PLANNING AND COORDINATION

Planning and coordination for operations involving the utility airplane company are no different from any other aviation unit and its supported ground unit. The basic principles remain the same. The most important factor in this phase is the establishment of liaison with the supported unit. For all large airmobile operations a liaison officer will be sent from the aviation company to the supported unit as soon as the mission is received.

3-22. SPECIAL CONSIDERATION

Due to its unique capabilities and the constant demands made upon this type unit, care must be exercised to ensure that this valuable asset is not wasted by misuse.

a. Missions which could be more readily accomplished by smaller and more economical aircraft should be assigned to another type unit.

b. To exploit the capabilities of this type unit, effort should ne made to provide productive sorties for each leg of a mission. An example would be to haul ammunition forward and to evacuate wounded on the return trip.

ANNEX A

Maximum Package Size Table

U-1A
(OTTER) MAXIMUM PACKAGE SIZE TABLE

PACKAGE LENGTH IN INCHES	PACKAGE WIDTH IN INCHES													
	14	16	18	20	22	24	26	28	30	32	34	36	38	40
	PACKAGE HEIGHT IN INCHES													
45	45	45	45	45	45	45	45	45	44	44	44	44	43	42
50	45	45	45	45	45	45	45	45	44	44	44	44	43	42
55	45	45	45	45	45	45	45	45	44	44	44	44	43	42
60	45	45	45	45	45	45	45	45	44	44	44	44	43	
65	45	45	45	45	45	45	45	45	44	44	44	44		
70	45	45	45	45	45	45	45	45	44	44				
75	45	45	45	45	45	45	45	45	44					
80	45	45	45	45	45	45	45	45						
85	45	45	45	45	45	45	45							
90	45	45	45	45	45	45	45							
95	45	45	45	45	45	45								
100	45	45	45	45	45									
105	45	45	45	45	45									
110	45	45	45	45										
115	45	45	45	45										
120	45	45	45											
125	45	45	45											
130	45	45	45											
135	45	45												
140	45	45												

EXAMPLE NO. 1

L - 55 INCHES
W - 40 INCHES
H - 42 INCHES

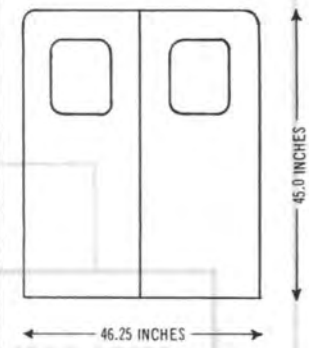
Package will pass through doors

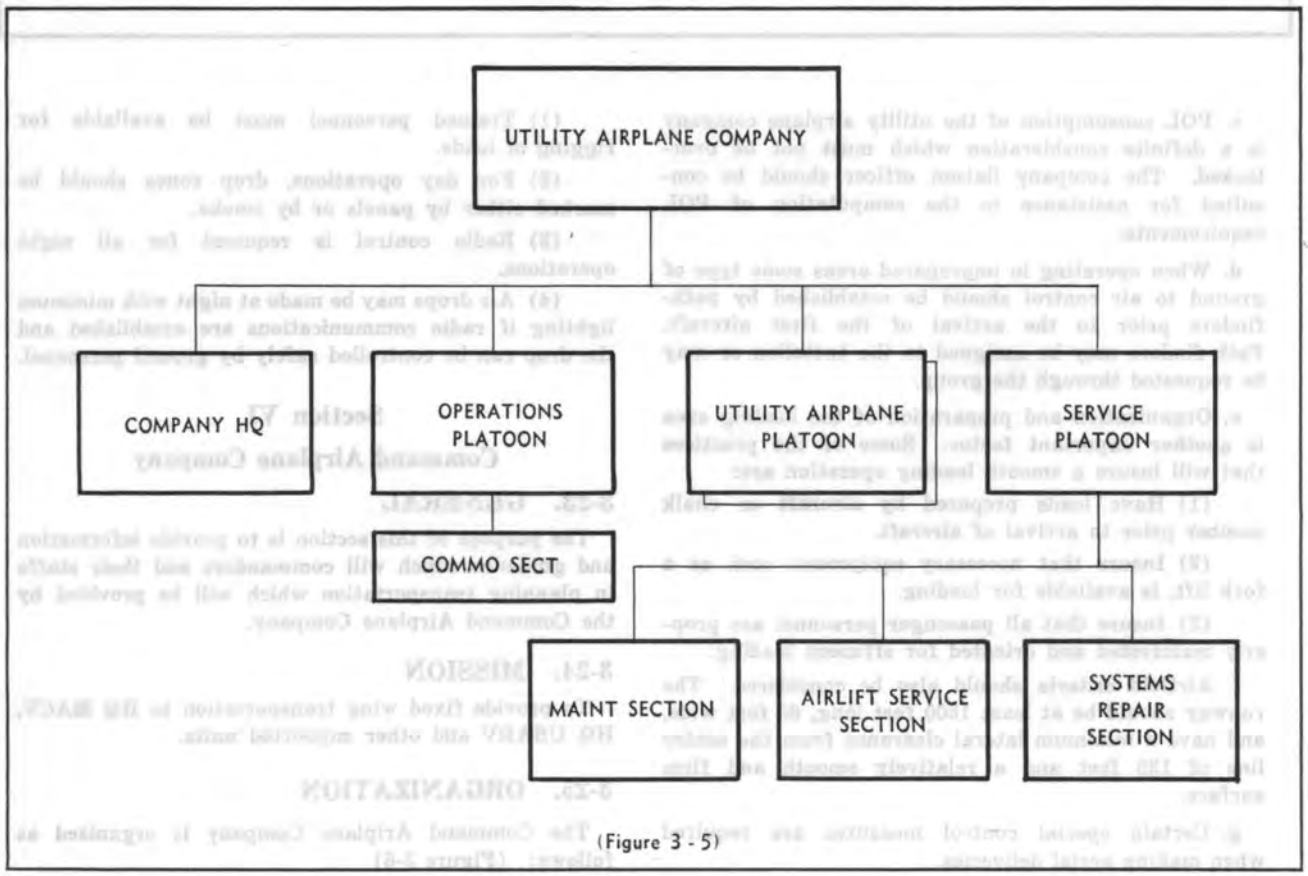
EXAMPLE NO. 2

L - 50 INCHES
W - 40 INCHES
H - 44 INCHES

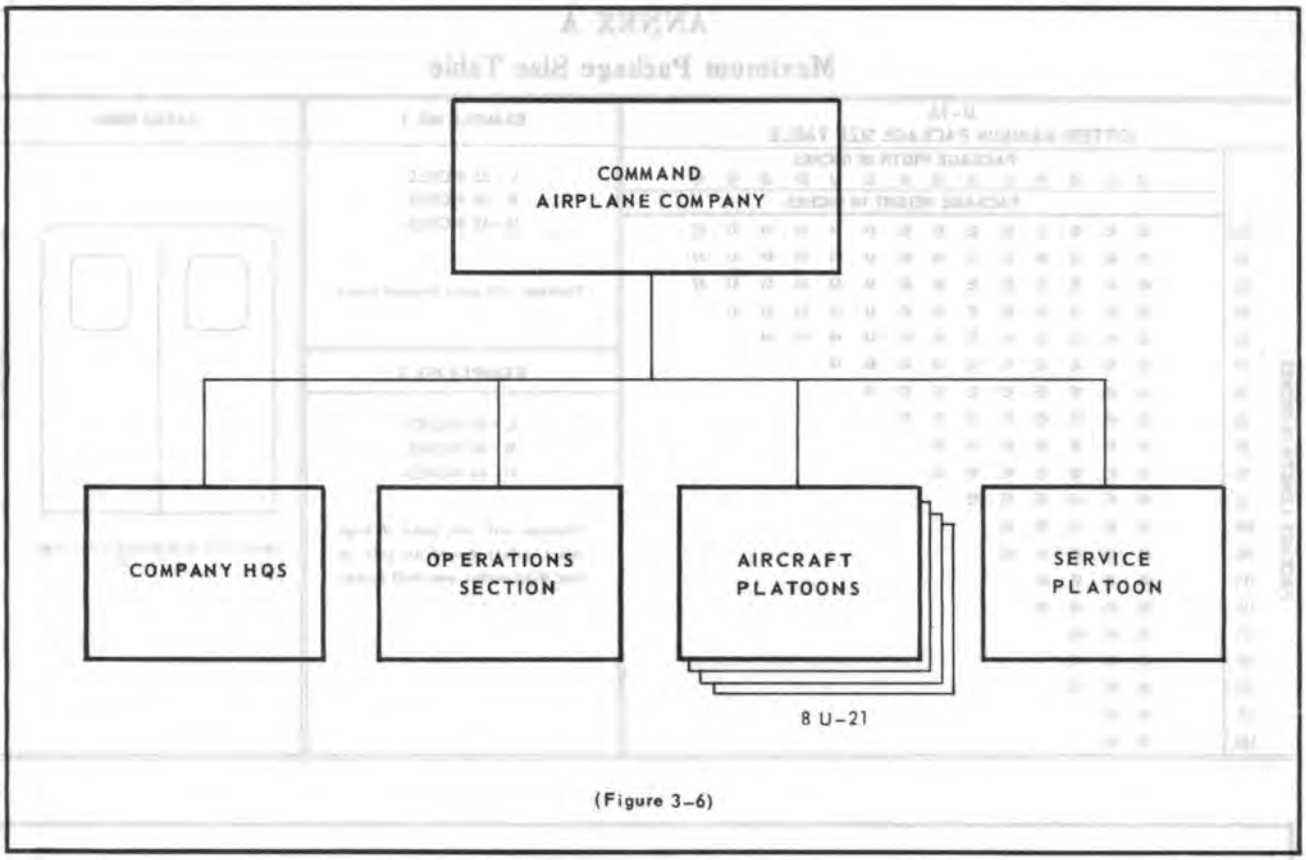
Package will not pass through doors unless turned on side so that W-44 inches and H-40 inches

CARGO DOOR





(Figure 3 - 5)



(Figure 3-6)

c. POL consumption of the utility airplane company is a definite consideration which must not be overlooked. The company liaison officer should be consulted for assistance in the computation of POL requirements.

d. When operating in unprepared areas some type of ground to air control should be established by pathfinders prior to the arrival of the first aircraft. Path finders may be assigned to the battalion or may be requested through the group.

e. Organization and preparation of the loading area is another important factor. Some of the practices that will insure a smooth loading operation are:

(1) Have loads prepared by aircraft or chalk number prior to arrival of aircraft.

(2) Insure that necessary equipment, such as a fork lift, is available for loading.

(3) Insure that all passenger personnel are properly mainfested and oriented for efficient loading.

f. Airfield criteria should also be considered. The runway should be at least 1500 feet long, 60 feet wide, and have a minimum lateral clearance from the center line of 135 feet and a relatively smooth and firm surface.

g. Certain special control measures are required when making aerial deliveries.

(1) Trained personnel must be available for rigging of loads.

(2) For day operations, drop zones should be marked either by panels or by smoke.

(3) Radio control is required for all night operations.

(4) Air drops may be made at night with minimum lighting if radio communications are established and the drop can be controlled safely by ground personnel.

Section VI

Command Airplane Company

3-23. GENERAL

The purpose of this section is to provide information and guidance which will commanders and their staffs in planning transportation which will be provided by the Command Airplane Company.

3-24. MISSION

To provide fixed wing transportation to HQ MACV, HQ USARV and other supported units.

3-25. ORGANIZATION

The Command Ariplane Company is organized as follows: (Figure 3-6)

a. The Company Headquarters which includes the administrative and supply elements.

b. An operations section.

c. A service platoon which includes the maintenance and airfield service sections.

d. Four aircraft platoons with 8 aircraft each. Each platoon will normally have 6 aircraft mission ready on a continuing basis.

3-26. CAPABILITIES AND LIMITATIONS

a. Capabilities

(1) Day or night operations under visual or instrument weather conditions (when adequate terminal facilities exist).

(2) Normally capable of performing missions within a 450 nautical mile radius without refueling.

(3) Transport seven (7) passengers or 1450 pounds of cargo or any combination of passengers and cargo not to exceed 1450 pounds.

(4) Augment other means of medical evacuation (3 litters, 2 ambulatory patients and one (1) attendant).

(5) Average cruise speed of 180 knots.

b. Limitations

(1) Large volume of POL required to sustain normal operations.

(2) An increased maintenance support requirement during periods of sustained operations.

(3) Must operate from airfields or strips that meet the minimum requirements for STOL operations.

3-27. PLANNING AND COORDINATION

a. Due to the high volume of air travel requests, the SGS, MACV, will process and coordinate all requests for CAC air transportation within the Saigon area.

b. The SGS, USARV, will process and coordinate all requests for CAC air transportation within the Long Binh area.

c. VIP requests for General Officers or U.S. Government Civilians in grades GS-16 and above will be scheduled as VIP flights. Requests will be scheduled thru the Assistant SGS, Protocol, Long Binh.

d. Routine requests will be scheduled and coordinated by the Assistant SGS, Flight Scheduling, Long Binh, NLT 1200 hours on the day prior to the requested flight. Late requests and changes submitted after 1200 hours will not be honored.

e. Emergency flight requests may be made directly to the Assistant SGS, Flight Scheduling, at any time. Such requests must have necessary approval prior to the flight. Emergency flights normally require a cancellation of a previously scheduled flight.

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CHAPTER 4
PATHFINDER OPERATIONS

Section I
General

4-1. GENERAL

a. This chapter is a guide for commander and staffs of ground, airmobile, and aviation units in organizing, training, and employing a pathfinder detachment to furnish navigational assistance and terminal guidance to Army aircraft.

b. The tactics, techniques, and procedures described herein for the organization, planning, preparation and execution of various types of missions are not inflexible rules, but are guides which commanders should modify as the varying conditions of airmobile operations require.

c. The habitual and proper use of pathfinders greatly simplifies and improves actions in both the pickup and landing zones and thereby helps to insure the overall success of the operation.

4-2. MISSION

a. The primary mission of the pathfinder detachment is to provide navigational assistance to Army aircraft through operation of en route navigation, air landing, or air delivery facilities on or over friendly, enemy-threatened, or enemy-dominated areas.

b. Additional missions for the pathfinder detachment are to assist the lifted unit in preparing and positioning loads and the lift unit by providing guidance to aircraft arriving in the PZ. When there are limited pathfinder resources available, priority will be given to LZ control and navigational assistance. The principles of operation found in this chapter apply equally to both missions.

4-3. ORGANIZATION

a. Pathfinder Detachment. An airmobile pathfinder detachment consists of two officers and thirteen enlisted men. While qualified pathfinders are normally parachutists this is not a prerequisite as pathfinders are rarely deployed in Vietnam by this method. Detachment members must be crosstrained in the duties of all other members of the detachment.

b. Pathfinder detachments are assigned to HHC of each aviation battalion. The detachments are normally employed as four man teams.

4-4. CAPABILITIES AND LIMITATIONS

a. Capabilities. Pathfinder detachments are capable of:

(1) Infiltrating an objective area by land, sea, or air.

(2) Indicating, with electronic and visual navigation aids, the desired direction(s) and route(s) of movement for aircraft and the identity of selected points of the terrain; the identity and location of low-level extraction and airlanded delivery areas; emergency ground-to-air signals; direction of landing, runways. taxiways, and parking areas for fixed-wing aircraft; directions and points of landing for helicopters, and the presence of obstacles to aircraft.

(3) Furnishing aviators, tactical commanders, and higher headquarters with information relative to the enemy and friendly situation, and terrain conditions in the delivery area. Limited weather observations can be provided to include wind velocity and directions, cloud cover, visibility, approximate ceiling, and density altitude.

(2) Providing aircraft commanders with information on landing sites, traffic patterns, coordinates, time and maximum ordinate of artillery and mortar fires and providing taxi, hover, parking, and take off instructions. Additionally they provide advice and limited physical assistance in preparing and positioning troops, supplies and equipment for air movement.

(5) Selection, operation, and limited improvement of landing zones for rotary and/or fixed-wing. aircraft.

(6) Indicating (by means of visual aids) the location of aircraft parking and unloading points, the initial direction of movement, and the designated assembly points for personnel, equipment and supplies.

(7) Furnishing operators to handle radio and/or limited wire communications within landing zones and between these zones and the headquarters directing the operation.

(8) Each pathfinder detachment is organized and equipped to establish and operate:

(a) Day or night control facilities for the simultaneous landing of a helicopter battalion (54 aircraft) at a single location or 18 aircraft at three separate company-size landing sites. Include is the provision for one release point (RP).

(b) Two day or night fixed-wing airfields.

(c) Two day or night resupply or personnel drop zones.

b. Limitations. Organic personnel and equipment strength of pathfinder detachments is such that their employment should be limited primarily to aircraft guidance. Use of the pathfinders by ground units for other duties is to be avoided as it detracts from their normal functions. It is necessary that detachments be augmented by additional personnel from a supported unit to:

(1) Remove major obstacles.

(2) Recover and assemble equipment and supplies.

(3) Operate additional ground net radios and telephones.

(4) Transport items of equipment.

Section II
Planning

4-5. INITIAL COORDINATION

At the earliest practicable time, the appropriate level commander issues a warning order alerting the pathfinder unit of its forthcoming support mission. The pathfinder commander establishes liaison with the commander of the supported aviation unit as soon as possible after receipt of the warning order and joins the battalion staff in planning the operation.

4-6. INITIAL PREPARATION

a. Inspection of the pathfinder unit's personnel and equipment begins immediately upon receipt of the warning order.

b. Equipment is prepared in accordance with the following priority:

(1) Communications equipment.

(2) Navigation aids.

(a) Electronic.

(b) Visual.

(3) Assembly aids.

(4) Weapons.

(5) Miscellaneous items.

4-7. JOINING WITH THE SUPPORT UNIT

a. Pathfinders join the supported unit at the appointed time and place. If possible, the pathfinder commander should accompany the AMTF and aviation commanders on the reconnaissance of the operational area for the selection of landing zones, routes of flight, and control points. As soon as conditions will allow, final coordination between the AMTF commander, and pathfinder commander is accomplished and includes, but is not limited to, the following:

(1) Ground tactical plan.

(2) Departure area and time.

(3) Loading plan.

(4) Air movement plan.

(5) Landing plan.

(6) Unloading plan.

(7) Assembly plan.

b. The pathfinder detachment and the aviation unit are designed to support the tactical operations of the ground unit commander. Landing zones may be operated within the same airhead, if sufficient pathfinder personnel and equipment are available. Alternate landing zones and the circumstances under which they will be used must be prearranged for emergency use.

c. The landing plan must support the aircraft unloading plan; and initial assembly of troops, supplies, and equipment in preselected areas must be designed to support the ground tactical plan. Unloading and assembly operations must be conducted without interfering with the arrival and departure of aircraft. Aircraft, personnel, supplies, and equipment must be rapidly cleared from the landing and parking areas in order to accomplish this. Tentative unloading and assembly areas are selected during the aerial reconnaissance of the landing zone. Initially, the landing (unloading) areas are selected by the aviation commander based on the size, shape, and condition of the landing zone. The ground unit commanders will select the assembly points for their respective personnel. After the initial lift, the pathfinders will designated exact unloading and assembly points based on a ground reconnaissance of the landing zone. The aircraft landing plan should assure that the desired personnel and equipment are delivered into the objective area at the time and place prescribed. The plan should permit maximum numbers of aircraft deliveries in a minimum amount of time. Efficiency of the plan will depend upon the capabilities of the involved pathfinder and aviation units.

d. The movement plan includes delivery of pathfinders and main assault elements. Routes to and from the landing zone are selected to provide maximum protection to aircraft, to maintain the security of the operation, and to support the landing plan. Pathfinders assist the movement of the main element by operating navigation aids and furnishing guidance and control of the aircraft. In the airhead, pathfinders control the activities of all aircraft within the landing zones to insure safe and efficient operations. Recognized pilot prerogatives in emergency situations remain in effect. Pilots will mage every effort to inform pathfinders of emergency measures benig planned or taken.

c. Should the pathfinders be placed or infiltrated into a landing zone prior to the arrival of an airmobile force, considerations should be given to furnishing artillery, armed helicopter, and tactical air support on call to the pathfinder party in the event they encounter hostile forces.

4-8. COORDINATION

Commanders of ground and aviation units coordinate and preplan the details of operations which require pathfinder assistance. The pathfinder detachment

commander should make recommendations on the organization of the landing zone, the landing formation, and the time schedule to be followed. The aviation unit commander coordinates with the ground unit commander on such matters as flight formation, time schedule, primary and alternate routes, communications checkpoints, and types of loads.

4-9. BRIEFING

Each pathfinder must fully understand the specific duties he is to perform in the objective area. He must be thoroughly briefed on the location and operation of proposed air landing facilities; on the flight formation, communications check points on the operation time schedule and on alternate plans and emergency procedures. He should be given the opportunity to study pertinent maps, air photos, and terrain models of the objective area.

4-10. FINAL PREPARATIONS

a. Based upon coordinated plans for the operation, the pathfinder commander requests any necessary augmentation in personnel and equipment. He bases this request upon the planned use of personnel and equipment for assembly of personnel, supplies and equipment of supported units; for removal of obstacles; for medical aid; for operation of ground net communications equipment; and for transportation and operation of navigation and assembly aids under pathfinder direction. Personnel and equipment augmentation must be in keeping with the transportation means to be used in delivering the pathfinder party. When reinforced the pathfinder unit remains under the full command of the pathfinder commander who is responsible for the functions of the entire team.

b. The pathfinder commander issues his operations order to the detachment as soon as practicable. The operations order normally will be issued as a series of fragmentary orders based upon available information.

c. A final detailed check is made of the equipment to be used in the operation. A decision is made on the exact manner in which the equipment is to be transported into the objective area. All items of equipment are prepared for rapid displacement.

d. A final weather and operation briefing is held just prior to departure. A final coordination meeting with the ground and aviation unit commanders is also held at this time.

4-11. METHOD OF DELIVERY

Pathfinders can be delivered by any of a variety of ground, sea, or air transportation means if they are to precede on airmobile force into a landing zone; however, due to the nature of the hostile threat in Vietnam, the pathfinders are normally landed by helicopter with the first elements of the assault forces. The pathfinders then organize the landing zone for subsequent lifts and operations. The hostile threat also precludes the pre-positioning of en route navigational aids except when absolutely necessary. Should it be necessary to introduce pathfinders into an objective area prior to an airmobile force, the most efficient method of delivery is the helicopter. Consideration should also be given to infiltrating pathfinders in connection with the activities of long range reconnaissance patrols. In either case, it is a critical operation and must be carefully planned and executed if secrecy is to be maintained and the mission accomplished according to plan. If the pathfinders are air landed, they must be landed away from the actual objective area and move by foot to the intended helicopter landing sites.

Section III
Operations

4-12. GENERAL

a. An essential element of a successful pathfinder operation is communications by ground-to-air voice radio. This radio is one of the first items placed in operation by pathfinders and it should be the last item of equipment taken out of operation. Pathfinders must have a thorough understanding of voice radio procedures. To achieve the necessary speed and clarity of transmission, radio discipline must be practiced by pathfinders and by supporting aviators. Extraneous and unnecessary messages should be omitted. Aviators should read back vital portions of a ground-to-air message from the control center if there is any doubt that proper instructions have been received.

b. Upon arrival in the objective area, pathfinders perform a hasty reconnaissance, select the desired locations, assemble assigned personnel and equipment at these locations, and establish the necessary landing aids. They perform these functions as rapidly as possible. Communications with an airborne command post may also be established at this time. In most cases they perform two or more function simultaneously.

4-13. FOLLOW-UP ACTIONS

a. Upon completion of an airmobile lift a pathfinder team will normally remain with the supported unit to control air traffic in the vacinity of the landing zone and to issue local advisories on the artillery and mortar fire. Should the supported unit move from the landing zone by foot, the pathfinders will accompany them to be readily available to set up and organize a pickup zone whenever an extraction is required. Intermediate landing zones may also be established to effect resupply or medical evacuation.

b. Whenever the ground force is to be extracted from a pickup zone and emplaced into a new objective area, the pathfinder team can be split, half of the team going with the initial elements of the airmobile force to the new landing zone and the remaining half

staying in the pickup zone until the last elements of the ground are extracted. This technique will insure almost continuous communications between the elements in both the pickup and landing zones and the aviation unit performing the lift.

c. Improvement of landing zones is continuous and must be carefully supervised by the pathfinders to insure that as many hazards and obstacles as possible are removed and that no new ones, such as radio antennas, are placed in or near the aircraft landing sites. Pioneer work is normally accomplished by the supported ground unit or their organic engineer elements. Time fuses should not be used for demolition work or removal of obstacles in areas where helicopters are likely to fly.

d. The pathfinder team is in direct support of the operation and is responsive to the needs of both the supported aviation and ground units alike.

e. Upon completion of an operation, attached or augmentation personnel revert to their parent units (this may be accomplished at any time the additional personnel are no longer required). The pathfinder commander notifies his unit of the completion of the operation and takes immediate steps to prepare his unit for further operations.

4-14. SECONDARY EMPLOYMENT

a. Pathfinder personnel and equipment remain assembled in the vicinity of, and in communication with, the supported aviation unit command post, except when performing pathfinder duties for subordinate units.

b. When the pathfinder detachment has completed preparation to perform further missions, it may be employed within the command post of the supported aviation unit to:

(1) Assist in airfield control.

(2) Assist communications personnel by operating radios or telephones.

(3) Assist in minor demolition and mine warfare tasks.

(4) Assist staff section by performing map and aerial photo work.

(5) Augment local security by acting as interior and exterior command post guards.

c. Training and maintenance may, as required, take priority over performance of secondary mission.

d. A pathfinder unit must be able to perform any of the assigned pathfinder missions with a minimum of preparation.

Section IV

Operation of Helicopter Landing Zones

4-15. GENERAL

The organization and operation of helicopter landing zones is the primary task of the pathfinder detachment of a helicopter battalion. Since pathfinders are seldom used to guide daylight helicopter flights into landing zones (this is usually accomplished by reconnaissance or command aircraft) primary emphasis in this chapter is placed on night operations where the pathfinders have preceded the airmobile force into the landing zone.

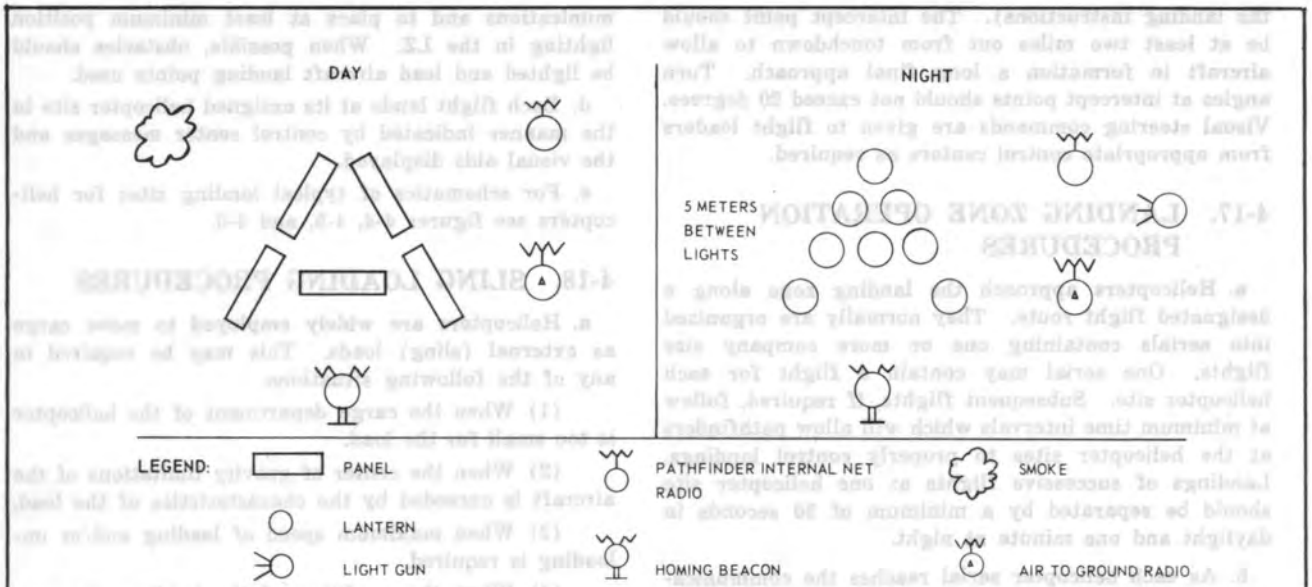
4-16. ORGANIZATION OF THE LANDING ZONE

A helicopter landing zone may contain one or more landing sites and a release point (RP). A control center is established at each landing site and it become the command post and communications center used in controlling the operation of the landing site.

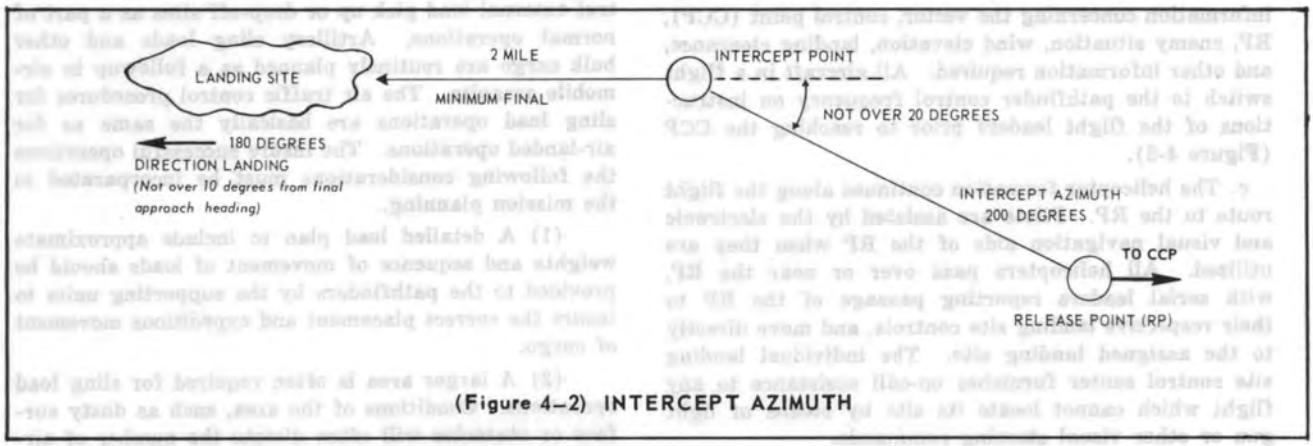
a. Control Center. The purpose of the control center is to control air traffic approaching, within, and departing a landing area; and to promote safe, orderly, and expeditious air movement. The pathfinder commander normally locates himself at the most important site within the landing zone and directs pathfinder operations in outlying facilities by means of the pathfinder operations internal radio net. A control center should be located to facilititate visual control of aircraft. The best location normally is on the centerline of the landing site and between the "T" of the lead formation and the departure end of the site. The requirement of the mission dictates the exact organization of the control center. It may consist of a single pathfinder operating the air-to-ground radio.

b. Release point. A release point (RP) is established to provide a traffic control point and final navigation check point for aircraft approaching the landing zone. The RP is primarily used to control helicopter traffic into multiple landing sites in the same general area, but it may also be used as an aid to navigation and traffic control when more than one type of landing/drop facility is established in the landing zone. The RP is normally unmanned because of the hostile situation, and is located 5-7 miles from the landing cites. The RP location is tentatively selected from map and aerial photograph studies as a point on the planned flight route to the landing zone. It should be located on or near a prominent terrain feature or on high, open terrain which allows maximum effective use of long-range electronic and visual navigation aids. One type of RP is shown in figure 4-1.

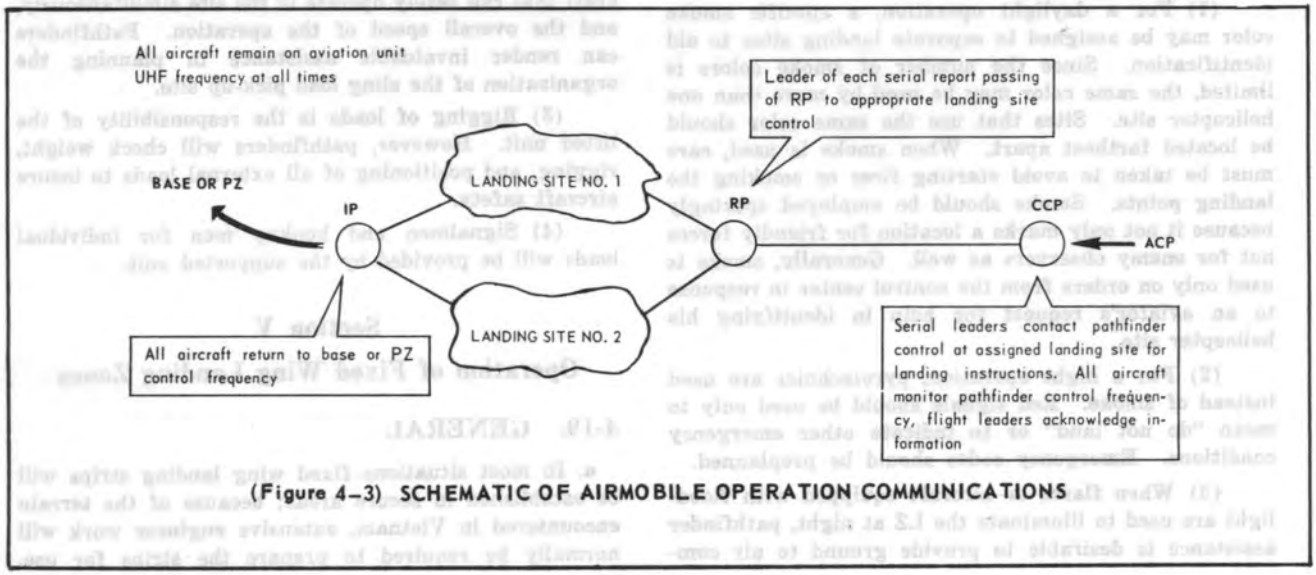
c. Intercept Azimuth. If at all possible, the azimuth from the RP to a landing site should be within 10 degrees of the actual landing direction to preclude sharp turns of aircraft in formation. The larger the formation the more important this factor becomes. If a straight-in approach and landing is not possible, then an intercept azimuth is established (Figure 4-2). The nececsity for an intercept azimuth to a landing site is determined by the aviation commander when he makes his initial landing zone reconnaissance. (If pathfinders have been placed into the objective area prior to the airmobile force, the senior pathfinder at the particular landing site will determine the azimuth and relay the information to the flight leaders as part of



(Figure 4–1) LANDING ZONE RP



(Figure 4–2) INTERCEPT AZIMUTH



(Figure 4–3) SCHEMATIC OF AIRMOBILE OPERATION COMMUNICATIONS

the landing instructions). The intercept point should be at least two miles out from touchdown to allow aircraft in formation a long final approach. Turn angles at intercept points should not exceed 20 degrees. Visual steering commands are given to flight leaders from appropriate control centers as required.

4-17. LANDING ZONE OPERATION PROCEDURES

a. Helicopters approach the landing zone along a designated flight route. They normally are organized into serials containing one or more company size flights. One serial may contain a flight for each helicopter site. Subsequent flights, if required, follow at minimum time intervals which will allow pathfinders at the helicopter sites to properly control landings. Landings of successive flights at one helicopter site should be separated by a minimum of 30 seconds in daylight and one minute at night.

b. As each helicopter serial reaches the communications check point on the flight route, the leader initiates communications with the appropriate control center. The control center then furnishes the leader with the information concerning the vector, control point (CCP), RP, enemy situation, wind elevation, landing clearance, and other information required. All aircraft in a flight switch to the pathfinder control frequency on instructions of the flight leaders prior to reaching the CCP (Figure 4-3).

c. The helicopter formation continues along the flight route to the RP. Pilots are assisted by the electronic and visual navigation aids of the RP when they are utilized. All helicopters pass over or near the RP, with serial leaders reporting passage of the RP to their respective landing site controls, and move directly to the assigned landing site. The individual landing site control center furnishes on-call assistance to any flight which cannot locate its site by means of light gun or other visual steering commands.

(1) For a daylight operation, a specific smoke color may be assigned to separate landing sites to aid identification. Since the number of smoke colors is limited, the same color may be used by more than one helicopter site. Sites that use the same color should be located farthest apart. When smoke is used, care must be taken to avoid starting fires or smoking the landing points. Smoke should be employed sparingly because it not only marks a location for friendly forces but for enemy observers as well. Generally, smoke is used only on orders from the control center in response to an aviator's request for help in identifying his helicopter site.

(2) For a night operation, pyrotechnics are used instead of smoke. Red signals should be used only to mean "do not land" or to indicate other emergency conditions. Emergency codes should be preplanned.

(3) When flares or aircraft equipped with floodlight are used to illuminate the LZ at night, pathfinder assistance is desirable to provide ground to air communications and to place at least minimum position lighting in the LZ. When possible, obstacles should be lighted and lead aircraft landing points used.

d. Each flight lands at its assigned helicopter site in the manner indicated by control center messages and the visual aids displayed.

e. For schematics of typical landing sites for helicopters see figures 4-4, 4-5, and 4-6.

4-18. SLING LOADING PROCEDURES

a. Helicopters are widely employed to move cargo as external (sling) loads. This may be required in any of the following situations.

(1) When the cargo department of the helicopter is too small for the load.

(2) When the center of gravity limitations of the aircraft is exceeded by the characteristics of the load.

(3) When maximum speed of loading and/or unloading is required.

(4) When the condition of the landing site prevents touchdown of the aircraft.

b. Pathfinders will be prepared to organize and control external load pick up or drop-off sites as a part of normal operations. Artillery sling loads and other bulk cargo are routinely planned as a followup to airmobile assaults. The air traffic control procedures for sling load operations are basically the same as for air-landed operations. The insure successful operations the following considerations must be incorparated in the mission planning.

(1) A detailed load plan to include approximate weights and sequence of movement of loads should be provided to the pathfinders by the supporting units to insure the correct placement and expeditious movement of cargo.

(2) A larger area is often required for sling load operations. Conditions of the area, such as dusty surface or obstacles will often dictate the number of aircraft that can safely operate in the site simultaneously, and the overall speed of the operation. Pathfinders can render invaluable assistance in planning the organization of the sling load pick-up site.

(3) Rigging of loads is the responsibility of the lifted unit. However, pathfinders will check weight, rigging, and positioning of all external loads to insure aircraft safety.

(4) Signalmen and hookup men for individual loads will be provided by the supported unit.

Section V
Operation of Fixed Wing Landing Zones

4-19. GENERAL

a. In most situations fixed wing landing strips will be established in secure areas; because of the terrain encountered in Vietnam, extensive engineer work will normally be required to prepare the strips for use.

Therefore, not all of the matrial contained in this section will apply in every case; however, as more landing strips are constructed and re-occupied during successive operations, the complete procedures will become more applicable.

b. A landing strip may have a parking area, a taxiway, and a dispersal area, or any combination of these. One or more landing strips may comprise a fixed wing landing zone, although this is normally not the case.

4-20. DETACHMENT ORGANIZATION AND DUTIES

a. To operate a fixed wing landing zone, the pathfinder detachment is organized into two basic parties; the control center and parking party. When more than one site is used, a code letter or prearranged visual signal should be used to positively identify each landing strip.

b. Parking party.

The parking party reconnoiters, prepares and marks the landing strip, taxiways, parking areas, and dispersal areas under the supervision of the detachment commander. It provides taxi and parking signals for each airplane and maintains ground communications with the control center. Using visual aids, it marks the initial assembly points for troops. The basic organization of the parking party includes:

(1) The parking party commander.

(2) Signalmen.

(3) Additional personnel as required.

4-21. SELECTION OF FIXED WING LANDING FACILITIES

a. Landing strip. Factors involved in the selection of aircraft landing facilities are discussed in detail in TM 5-251.

(1) The surface of a landing strip must be sufficinetly smooth to permit aircraft to takeoff and land without damage and the ground must be sufficiently firm to permit loaded planes to land, taxi, and takeoff without bogging down.

(2) The minimum length and width requirements of a landing strip depends upon the type of aircraft used, the types of loads, the direction and velocity of the wind, and the condition of the ground. The pathfinder commander coordinates with the aviation unit commanders to determine the minimum dimensions of landing strips. The final decision rests with the aviation unit commander.

b. Taxiways. Taxiways should be prepared on one or both sides of the landing strip so planes can clear the strip immediately after landing.

c. Parking Areas and Points

(1) Parking areas and points are selected where aircraft can load or unload equipment, supplies, or personnel in accordance with a prearranged plan without interfering with the continuous operation of the landing strip. More than one parking area may be needed to provide enough parking points to support the tactical plan.

(2) The exact location of parking points depends upon ground conditions, obstacles, number and types of aircraft, types of loads, and other aircraft scheduled to remain in the area.

4-22. ESTABLISHMENT OF FIXED WING LANDING FACILITIES

a. Landing Strip

(1) The pathfinder air-to-ground and internal control radios are prepared for operation immediately upon arrival at the landing site. Operators carry their radio at all times in order to maintain constant communications with the control center.

(2) The parking party and pathfinder commander reconnoiter the areas as soon as they arrive. Upon arrival, the pathfinder commander selects and points out to the parking party the exact landing strip to be used. He designates the center of the long axis or one of the sides of the runway by means of an azimuth or a terrain feature. The parking party then marks the landing strip with visual aids. For day operations, the strip is marked with signal panels. For night operations, it is marked with electric lanterns or field expedients, if necessary (Figure 4-7).

b. Control Center and RP

A control center is required at each landing strip. If a pathfinder detachment operates more than one strip, the primary control center is located at the most important strip. An RP is not required; however, one may be use if the detachment operates more than one landing facility within a landing zone.

(1) Concurrently with marking, the parking party makes hasty improvements by filling holes or removing brush on the landing strip. It also removes or marks obstacles in the approach and departure paths as quickly as possible.

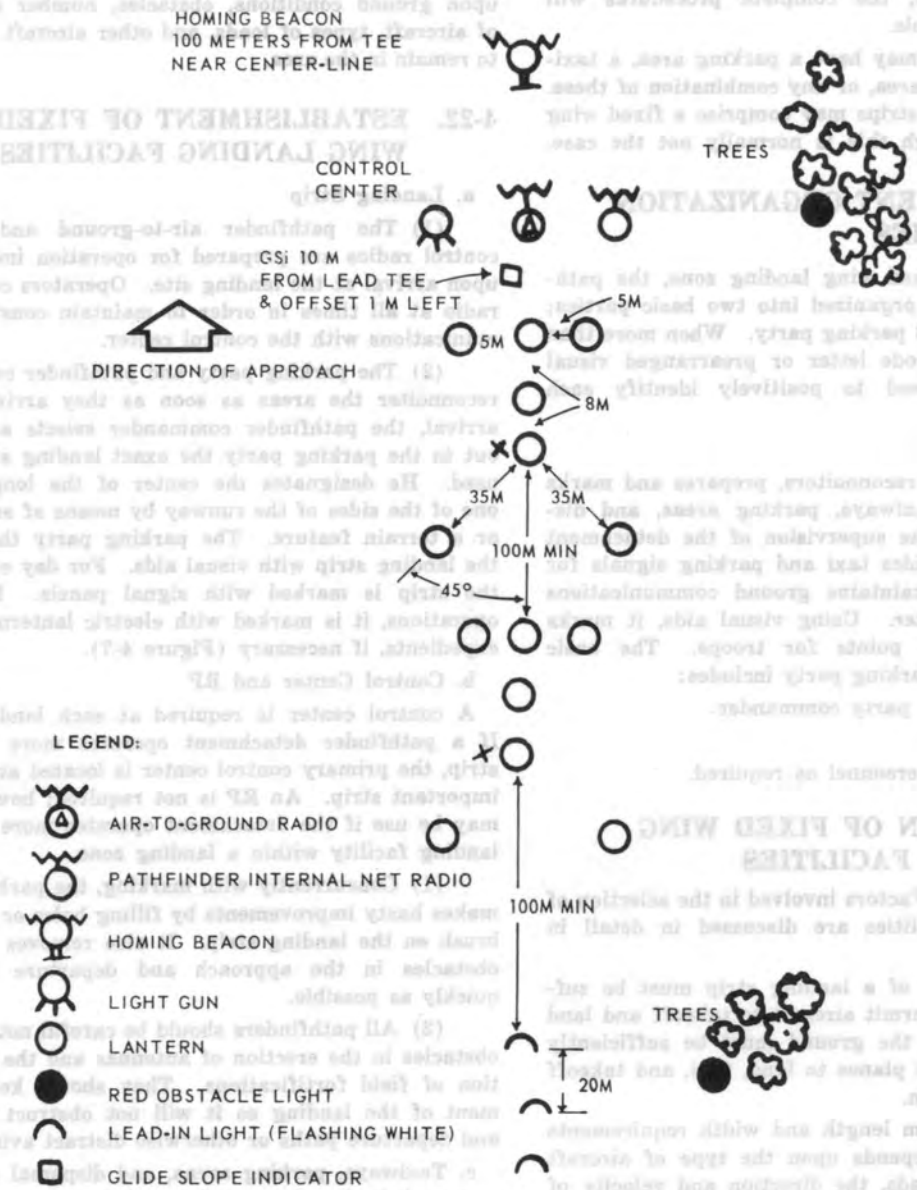
(2) All pathfinders should be careful not to create obstacles in the erection of antennas and the construction of field fortifications. They should keep equipment of the landing so it will not obstruct approach and departure paths or otherwise distract aviators.

c. Taxiways, parking areas, and dispersal areas are prepared in locations designated by the pathfinders commander. The parking party may prepare these areas simultaneously with preparation of the landing strip. They remove or mark obstacles and continue to improve facilities until there is no further improvements to be made, or their mission in the area is complete.

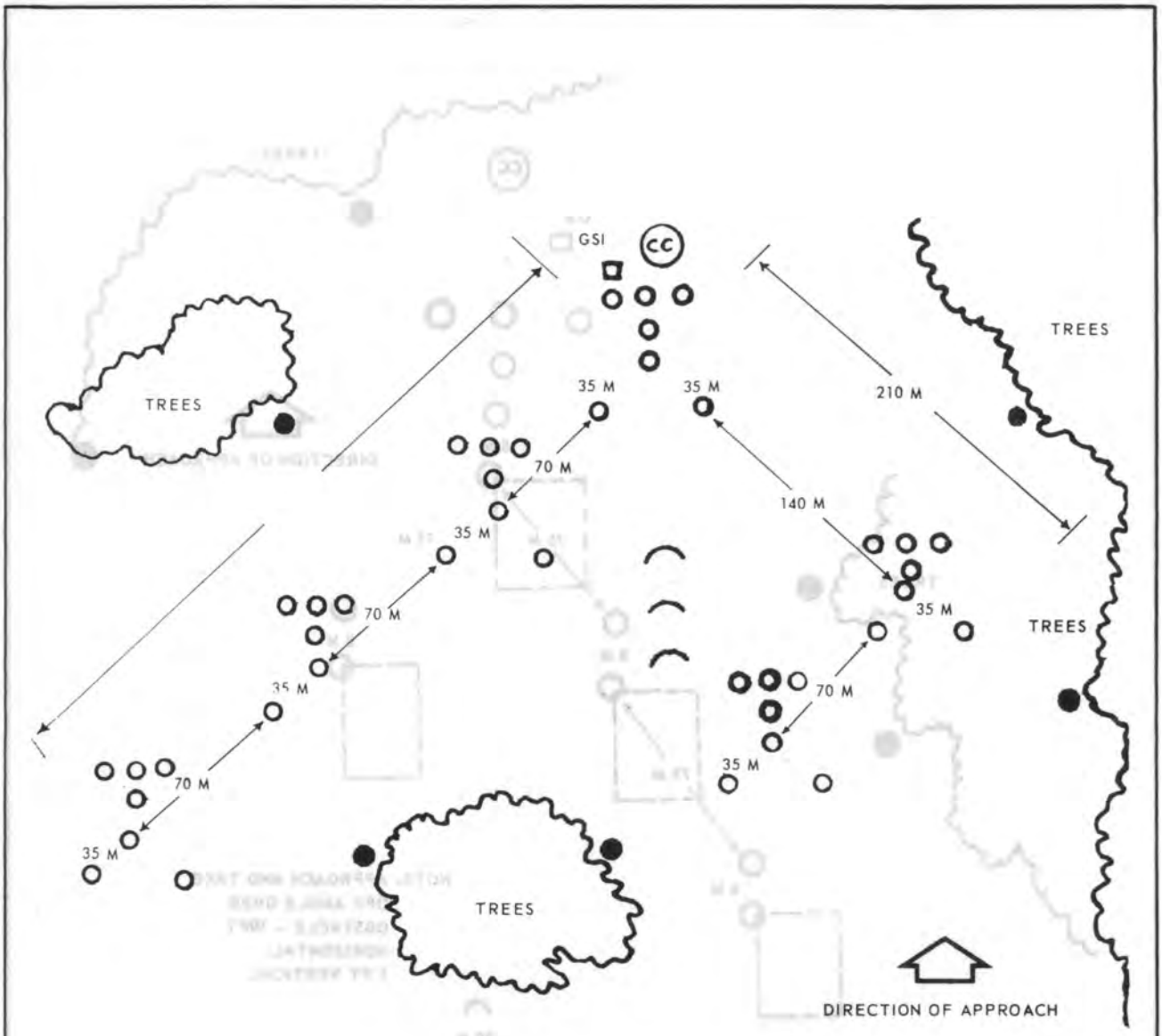
4-23. OPERATION OF FIXED WING LADING ZONE

a. General

(1) The control center pathfinder ground-to-air net operators record flight arrival and departure times and the types of loads brought in or evacuated.

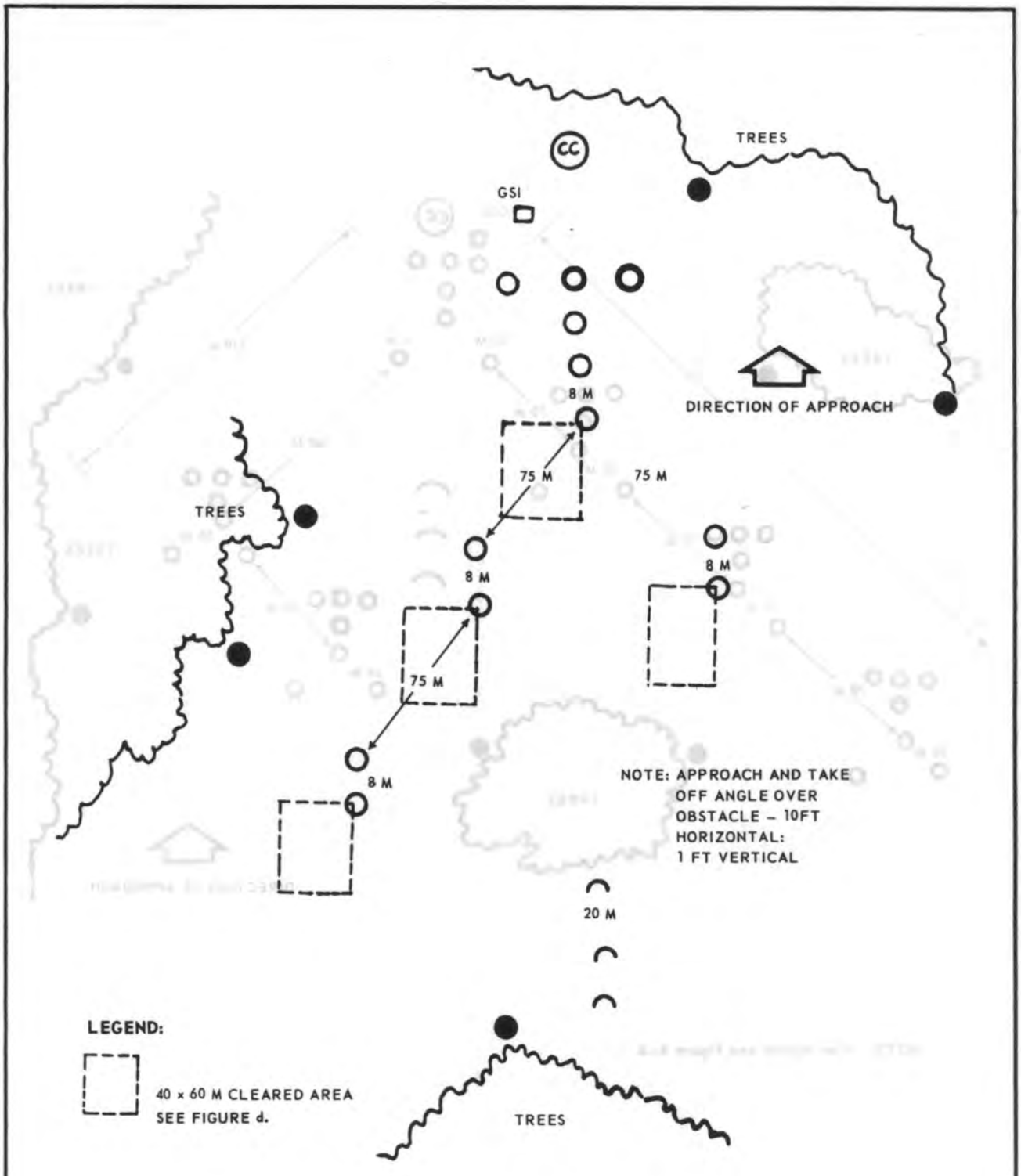


(Figure 4–4) SCHEMATIC OF NIGHT LANDING SITE FOR ONE PLATOON *(6 AIRCRAFT)* OF HELICOPTERS; SECTIONS IN COLUMN, VEE FORMATION.

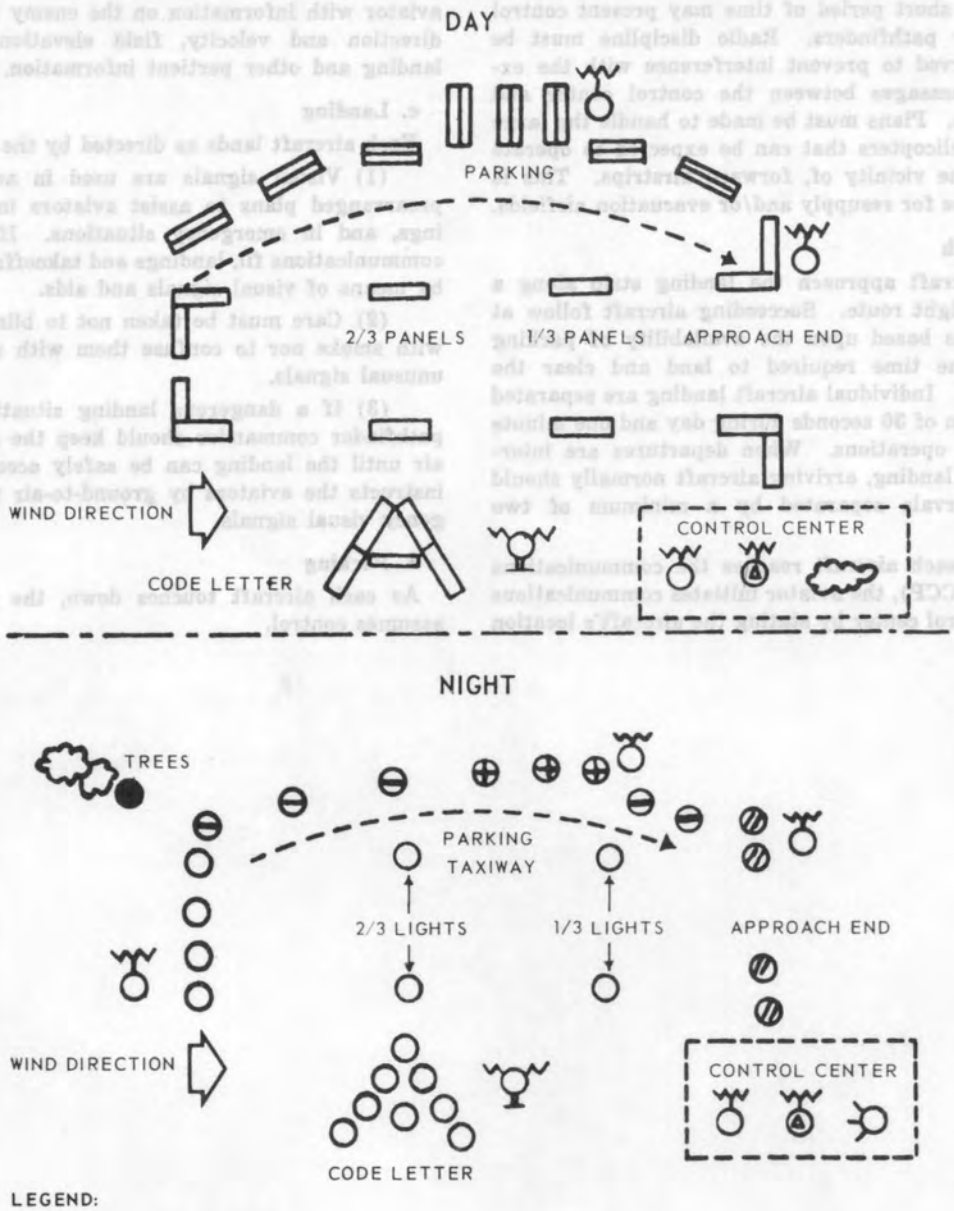


NOTE: *For legend see figure 4–4*

(Figure 4–5) SCHEMATIC OF PLATOON LANDING SITE, PLATOON V.



(Figure 4–6) CH–47 PLATOON NIGHT LANDING SIGHT, FORMATION HEAVY LEFT.



(Figure 4–7) FIXED WING AIRFIELD

(2) Landing and takeoffs by a large number of aircraft in a short period of time may present control problems for pathfinders. Radio discipline must be strictly observed to prevent interference with the exchange of messages between the control center and flight leaders. Plans must be made to handle the large number of helicopters that can be expected to operate into, or in the vicinity of, forward airstrips. This is especially true for resupply and/or evacuation airfields.

b. Approach

(1) Aircraft approach the landing strip along a designated flight route. Succeeding aircraft follow at time intervals based upon the availability of parking space and the time required to land and clear the landing strip. Individual aircraft landing are separated by a minimum of 30 seconds during day and one minute during night operations. When departures are interspersed with landing, arriving aircraft normally should land at intervals separated by a minimum of two minutes.

(2) As each aircraft reaches the communications check point (CCP), the aviator initiates communications with the control center by stating the aircraft's location and type load. The control center then provides the aviator with information on the enemy situation, wind direction and velocity, field elevation, direction of landing and other pertient information.

c. Landing

Each aircraft lands as directed by the control center.

(1) Visual signals are used in accordance with prearranged plans to assist aviators in routine landings, and in emergency situations. If ground-to-air communications fil, landings and takeoffs are controlled by means of visual signals and aids.

(2) Care must be taken not to blind the aviators with smoke nor to confuse them with unnecessary or unusual signals.

(3) If a dangerous landing situation arises, the pathfinder commander should keep the aircraft in the air until the landing can be safely accomplished. He instructs the aviators by ground-to-air radio or emergency visual signals.

d. Parking

As each aircraft touches down, the parking party assumes control.

CHAPTER 5

AIR TRAFFIC CONTROL AND FLIGHT INFORMATION

Section I

General

5-1. GENERAL

This chapter provides information and guidance which will assist commanders and their staffs in planning use of Air Traffic Control Teams and Aviation Detachments (Divisional). This chapter also establishes procedures to be used by aviators in RVN for flight following and terminal control.

Section II

Operations

5-2. GENERAL

a. Airspace

All airspace over Vietnam is under control of the Directorate of Civil Aviation (DCA), RVN. By letter of agrement between USMACV, DCA, and the Vietnamese Air Force (VNAF), certain airspace control has been delegated to USAF/U.S. ARMY/USMC. In addition, U.S. air traffic agencies assist VNAF/DCA controllers at several facilities.

b. Instrument Flight Rules (IFR)

All en route IFR traffic is controlled by DCA under International Civil Aviation Organization (ICAI) procedures. Terminal facilities are operated by U.S. air traffic agencies or DCA in accordance with the letter of agreement. For example: terminal/control at Tan Son Nhut, is under DCA; at Vung Tau, under U.S. Army; at Nha Trang, under USAF; at Da Nang, under USMC. Refer to DOD Flip Planning Data, Section II and Section III for specific ICAO Pilot Procedures.

c. Visual Flight Rules (VFR)

Standard ICAO visual flight rules are used in RVN. However, weather minimums are suspended for combat operations. VFR aircraft operating over 3000 feet above ground will use Flight Levels (Altimeter setting 29.92). VFR (or IFR on TOP) will use odd thousands plus 500 feet when flying 0° to 179° magnetic and even thousands plus 500 when flying 180° to 359° magnetic.

d. Organization

The 165th Aviation Group (CBT) has been given the mission of providing air traffic control of airspace delegated to the United States Army in Vietnam. To accomplish this mission, major elements of the groups are employed as follows:

(1) The group headquarters performs inspections and service evaluations of all Army Air Traffic Control facilities and NAVAIDs in Vietnam and assists in the support and maintenance of the mission essential air traffic control equipment involved.

(2) The 125th Aviation Company (ATC) operates the Army enroute flight following system and also provides tactical air traffic control teams for air traffic control at tactical airfields and landing zones.

(3) 35 Aviation Detachments (Division) and the An Khe Army Airfield Command provide terminal control at established airfields and heliports.

5-3. FLIGHT FOLLOWING SYSTEMS

These systems are designated to make maximum effective use of ATC personnel and equipment resources, and to provide safe and responsive control in RVN. Two systems for flight following exist in RVN. One system is operated by the 125th Air Traffic Company and the other is a radar system operated by the USAF. Either system can be used twenty-four hours daily. For highly localized operations, in which distances are short, or in operations where an entire unit is operating (e.g. combat assault), the aviation unit should flight follow its own aircraft. Note: Flight plans, DD Forms 1080 or 175, are not filed with the flight following station. Passenger/cargo manifests and required flight plans are filed with unit operations.

a. Army

The Army system is operated by the 125th Air Traffic Control Campany through its three flight regulation platoons.

(1) Platoon headquarters are located at Pleiku, Cam Ranh, and Tan Son Nhut. Platoon sectors are roughly comparable to the Corps Tactical Zones with the Third Platoon being responsible for both Third and Fourth Corps areas. Each platoon operates a Flight Operations Center (FOC), a number of Flight Coordination Centers (FCC), Flight Following Stations (FFS), and/or Radio Relay (RR) Stations as required to provide country-wide ground/air radio communications. (Figure 5-1).

(2) These ATC stations have communications to other ATC stations, USAF Control and Reporting Centers (CRC), Corps Tactical Operations Centers (TOC), and civilian flight service. Thus, an aircraft will remain under continuous flight following even though passing from one section to another. Aircraft

can also get assistance in filing IFR flight plans and clearances and weather information. (Figure 5-2)

(3) Procedures for using the Army flight following system are found in DOD FLIP planning data Section III. Frequencies and call signs are found in current flight information publications.

b. Air Force

USAF operates radar flight following and traffic advisory service at several locations in Vietnam as traffic permits. This system is based on the use of the IFF/SIF transponder. There are gaps, however, where this system does not provide coverage. In addition, the radar stations are not inter-communicating and if an aircraft leaves the coverage of one station for that of another, he must establish a new flight following request with the new station. Frequencies and call signs for USAF radar stations can be found in the Tactical Aerodrome Directory (TAD) and in the RVN ATC Frequency publication published by the 165th Aviation Group (CBT).

5-4. AIRFIELD TERMINAL CONTROL

a. Fixed Airfield/Heliport Terminal Facilities

(1) Terminal air traffic facilities (GCA, NDB, Tower) and personnel are established at most airfields having two or more aviation companies located thereon, or airfields which have more than 5,000 aircraft operations per month. These airfield control facilities usually operate from sunrise to sunset or until all aircraft have landed, whichever occurs later.

(2) VFR traffic must comply with local traffic patterns and establish radio contact with tower concerned prior to entering traffic. EXTREME CAUTION should be used in the vicinity of all airfields due to high density of traffic. Traffic advisories and hazards on runways will be given by tower operators.

(3) Standard instrument approach procedures as established for Army Airfields throughout RVN. Approved TACAN and ADF procedures are published in the DOD Flip (Terminal). Radar (PAR & ASR) minima are published in both the DOD Flip Supplement and the Tactical Aerodrome Directory. In some cases procedures may be out of controlled airspace or in airspace not controlled by the airfield at which the procedure is located. Commanders of aviation units stationed at Army Airfields where GCA's are located are responsible for providing practice GCA's for proficiency training of controllers to the maximum extent permitted by the mission. AD(D)s are responsible for developing tower/GCA procedures which will permit simple and expeditious (preferably straight-in) approaches for aircraft entering the airfield control area for landing.

(4) Ground operations and movement of vehicles and aircraft must be under direct control of the tower. Helicopters must exercise EXTREME CAUTION when hovering near fixed wing aircraft and landing areas or when landing near other helicopters backing out from revetments.

(5) Communications Phraseology: Voice communications should be as brief as possible. Initial "callup" of towers and flight following stations is NOT required. For example, if you are ready for takeoff, the call should be, "Bien Hoa Tower, Snowball 590, ready for takeoff." Use one transmission to include the contact and request, rather than "Bien Hoa Tower, Snowball 590, over," and then a repeat. Pilots must make every effort to minimum excessive radio transmissions due to the congestions of frequencies and air traffic at all airfields.

(6) Reporting of NAVAID's Outage: All pilots are urged to report all non directional beacons, TACAN's or other NAVAID's that are unreliable or not operational to the nearest Flight Following Station or Army Airfield Control Tower for relay to 165th Aviation Group (CBT). Repeated reports of outages are desired to take followup action where necessary.

b. Tactical Air Traffic Control Teams

The 125th Aviation Company (ATC) of the 165th Aviation Group (CBT) is responsible for providing Tactical Air Traffic Control Teams (TATCT), which are capable of moving into a combat operation area and providing air traffic control as required. USARV Regulation 95-7 clearly defines applicable procedures. They are as follows:

(1) Army Tactical Air Traffic Control Teams (TATCT) utilizing tower or tower/GCA equipment are available for tactical operations. When joint operations are conducted, USAF combat control teams (Tailpipe) are avilable to provide VFR control tower service for periods not to exceed 10 days. Requests for air traffic control support should be initiated by the senior ground commander at least 15 days in advance of the requirement. Quick reaction requirements can be accomodated dependent upon existing personnel and equipment capabilities of the 165th Aviation Group (CBT).

(2) In the event of sustained tactical operations involving divisional or larger size units. ATC personnel from 165th Aviation Group (CBT) shall be requested to participate in the initial planning of the operation. Note: Commanders are responsible for establishing traffic patterns and safe separation of air traffic to be controlled by TATCT.

(3) The senior ground commander in charge of the operations is responsible for providing transportation for the movement of ATC personnel and equipment to and from the desired field location, Movement priority will be established by the senior ground commander and should be the highest priority consistent with the overall priority of the operation as determined in accordance with USARV Reg 55-4 and included in the original request.

(4) All requests will be submitted through FFV or Corps Commanders to the 165th Aviation Group (CBT). Information addresses will include USARV Headquarters, ATTN: AVHAV-OPT and 1st Aviation Brigade, ATTN: AVBAGC. Format to be used is at Appendix III to USARV Regulation 95-7.

5-5. AVIATION SUPPORT DETACHMENTS (ASD)

a. Mission

(1) The Aviation Detachment (Divisional)'s primary mission is to conduct air traffic control operations on a Class "A" or "B" airfield. This includes the mission to establish and operate one each instrumented airfield with terminal flight facilities to include Ground Control Approach (GCA) for 24 or 16 hours a day, respectively. To accomplish this mission, there are 19 "A" team ASD's and 16 "B" team ASD's operating 35 airfields in the Republic of Vietnam. The "A" teams consist of 19 enlisted men, 1-NCOIC, and 1-ASD Commander. The "B" teams consists of 15 enlisted men, 1-NCOIC, and 1-ASD Commander.

(2) These Aviation Support Detachments are assigned to the 165th Aviation Group (CBT) and are attached to the predominant user of their respective airfield for quarters, rations, logistical support, and financial matters. The Aviation Detachment (Divisional) Commander is habitually assigned as airfield commander and may also be installation commander.

b. Capabilities: Services provided by the Aviation Detachment (Divisional) are: operation of the control tower, operation of the GCA and NDB facilities, gathering and transmission of NOTAMS relevant to the assigned airfield, establishment of letters of agreement, letters of authorization, establishment of local flying regulations and traffic patterns, notification of airfield data changes to DOD Flip publications and reporting of NAVAID outages.

5-6. FLIGHT INFORMATION

A list of Flight Information Publications is contained in Section IV.

Section III

Army Flight Following Procedures

5-7. INITIAL CONTACT WITH FOC OR FCC

The pilot will give unit call sign, last three digits of aircraft serial number, mission number (if appropriate), type aircraft, place of departure, (time of departure if other than time of initial call), route of flight, destination, estimated time of arrival (ETA), altitude (if requesting artillery information), and number of persons on board. EXAMPLE: "Capitol Center, this is Snowball five-nine-zero, mission number 3, off Tan Son Nhut (at one-zero), direct (Coastal), Vung Tau one-zero-four-five, two thousand, five hundred feet, four persons on board, over."

5-8. SUBSEQUENT OR INTERMEDIATE CONTACTS

a. Time position reports will be required after takeoff if the ETE exceeds 30 minutes. These reports will be made as directed by the FIC, FCC or FFS. If contact cannot be made with the directed station, position reports may be made to any flight following facility. Changes to the original flight plan will be given to the Flight Following Facility. It may be necessary at times to relay position reports and termination of flight following through airfield towers and/or other aircraft. Reason: In the mountainous regions of Vietnam radio are many times limited to short ranges, and it becomes exceedingly difficult to contact power stations. It is essential that the reports are made to prevent initiating search and rescue.

b. Landing will be reported to the flight following facility by calling "Destination." If the landing area is not secure or is a remote area, the pilot may give an estimated ground time. EXAMPLE: "Capital Center, this is Snowball five-nine-zero, destination, estimating one plus three-zero ground time, over."

c. When a mission requires more than one landing, the procedures and calls outlined above will be repeated except that aviators may omit the misssion number after the initial call. EXAMPLE: "Capital Center, this is Snowball five-nine-zero, off Vung Tau, direct, Tan Son Nhut four-five, five persons on board, over."

5-9. FINAL CONTACT TO TERMINATE FLIGHT FOLLOWING

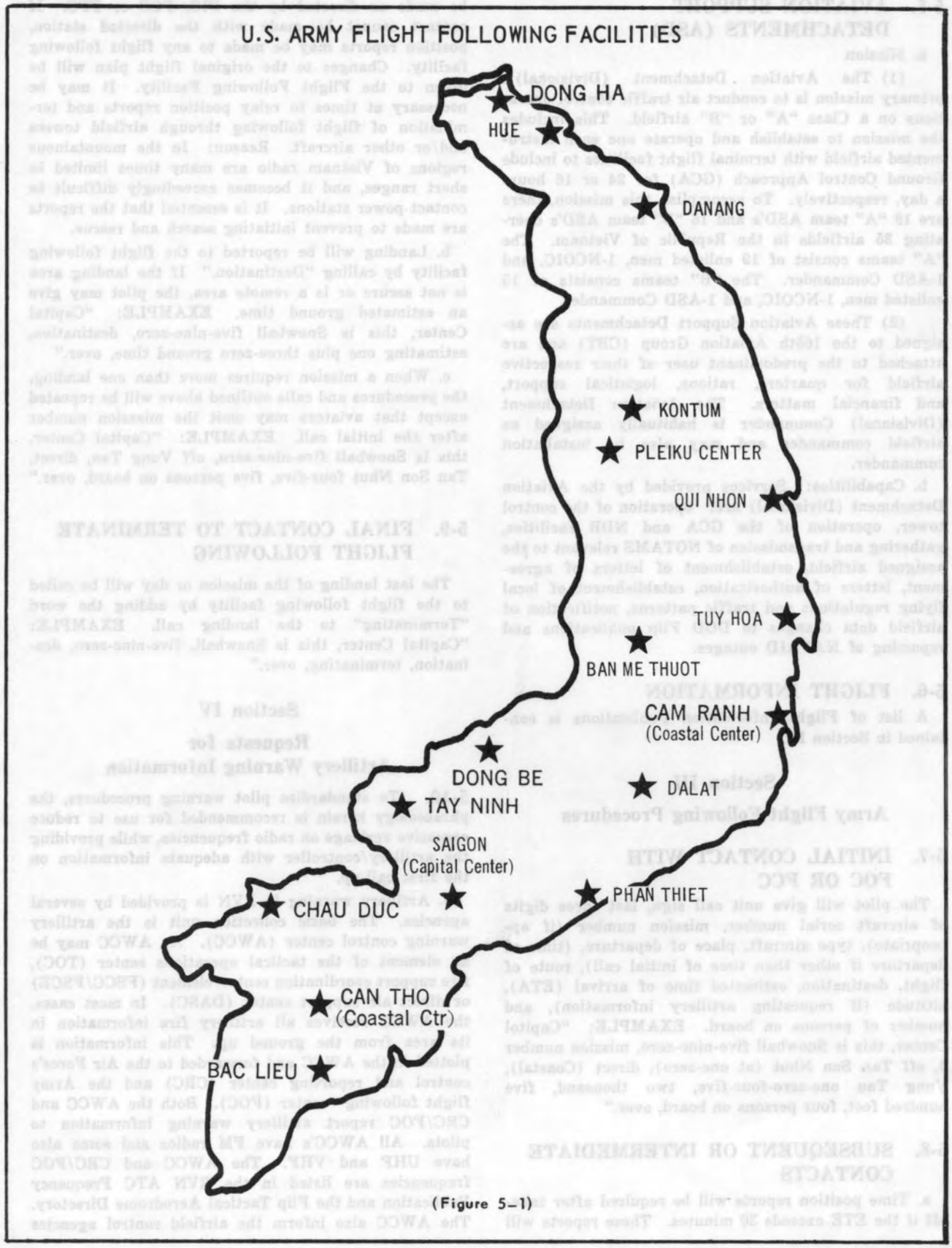
The last landing of the mission or day will be called to the flight following facility by adding the word "Terminating" to the landing call. EXAMPLE: "Capital Center, this is Snowball, five-nine-zero, desination, terminating, over."

Section IV

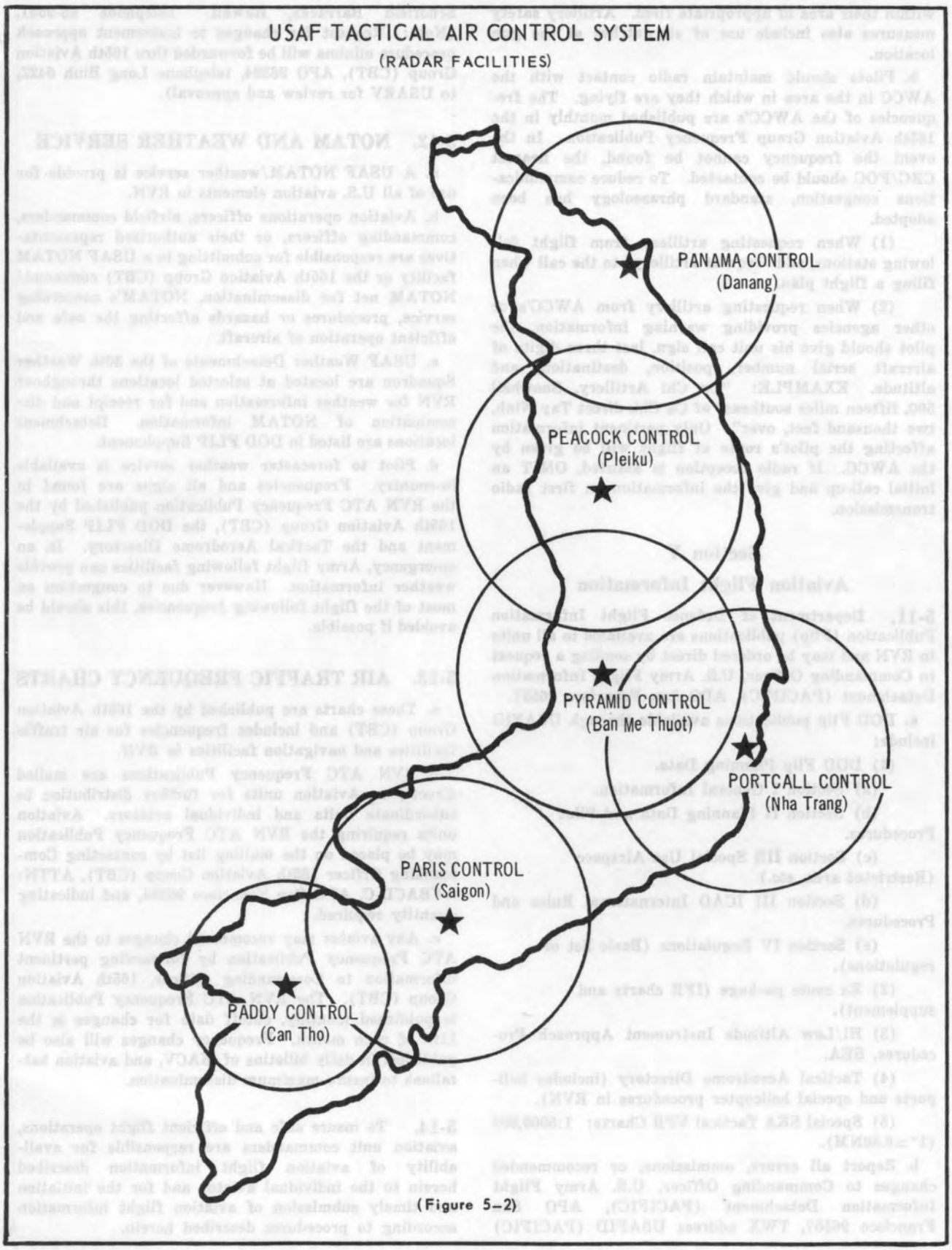
Requests for Artillery Warning Information

5-10. To standardize pilot warning procedures, the phraseology herein is recommended for use to reduce excessive verbiage on radio frequencies, while providing the artillery/controller with adequate information on the first call-up.

a. Artillery warning in RVN is provided by several agencies. The basic collection unit is the artillery warning control center (AWCC). An AWCC may be an element of the tactical operations center (TOC), fire support coordination center/element (FSCC/FSCE) or direct air support center (DASC). In most cases, the AWCC receives all artillery fire information in its area from the ground up. This information is plotted in the AWCC and forwarded to the Air Force's control and reporting center (CRC) and the Army flight following center (FOC). Both the AWCC and CRC/FOC report artillery warning information to pilots. All AWCC's have FM radios and some also have UHF and VHF. The AWCC and CRC/FOC frequencies are listed in the RVN ATC Frequency Publication and the Flip Tactical Aerodrome Directory. The AWCC also inform the airfield control agencies


U.S. ARMY FLIGHT FOLLOWING FACILITIES
DONG HA
HUE
DANANG
KONTUM
PLEIKU CENTER
QUI NHON
TUY HOA
BAN ME THUOT
CAM RANH
(Coastal Center)
DONG BE
DALAT
TAY NINH
SAIGON
(Capital Center)
PHAN THIET
CHAU DUC
CAN THO
(Coastal Ctr)
BAC LIEU

(Figure 5–1)


USAF TACTICAL AIR CONTROL SYSTEM
(RADAR FACILITIES)
PANAMA CONTROL
(Danang)
PEACOCK CONTROL
(Pleiku)
PYRAMID CONTROL
(Ban Me Thuot)
PORTCALL CONTROL
(Nha Trang)
PARIS CONTROL
(Saigon)
PADDY CONTROL
(Can Tho)

(Figure 5–2)

within their area of appropriate fires. Artillery safety measures also include use of skywatches at the gun location.

b. Pilots should maintain radio contact with the AWCC in the area in which they are flying. The frequencies of the AWCC's are published monthly in the 165th Aviation Group Frequency Publication. In the event the frequency cannot be found, the nearest CRC/FOC should be contacted. To reduce communications congestion, standard phraseology has been adopted.

(1) When requesting artillery from flight following stations, add "request artillery" to the call when filing a flight plan.

(2) When requesting artillery from AWCC's or other agencies providing warning information, the pilot should give his unit call sign, last three digits of aircraft serial number, position, destination, and altitude. EXAMPLE: "Cu Chi Artillery, Snowball 590, fifteen miles southeast of Cu Chi, direct Tay Ninh, two thousand feet, over". Only pertinent information affecting the pilot's route of flight will be given by the AWCC. If radio reception is assured, OMIT an initial call-up and give the information on first radio transmission.

Section V

Aviation Flight Information

5-11. Department of Defense Flight Information Publication (Flip) publications are available to all units in RVN and may be ordered direct by sending a request to Commanding Officer, U.S. Army Flight Information Detachment (PACIFIC), APO San Francisco 96557.

a. DOD Flip publications available through USAFID include:

(1) DOD Flip Planning Data.

(a) Section I General Information.

(b) Section II Planning Data and Pilot Procedures.

(c) Section IIB Special Use Airspace (Restricted area, etc.)

(d) Section III ICAO International Rules and Procedures.

(e) Section IV Regulations (Basic list of regulations).

(2) En route package (IFR charts and supplement).

(3) Hi/Low Altitude Instrument Approach Procedures, SEA.

(4) Tactical Aerodrome Directory (includes heliports and special helicopter procedures in RVN).

(5) Special SEA Tactical VFR Charts: 1:5000,000 (1"=6.86NM).

b. Report all errors, ommissions, or recommended changes to Commanding Officer, U.S. Army Flight Information Detachment (PACIFIC), APO San Francisco 96557, TWX address USAFID (PACIFIC) Schofield Barracks, Hawaii. Telephone 65-9531. (Note: Request for changes to instrument approach procedure minima will be forwarded thru 165th Aviation Group (CBT), APO 96384, telephone Long Binh 6422, to USARV for review and approval).

5-12. NOTAM AND WEATHER SERVICE

a. A USAF NOTAM/weather service is provide for use of all U.S. aviation elements in RVN.

b. Aviation operations officers, airfield commanders, commanding officers, or their authorized representatives are responsible for submitting to a USAF NOTAM facility or the 165th Aviation Group (CBT) command/ NOTAM net for dissemination, NOTAM's concerning service, procedures or hazards affecting the safe and efficient operation of aircraft.

c. USAF Weather Detachments of the 30th Weather Squadron are located at selected locations throughout RVN for weather information and for receipt and dissemination of NOTAM information. Detachment locations are listed in DOD FLIP Supplement.

d. Pilot to forecaster weather service is available in-country. Frequencies and all signs are found in the RVN ATC Frequency Publication published by the 165th Aviation Group (CBT), the DOD FLIP Supplement and the Tactical Aerodrome Directory. In an emergency, Army flight following facilities can provide weather information. However due to congestion on most of the flight following frequencies, this should be avoided if possible.

5-13. AIR TRAFFIC FREQUENCY CHARTS

a. These charts are published by the 165th Aviation Group (CBT) and includes frequencies for air traffic facilities and navigation facilities in RVN.

b. RVN ATC Frequency Publications are mailed directly to Aviation units for further distribution to subordinate units and individual aviators. Aviation units requiring the RVN ATC Frequency Publication may be placed on the mailing list by contacting Commanding Officer 165th Aviation Group (CBT), ATTN: AVBACD-C, APO San Francisco 96384, and indicating quantity required.

c. Any aviator may recommend changes to the RVN ATC Frequency Publication by forwarding pertinent information to Commanding Officer, 165th Aviation Group (CBT). The RVN ATC Frequency Publication is published monthly, cutoff date for changes is the 11th of each month. Frequency changes will also be published in daily billetins of MACV, and aviation battalions to insure maximum dissemination.

5-14. To insure safe and efficient flight operations, aviation unit commanders are responsible for availability of aviation flight information described herein to the individual aviator and for the initiation and timely submission of aviation flight information according to procedures described herein.

CHAPTER 6
AIR CAVALRY OPERATIONS

Section I
Air Cavalry Squadron

6-1. GENERAL

This chapter provides guidelines for the employment of air cavalry units in Stability Operations in RVN. Successful operations by air cavalry units depend on the tactical ingenuity of commanders to make maximum use of the air cavalry squadron's inherent characteristics of airmobile firepower, air and ground mobile combat elements, shock effort, extensive and multiple means of communications, surprise and flexibility. The air and ground units of the squadron and troops should be employed so as to complement one another.

a. Firepower. Air cavalry squadrons have mobile firepower in the form of high volume, short duration air-to-ground point and area fire weapons, ground mobile antitank weapons, machineguns, mortars, and individual weapons.

b. Mobility. Air cavalry squadrons have air and surface mobility using organic vehicles and aircraft. They can move rapidly through the air, on roads and trails, and under favorable conditions, cross-country. The vehicles of the cavalry troop can be readily transported throughout the battle area by Army helicopters.

c. Shock Effect. Shock effect in air cavalry units is enhanced by three dimensional mobility and a large volume of aerial firepower.

d. Extensive and Flexible Communications. Air cavalry units have extensive and flexible communications. Although FM and UHF voice are the primary means employed between troop and squadron, AM SSB voice radio and telephone are available. This capability enables a great volume of message traffic to be handled over the long ranges normally separating the troops from the squadron operations center.

e. Flexibility. Air and surface mobility, extensive and flexible communications and responsiveness to command, permit air cavalry units to operate over wide areas in accomplishing rapidly changing and varied missions.

6-2. MISSION

The mission of the air cavalry squadron is to extend by air means the reconnaissance and security capabilities of unit that it is supporting. The air cavalry squadron performs basically four types of missions: reconnaissance, surveillance, security and economy of force. The air Squadron may except employment in operations as follows:

a. Route, zone and area reconnaissance.
b. Security.
c. Raids.
d. Damage assessment and exploitation of supporting fires.
e. Pursuit.
f. Ambush.
g. Counterattack and coordinated attacks.
h. Encirclement (very limited capability).

6-3. CAPABILITIES AND LIMITATIONS

a. Capabilities

(1) Conducting air and ground reconnaissance over broad fronts and to extended depths.

(2) Collecting and reporting information of intelligence value and employing air and ground observation.

(3) Protecting or screening a flank or flanks.

(4) Providing security or maintaining contact between elements of a unit or between adjacent units.

(5) Acting as part of a covering force in offensive and retrograde operations and as a general outpost in defensive operations.

(6) Exploiting the success of other units and effects of supporting weapons.

(7) Providing a security force for airmobile operations.

(8) When suitably reinforced, conducting extended semi-independent combat operations.

(9) Providing a highly mobile counterattack and pursuit force.

(10) Conducting offensive, defensive, or delaying actions as required.

b. Limitations

(1) Requires continuous resupply due to its high rate of ammunition expenditure and POL consumption.

(2) Adverse weather conditions may limit the air cavalry squadron in its assigned missions. Periods of low visibility and darkness present problems in flight, observation techniques and delivery of aerial fire.

(3) Cannot normally hold terrain in an offensive operation and concurrently perform its assigned mission of reconnaissonce and security for a major ground combat unit.

6-4. ORGANIZATION

a. General. The Air Cavalry Squadron is a self-contained combat unit, containing reconnaissance, maneuver, and fire support elements found in a combined arms team.

b. The Air Cavalry Squadron consists of a headquarters and headquarters troop, three air cavalry troops, and a ground cavalry troop. The squadron organization is shown in Figure 6-1.

(1) The headquarters and headquarters troop provides command, administration, communication, supply, mess, medical, transportation, and maintenance support and a standardization section for the Squadron. It has an aviation platoon which provides five command and control helicopters for the squadron commander and his staff.

(2) The air cavalry troop consists of a troop headquarters with an aviation section and a maintenance section, aeroscout platoon, aerorifle platoon, and aeroweapons platoon. A TC detachment and Signal Corps RL detachment are attached to the troop. Figure 6-2 shows the organization of the air cavalry troop.

(a) Troop headquarters is the administrative center of the troop and performs normal administrative functions usually under the supervision of the executive officer.

(b) The aviation section with two UH-1H's provides a C&C ship and a maintenance aircraft. The organic maintenance section provides organizational maintenance on air and ground vehicles, armanent, avionics, other communications equipment and performs technical supply functions. The attached TC detachment provides DS aircraft maintenance and technical supply to the troop. The attached SC detachment provides DS avionics repair and supply.

(c) The aeroscout platoon is equipped with 10 light observation helicopters and provides the primary reconnaissance capability of the troop.

(d) The aerorifle platoon, organized into four rifle squads provides a ground reconnaissance capability to the troop, and is made airmobile by the lift section's 5 UH-1 helicopters.

(e) The aeroweapons platoon, with 9 AH-1G helicopters and one UH-1, provides the high volume, high intensity, short duration fire support for the troop.

6-5. ORGANIZATION FOR COMBAT

a. Organization of the air cavalry squadron for combat is characterized by flexibility which permits tailored forces to be organized by the squadron commander to meet the mission requirements. Tactical integrity of the squadron, retaining all assets under the command and control of the squadron commander enhances the total combat power potential available.

b. The squadron commander normally employs the air cavalry troops and the cavalry troop directly under squadron control without change in troop organization. However, situations often require a temporary reorganization of one or more air cavalry troops and the cavalry troop to accomplish a specific mission. The squadron commander shifts or cross-attaches the elements of troops to form troop teams of appropriate size and containing the required ratio of aeroweapons aeroscouts, and cavalry platoons to best accomplish the mission.

6-6. EMPLOYMENT

Detailed doctrine for the employment of the air cavalry squadron is contained in FM 17-37, the Air Cavalry Squadron.

a. The Air Cavalry Squadron is designed to operate as a combat team commanded and controlled by the squadron commander. Fragmentation of any the squadron's elements limits the overall flexibility and combat effectiveness of the Air Cavalry Squadron. Fragmentation, to any degree, reduces the inherent capability of the squadron commander to cross attach or tailor his organic elements to accomplish his assigned mission in the most efficient manner. Those elements committed are tailored for combat by the squadron commander based upon the factors of METT. Those elements not committed provide the commander with reinforcing or reaction forces for the committed Air Cavalry units.

b. The air cavalry squadron is capable of being employed on independent missions. The capability to operate on independent missions is based on the organic combined arms team structure employing flexibility, mobility and firepower.

c. The commander's careful and continuous consideration of mission, enemy, terrain, weather and troops available, coupled with the squadron's flexibility permitting rapid organization of specifically tailored combat teams, provide decisive and responsive reaction to enemy threats and changing situations.

d. Fire support is made available to the air cavalry squadron by artillery, mortars or TAC air. Artillery and TAC air provide the majority of the fire support for the air cavalry squadron. All supporting fires must be planned and coordinated with squadron employment through the squadron LNO. Artillery forward observers are available to the troops when artillery is in direct support of the squadron. Squadron aviators are trained and qualified to adjust artillery fires to include targets of opportunity.

Section II

The Air Cavalry Troop

6-7. GENERAL

a. The Air Cavalry Troop is most effectively employed under the control of its parent squadron; however, it may be placed in direct support of a brigade or similar headquarters for specific operations. The troop is a combat force that combines the characteristics of tactical air mobility and restructive fire power possessing an anti-personnel and anti-material capability. The aeroscout, rifle, and weapons platoons are tactical elements of the troop and can operate as teams sections, squads, or platoons. The platoons should not be fragmented for independent missions.

b. Unless total effort is required to accomplish the mission, only those elements essential to mission accomplishment are committed. This enables continuous operation, uncommitted elements relieving committed elements on station.

6-8. INDEPENDENT TROOP OPERATIONS

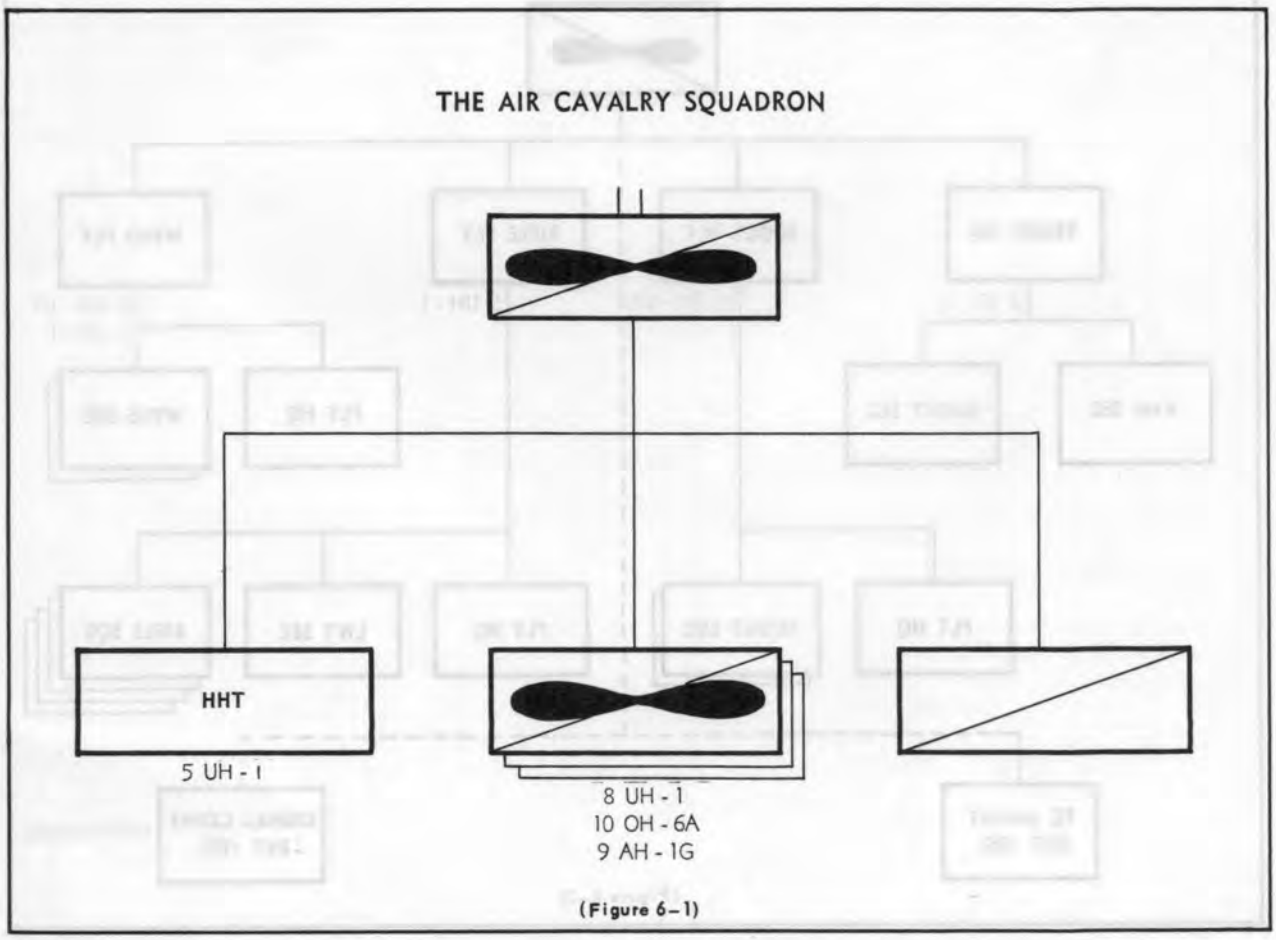
When the Air Cavalry Troop is placed in direct support of a brigade sized unit, the effectiveness of the troop is measured by its ability to establish enemy contact and to develop the enemy situation. The success of the overall mission is dependent on the ability of the ground commander to react to enemy contact made by the troop. Sufficient combat power should be allocated to ready reaction forces to enable the ground commander to readily exploit the contact. The infantry reaction force should be airmobile and utilize lift aircraft from resources outside the Air Cavalry Troop. The Air Cavalry Troop operating independently from its parent squadron does have limited flexibility to tailor its forces to meet the rapidly developing situations which are inherent in cavalry operations. Aircraft from the three platoons may be formed into combat teams as required by the situation.

6-9. TROOP RESOURCES

When placed in direct support of a brigade, the troop is restricted only to those resources assigned to that troop. No arrangements are made for cross attachment with other squadron elements. Aircraft down for maintenance or combat loss subtract from the Troops combat potential. Normally the troops will have the capability to provide aeroscout, aeroweapons, and aerorifle elements in sufficient quantity to accomplish this mission. This force will include two scout teams, two fire teams and a lift element to carry the rifle platoon elements; however, periods of extensive flying hours or unusually high combat damage could reduce this capability.

6-10. LIAISON

The immediate establishment of a liaison element from the Air Cavalry Troop to the Brigade headquarters is a most important factor to insure maximum troop utilization and successful mission accomplishment. Further discussion on the liaison element is contained in Chapter 2.



(Figure 6–1)

Section III

The Cavalry Troop

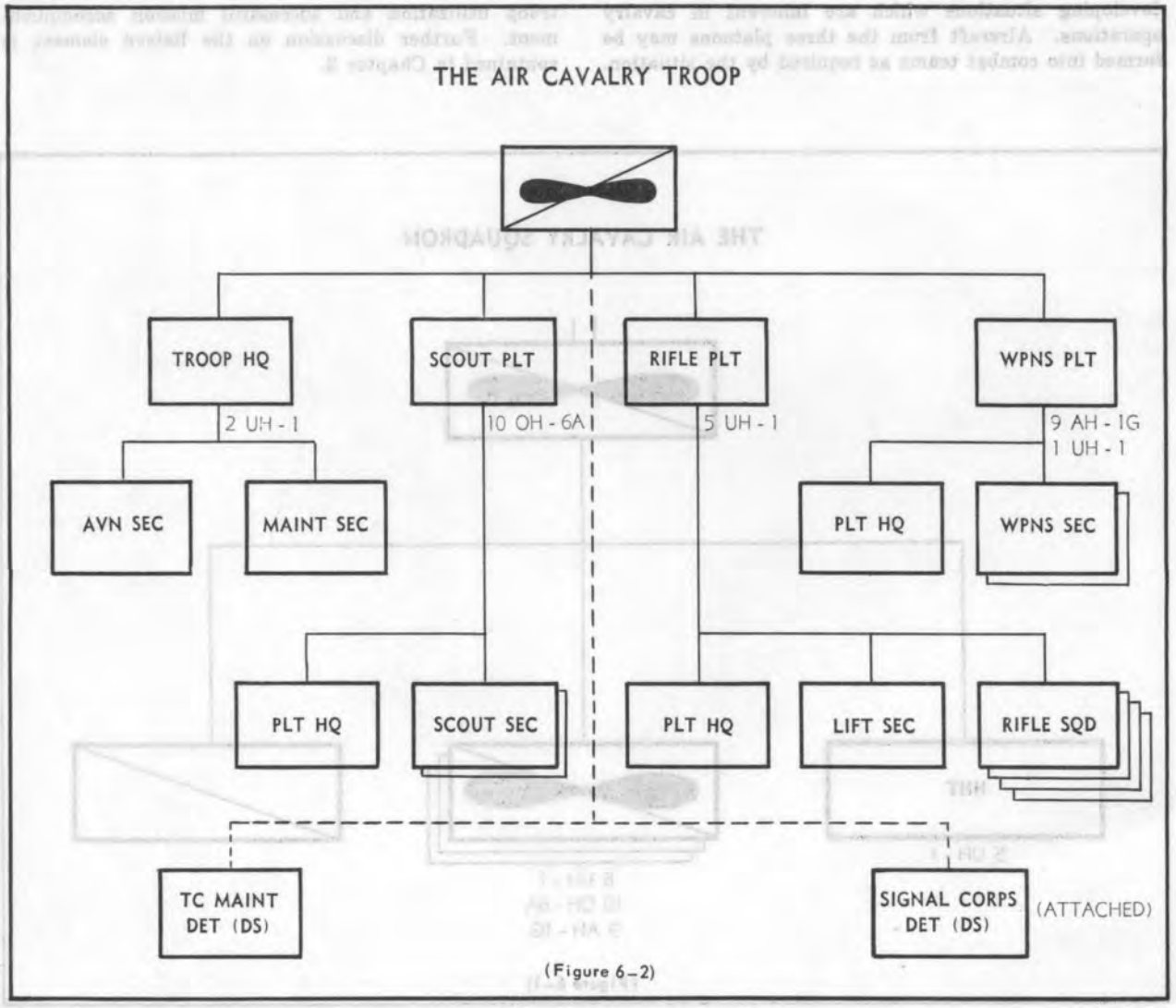
6-11. GENERAL

a. The mission of the cavalry troop is to perform ground reconnaissance, security and surveillance, operations and to act in an economy of force role. It is normally employed on missions which augment the squadron mission. In stability operations the cavalry troop may be employed on route, zone or area reconnaissance missions, used as a covoy escort, or used to protect and secure ground lines of communication. In the economy of force role it may be used as a ready reaction force for the Air Cavalry Troops or as a security force for the squadron base.

b. The cavalry troop consists of a troop headquarters, maintenance section and three cavalry platoons (see Figure 6-3). Each cavalry platoon contains a platoon headquarters, scout section, anti-tank section, rifle squad and mortar squad. The cavalry platoons are normally employed as organized but elements may be consolidated to form fighting forces tailored for specific missions.

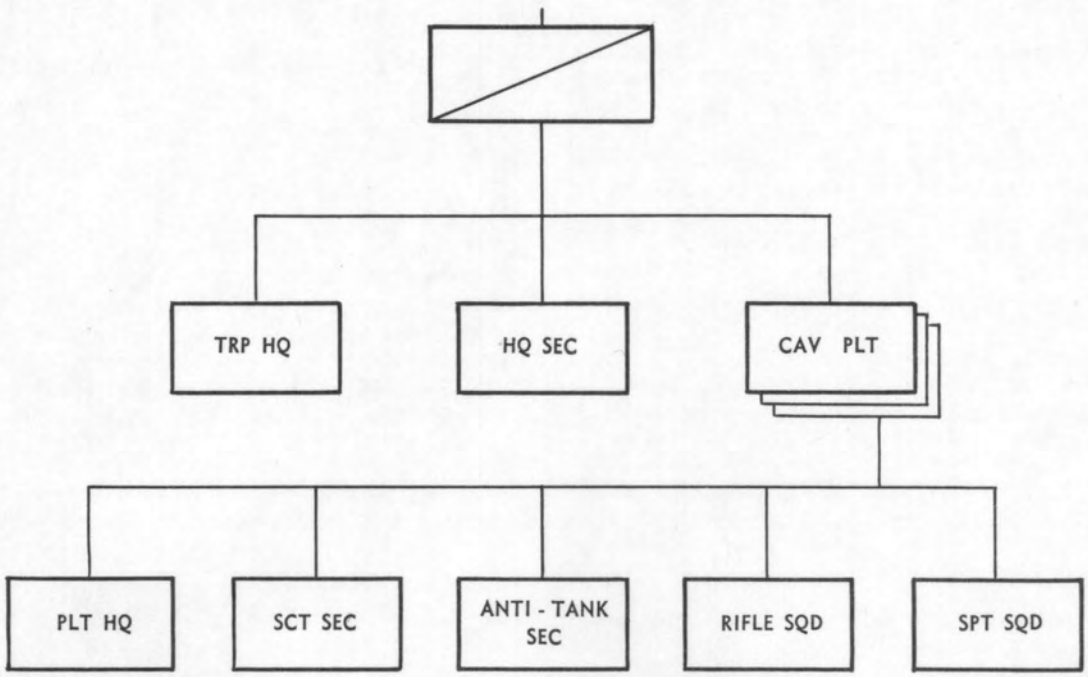
6-12. INDEPENDENT TROOP OPERATIONS

The cavalry troop normally operates under the control of its parent squadron. However, it is capable of operating as an independent force and may be attached to, or placed in direct support of or OPCON to a brigade or similar sized unit. Employment of the cavalry troop will be significantly influenced by the cross-country movement capability of its wheeled vehicles. Liaison personnel are avialable within the troop to establish a liaison element with the supported headquarters.



(Figure 6–2)

THE CAVALRY TROOP



(Figure 6 - 3)

CHAPTER 7
AERIAL RECONNAISSANCE AND SURVEILLANCE

Section I
General

7-1. GENERAL

a. This chapter provides information and guidance to commanders and staffs concerning the missions, orgnization, and command and control of Reconnaissance Airplane and Survillance Airplane Companies. In addition, it covers the capabilities, limitations, employment, techniques of operation of Reconnaissance (O-1) and Surveillance (OV-1) aircraft, and communications considerations.

b. Aerial Reconnaissance and Surveillance missions are performed in RVN by Army aviation units, the Tactical Air Force, and/or other supporting services. For detailed discussions concerning the Visual Aerial Reconnaissance and Surveillance (VARS) in the Republic of Vietnam, see MACV Directive 381-1, dated 1 November 1968.

c. All army aircraft currently employed in RVN are capable of performing aerial surveillance and reconnaissance missions to varying degrees, based on each aircraft's capabilities and limitations. These aircraft are organic to aviation and non-aviation units.

d. Army aerial reconnaissance and surveillance aircraft make a significant contribution to the overall collection of information needed to produce useful intelligence by extending and supplementing ground observation though the use of visual, aerial infrared, radar and photographic sensory devices.

7-2. DEFINITIONS

a. Reconnaissance. Reconnaissance is a mission undertaken to obtain by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy. A reconnaissance mission is characterized by its direction toward one or more specific target areas without the requirement for continuous coverage.

b. Surveillance. Surveillance is the systematic observation of airspace, surface, or subsurface areas, places, persons, or things, by visual, electronic, photographic, or other means for intelligence purpose. A surveillance mission is characterized by the greater expanse of terrain that it covers and the repetition with which it is flown.

7-3. CLASSIFICATIONS OF MISSIONS

Aerical surveillance and reconnaissance missions are classified as either preplanned or immediate.

a. Preplaned. Preplanned mission requirements are anticipated requirements for aerial surveillance or reconnaissance missions to collect intelligence information.

b. Immediate. Immediate mission requirements are unforseen requirements and are characterized by the urgency of time involved between request for, and receipt of information.

7-4. MISSION REQUESTS

All aerial reconnaissance and surveillance requests are processed through intelligence channels as prescribed by the senior U.S. commander/advisor in each Corps Tactical Zone (CTZ). For a detailed discussion concerning request procedures, see Section III Chapter 4, FM 30-20.

Section II
Surveillance Airplane Company (OV-1)

7-5. MISSION

The Surveillance Airplane Company provides combat surveillance, and target acquisition support to units in each Corps Tactical Zone (CTZ) by employing their organic OV-1 aircraft, sensor equipment, and ground sensor terminals.

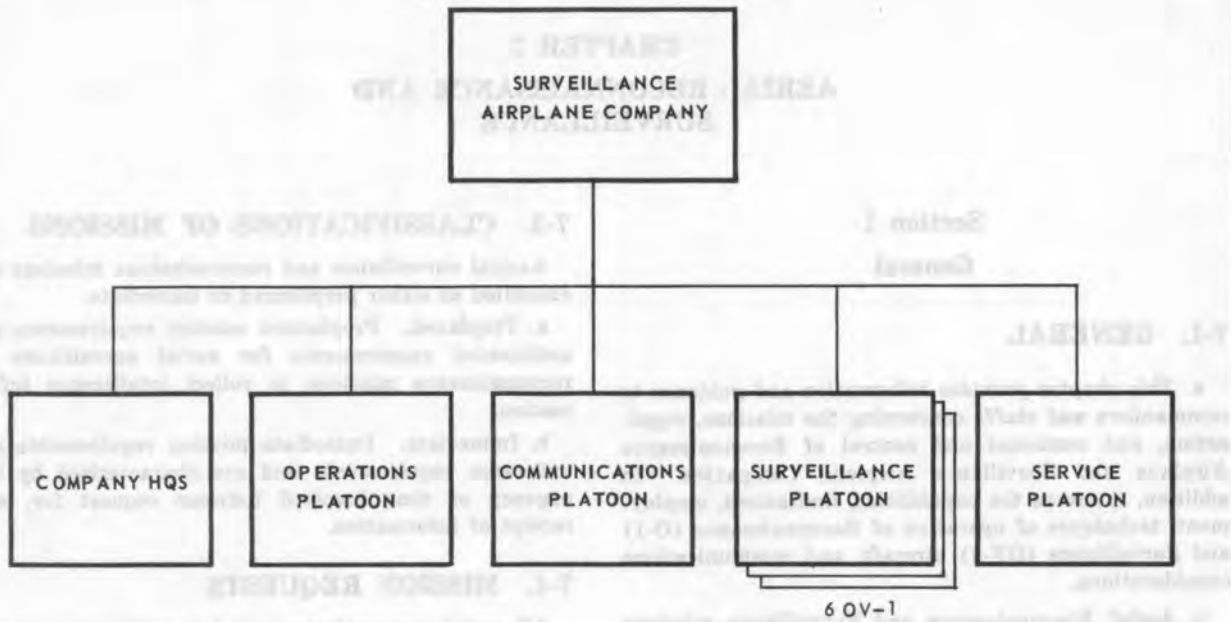
7-6. ORGANIZATION

Surveillance Airplane Companies are organized under MTOE 1-28T, PAC 1/68, 28 October 1968, (Figure-7-1).

7-7. COMMAND AND CONTROL

a. Command channels for normal unit administrative, logistical, and maintenance requirements are through the parent organization of each company.

b. Tactically, Surveillance Airplane Companies are in general support of the senior U.S. commander/advisor in each CTZ. The G2 Air Officer of the commander's staff normally exercises operational mission control of each company by directing the surveillance effort through the assignment of specific mission and priorities for accomplishment.



(Figure 7-1)

7-8. CAPABILITIES

a. OV-1 aircraft have the capability of providing visual reconnaissance of routes, rivers, canals, and selected terrain features. They can locate, identify and confirm tragets and conduct poststrike analysis. In addition, the OV-1 has the capability of providing photographic, side-looking airborne radar (SLAR) and infrared (IR) coverage.

b. SLAR is generally employed for large area coverage, area search missions, or in surveillance of linear distances such as lines of communications (LOC) coastlines, and international boundaries.

c. Side Looking Airborne Radar (SLAR) emits pulses that reflect off objects and terrain; this creates a return signal that is received by the radar antenna. The radar antenna mounted on the right front side of the OV-1B air craft has the capability of mapping terrain 25, 50, and 90KM ranges on one or both side of the aircraft simultaneously. A range delay feature of 10 KM increments out to a maximum of 40 KM range delay and 50 KM range can be incorporated giving a stand-off capability. It should be noted a range of 25 KM is the most effective for and map scale reproduction. This range will allow the airborne sensor operator a greater capability to correlate a map to the processed imagery for the purpose of giving inflight reports to ground combat units. The return signal is coverted into a visual representation and transferred to film. This film is processed in flight by the RO-166 inflight film processor. Processing takes about three minutes, after which the processed film rolls into view over a light table, enabling the airbonre sensor operator to interpret the imagery while in flight. The processed imagery has fixed taget indicator (FTI) and moving taget indicator (MTI) sides. The FTI presentation shows the terrain which is being mapped and the MTI portion of the imagery indicates targets which are moving. The MTI will appear as black dots on the imagery.

d. The aerial infrared system (IR) can be employed day and night; however, it is particularly effective at night in detecting infrared (heat) radiations of terrain and objects, by using the differential in the wave lengths of the electromagnetic (IR) radiations. The IR system emits no signal; it only receives those electro-magnetit radiations that reach the port door of the aircraft (a small opening located on the belly of the aircraft). Unlike the SLAR system which gives a near-real time presentation, the IR system has real time presentation of the target area the aircraft is flying over, which limits the capability of inflight plotting and reporting of targets. The IR system does not have an inflight imagery processing system. It has two scopes which allow the airborne sensor operator the ability to monitor the type imagery the IR

system is recording. The IR film is not processed until the aircraft returns to home base. Through experience it has been found that a limited inflight target reporting capability exists. To utilize this capabilty the airborne sensor operator must use the aircrafts organic Canadian-Marconi Doppler Navigational Computer system in determining the location of the target. A second method would be locating a target on or near a prominent terrain feature, such as a river, canal or road. The airborne sensor operator would then plot the target on his tactical map. The surface of the earth and objects on it emit varying degrees of heat emissions which are detected by the IR system. These varying degrees of heat emissions can be categorized as short wave lengths medium wave lengths or as long wave lengths depending on the temperature of the emissions relative to the temperature of the terrain or objects surrounding them. In order to detect thees varying degrees of heat emissions the IR system has wave length detectors capable of detecting any wave length within a micron spectrum relative to military significant targets. The IR system is a dual channel system in which various formats can be utilized along with the option to select the type wave length detector and altitude that will best answer the ground commander's EEI. The altitude required for an IR mission will vary and is dependent on the nature of the information that is desired. An IR mission can be flown to recognize a target or to identify it; i.e., recognition would place a target in a category such as large trucks or tanks, identification would name the target, such as a 2½ ton truck or a M-60 tank. As the altitude increases the capability to identify a target is reduced. IR can be employed in conjunction with visual, photo or SLAR missions to obtain additional information on activities noted. The detected heat emissions are converted into a visual presentation and printed on film. Heat producing sources are displayed as black dots. The film cannot be viewed in the aircraft as in the case of the SLAR but an observer can observe a heat source in his scope while airborne.

e. Photographic capabilities of the OV-1 include three camera systems; the KA-30 belly camera, the KA-76 belly camera, and the KA-60 nose camera. The KA-20 is used with the older series of aircraft and the KA-76 with the new OV-1C series. The KA-30 and KA-76 have the capability of taking vertical and 15 or 30 degree oblique photos with a variety of interchangable lens cones, compatable with mission requirements. The nose mounted KA-60 panoramic camera provides a 180 degree horizon to horizon photograph of the terrain immediately in front of the aircraft, just as the flight crew would observe it. This type of coverage makes the KA-60 ideally suited for photographing possible helicopter landing zones and planned flight routes to these zones. Forward looking panoramic photos will present the area or route exactly as it will appear to the aviator leading the assualt formation during an actual approach along the same route. Three different types of film are available for use with the KA-20 and KA-76 cameras. Black and white, the most commonly used film, can satisfy most photographic requests. Color is available and may be used when greater contrast is required to gain intelligence. CD (comouflage detection) film is best used to detect enemy attempts to hide their positions or equipment, CD and conventional color film are difficult to process and should be used to cover relatively small areas. Color and black and white film are available for the KA-60 camera.

f. The best intelligence information is obtained when all three OV-1 surveillance systems can be employed in conjuction with each other. The SLAR aircraft is normally employed to provide continuous surveillance over a given area during the hours of darkness. After analysis of the SLAR imagery, an IR aricraft may be employed to further identify the returns. The IR imagery is in turn analyzed, and if the situation warrants, an aircraft may be deployed to visually check and photograph the suspected areas. The combinations in which the three systems are used and the time of day, will be determined by the type activity, the terrain, and aircraft availability.

g. One of the assets within the Surveillance Airplane Company which is availabe to the ground commander is the SLAR and IR ground data terminal stations. These stations provide the ground commander with an almost immediate read out of the same information that is being received by the aircraft. The aircraft simultaneously transmits to the ground station, and what is being seen by the observer in the aircraft is also being observed by the ground station operator. The station operates on a line of sight principle and is limited by this factor.

7-9. LIMITATIONS

a. All aerial reconnaissance, and some surveillance means, are restricted by adverse weather, poor visibility and enemy air defense systems.

b. The SLAR may be employed under conditions of marginal weather with poor visibility, but not under severe weather conditions. SLAR reconnaissance is largely ineffective in areas where VC vehicular or boat traffic is virtually non-existent. Furthermore, mountainous terrain and heavy foliage further limits the effectiveness of radar surveillance. The SLAR is most effective when used in the Delta and coastal areas of Vietnam because of the numerous waterways used by the VC and because of fewer terrain obstacles which block radar emissions. (The establishment of curfews, restricted and prohibited areas in which boat and vehicular traffic are controlled will tend to improve the effectiveness of this type surveillance).

c. The IR is not an all-weather system and for satisfactory results with IR detectors the aircraft must fly low the cloud layers in the target area. Under marginal weather conditions, such flight is extremely difficult in mountainous terrain.

d. Visual/Photographic reconnaissance is limited by the proficiency of the aviator-observer team, terrain

condition, hostile ground fire, visibility, altitude and type of camera used.

e. If an intelligence trained briefing/debriefing officer is available to formally brief and debrief aviators and observers before and after flight, the amount of information collected from the flight is greatly increased. Much of the success of reconnaissance and surveillance efforts depends on the ability and direction given by this person. For detailed discussions concerning briefings and debriefings, see Chapter 10, FM 30-20.

7-10. EMPLOYMENT

a. The OV-1B, with its SLAR, provides area surveillance capable of detecting movement deep in enemy territory without crossing the FEBA or border.

b. The OV-1B and SLAR system, with its standoff capability, can obtain information located well within enemy controlled territory without having to overfly it. Flying along geographical or tactical boundaries, it can detect tragets well out of the range of antiaircraft fire. This standoff capability is particularly useful for border and coastal surveillance in counterinsurgency operations. Because the sensor can be employed from high altitudes the aircraft may be sent into enemy areas for specific missions. Care must be taken to protect it from aircraft and air defense weapons to which it is particularly vulnerable because of its comparatively slow speed.

c. The OV-1C, with its IR, provides route or strip surveillance which can detect enemy concentrations. IR can be used for area searches; however, due to its narrow width of coverage this requires repeated passes over the same general area. This employment provides the enemy with a measure of counterintelligence. Although IR is particularly effective at night, its usefulness during the daylight hours should not be overlooked. IR is often used to confirm targets that have already been located by visual, SLAR or other means. If employed over enemy territory, measures must be taken to protect the OV-1C from defense weapons, and enemy aircraft.

d. The OV-1, with its photographic capability, is highly effective when employed in conjuction with the O-1 reconnaissance aircraft. Working as a team, the OV-1 can concentrate on preplanned photo targets and yet be responsive to photo targets of opportunity located by the O-1. This combination of the O-1 locating and pinpointing the target, and the OV-1 photographing the target is especially effective in the fluid situations in a counter-insurgency enviorment.

7-11. TECHNIQUES OF AERIAL SURVEILLANCE AND RECONNAISSANCE OPERATIONS

For detailed discussion concerning techniques of aerial Surveillance and Reconnaissance Operations, see Chapter 8 Section IV, paragraphs 86 thru 89, FM 30-20 and Section II USARV Pam 381-2, "Concept guide for employment of the Aerial Surveillance Company".

Section III

Recon Apl Co (O-1)

7-12. MISSION

The Reconnaissance Airplane Company (RAC) provides reconnaissance and surveillance, adjustment of artillery and Naval gunfire, convoy cover, radio relay and marking of targets for strike aircraft and gunships as required in each CTZ.

7-13. ORGANIZATION

The Reconnaissance Airplane Companies are organized under TOE 1-257F (Figure 7-2). Each company is modified to support the requirements of the CTZ which it operates.

7-14. COMMAND AND CONTROL

a. Command channels for normal unit administrative, logistical and maintenance requirements are through the parent organization of each company.

b. Tactically, the Reconnaissance Airplane Companies are under the operational control of the senior U.S. commander/advisor in each CTZ. The G-2 Air Officer normally exercises operational control by directing the reconnaissance and surveillance effort through the assignment of specific missions.

7-15. CAPABILITIES

The O-1 aircraft has a visual (direct) and photographic observation capability. A photographic capability may be obtained by adding a side mounted KA-39 camera or any variety of hand held photographic equipment. It can carry an external load of 250 pounds of cargo under each wing and 200 pounds, or an observer, internally. In addition to performing visual reconnaissance and surveillance, adjustment of artillery and Naval gunfire, convoy cover, radio relay missions, and marking targets for strike aircraft and gunships, the O-1 is capable of providing limited illumination, wire laying, and message pickup and drop.

7-16. LIMITATIONS

Factors that limit visual/photographic reconnaissance and surveillance are:

a. Weather conditions which produce poor visibility and high gusty winds.

b. Enemy air defense system in operational area.

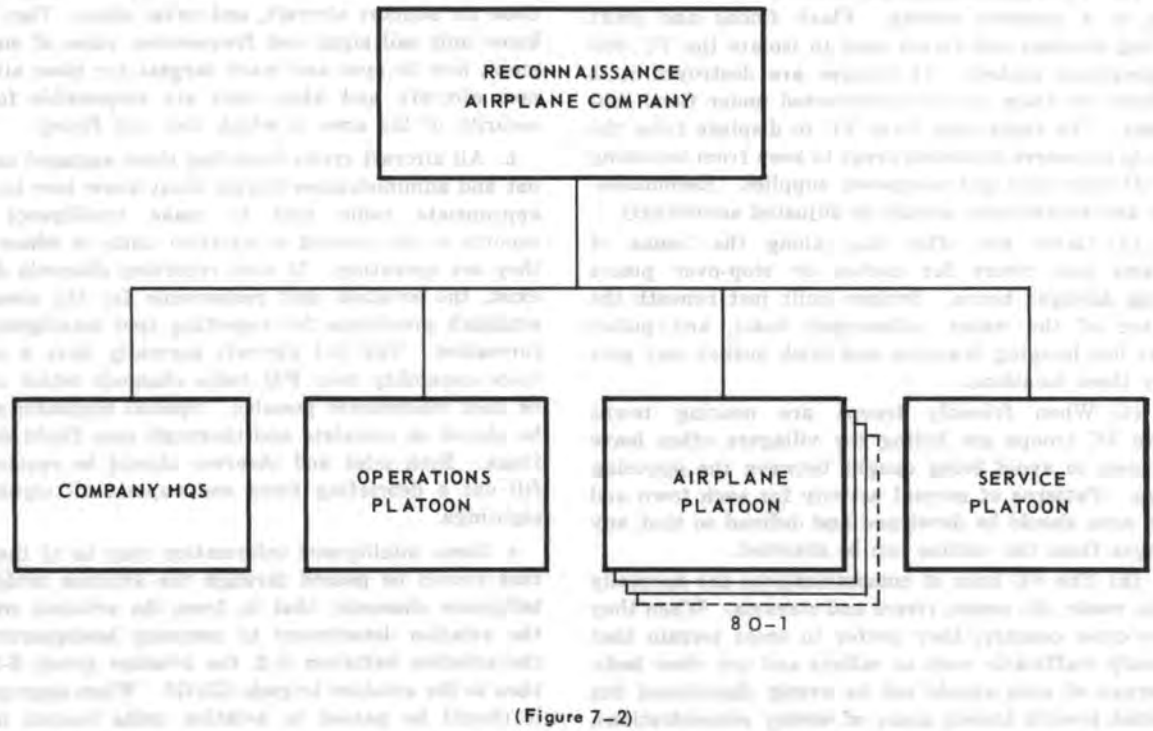
c. Dense vegetation or high hills or mountains which mask or restrict direct observation.

d. Unusually dark nights.

e. The proficiency of the aviator/observer team.

7-17. EMPLOYMENT

a. The Reconnaissance Airplane Company normally is employed as a unit with its subortinate elements



(Figure 7-2)

dispersed throughout its area of operations. A platton or section can operate detached from its parent unit for an extended period with assistance from its parent or supported unit. They are normally assigned an area mission and, where possible are centrally located in this area. The company commander acts as the visual reconnaissance advisor to the area commander, advisor, or senior ground force commander.

b. For ease of reconnaissance and surveillance, an area is normally divided into easily identifiable geographic areas which can be thoroughly covered. These areas are numbered and/or lettered for identification purposes. The same aviator/observer team flies in the same area on a daily basis so that they become intimately familiar with the pattern of life in the area and are able to detect any deviation from the normal.

c. MACV Dir 95-10, Subject, "Use of USA and USAF O-1 Aircraft and Crews", outlines the following general guidance for the establishment of priorities for the use of O-1's. Specific priorities are to be determined at the action level.

(1) Quick response mission necessary for tactical success at sector level.

(2) Airstrike Control

(3) Artillery and Naval gunfire edjustment

(4) Convoy/ship escort

(5) Visual Reconnaissance and Surveillance

(6) Raido relay

(7) Directing gunships and medivacs

(8) Flare missions

(9) Message drop and pickup

(10) Others

7-18. VISUAL AERIAL RECONNAISSANCE AND SURVEILLANCE TECHNIQUES

a. Methods and techniques of aerial surveillance and reconnaissance in counterinsurgency operations are basically the same as those of other types of warfare. The surveillance watch in Vietnam is extended over the entire country, rather than being limited to an immediate battle area. For a detailed discussion on aerial surveillance and reconnaissance in more stabilized operations, see Chapter 11, FM 30-20, August 1967.

b. Knowing specific traits of the enemy will enhance the aviator/observer team's effort to detect enemy activities. For example:

(1) The VC locate their camp sites on the sides of hills because ARVN and U.S. units have a marked tendency to shell and bomb valleys; however, their sites are normally close to water to provide facilities for cooking, bathing and manufacturing processes that require large amounts of water. As a result, their camp sites are usually located within 1500 meters of a

water source. During the dry season, they may be forced to displace their sites to other locations.

(2) The rainy season, particularly in mountainous area, is a common enemy. Flash floods and swift moving streams and rivers tend to isolate the VC into geographical pockets. If bridges are destroyed it is difficult for them to be reconstructed under flood conditions. The rains may force VC to displace from the hills to be nearer inhabited areas to keep from becoming cut off from food and manpower supplies. Reconnaissance and surveillance should be adjusted accordingly.

(3) Caves are often dug along the banks of streams and rivers for caches or stop-over places during daylight hours. Bridges built just beneath the surface of the water, submerged boats, and pulled under low hanging branches and thick bushes may give away these locations.

(4) When friendly troops are nearing towns where VC troops are hiding the villagers often leave the town to avoid being caught between the opposing forces. Patterns of normal activity for each town and farm area should be developed and defined so that any changes from the routine can be detected.

(5) The VC lines of communications are normally trails, roads, the ocean, rivers and streams. When they move cross country, they prefer to cross terrain that is easily trafficable such as valleys and dry river beds. Coverage of area should not be evenly distributed but directed toward known areas of enemy concentrations, known lines of communications, and areas where terrain favors enemy movement.

(6) The VC use floating vegetation in canals or rivers as a means of concealment while swimming under it, Floating vegetation that does not follow the flow of the current is the best indication here. A dark form underlying this foilage is another good indication of the presence of the enemy.

(1) The VC use irrigation ditches for concealment of their sampans. Since the edge of the canals are usually more verdant than the outlying areas, this can provide excellent natural camouflage. Normally these irrigation ditches are not overgrown with vegetation to allow for the free flow of water. Observation of these type intersections, where the foilage has grown over the irrigation ditch, is a good indication of an underlying water craft. A comparison of this growth of covering to that of the surrounding area can lead to a more conclusive indication of VC materiel.

7-19. COMMUNICATION

a. Reconnaissance and surveillance must be timely and the user must have the ability to react immediately to intelligence sightings. Aviators and observers must be completely familiar with the exact location and designation of all friendly troops to include exact locations and ranges of all artillery units, gunships, close air support aircraft, and naval ships. They must know unit call signs and frequencies, rules of engagement, how to spot and mark targets for close air support aircraft, and what units are responsible for the security of the area in which they are flying.

b. All aircraft crews including those engaged in combat and administrative flights must know how to enter appropriate radio nets to make intelligence spot reports to the ground or aviation units in whose area they are operating. If such reporting channels do not exist, the aviation unit responsible for the area will establish provisions for reporting spot intelligence information. The O-1 aircraft normally have a secure voice capability over FM radio channels which should be used wherenever possible. Special emphasis should be placed on complete and thorough post flight debriefings. Both pilot and observer should be required to fill out a debriefing form and explain all significant sightings.

c. Some intelligence information may be of the type that should be passed through the aviation bridge intelligence channels; that is, from the aviation crew to the aviation detachment to company headquarters, to the aviation battalion S-2, the aviation group S-2 and then to the aviation brigade G2/G3. When appropriate, it should be passed to aviation units located in the same or adjacent areas and to supported U.S./ARVN/FWMAF units or their higher or lower headquarters. Occasionally information will be of such a nature that it must be passed through both aviation and non-aviation channels. The decision on which channel to use is made by the unit intelligence officer.

Each aviation group, battalion, company, and detechment must remain constantly aware of the fact that every flight in which their personnel participate may produce information that can be converted into vital intelligence. For this reason, all personnel must be instructed to be alert and, when not engaged in combat or other actions necessary to mission accomplishment, to actively perform a visual reconnaissance of the operational area.

e. Operations personnel must be properly trained to pass intelligence information to appropriate agencies so that if no other communications nets are available, flight crews can use tower and flight following frequencies to pass intelligence information. Intelligence informations messages relayed through control tower or flight following stations will be preceded by the wards SPOT REPORT, to insure that they are recognized as intelligence messages.

CHAPTER 8
SPECIAL OPERATIONS

Section I
General

8-1. GENERAL

This chapter provides information and guidance in the conduct of unconventional or specialized assault helicopter operations in support of Long Range Reconnaissance Patorl (LRRP) or Special Forces clandestine type operations. It will also serve as a guide in organizing, and employing aviation elements in the conduct of specialized helicopter missions in a theater of operations. The nature of each mission is such that standard rules of employment cannot be adhered to; however, the following procedures are a starting point from which tactics may be developed to meet the variety of terrain and enemy situations that are encountered.

8-2. MISSION

The mission of aviation elements in the support of LRRP and Special Forces reconnaissance and interdiction operations is to insert various sized patrols by the use of unconventional and specialized helicopter tactics into selected sites with maximum secrecy and to extract them either upon completion of their mission, upon mission compromise or if they are under heavy contact by a numerically superior enemy force. A unit performing unconventional helicopter operations may support as many as three or four Special Forces Detachments and LRRP units simultaneously at remote outposts far distant from the unit's home base. Unlike conventional combat assault missions, an Air Mission Commander (AMC) is required and recommended for every supporting aviation element in the field. Armed helicopter teams organic to the supporting aviation element are desired at every separate forward operations base. Aside from the additional specialized techniques and tactics that are involved, logistical, maintenance and general support responsibilities are more complex and demanding upon the section, platoon, and unit commanders.

8-3. TEAMWORK

The successful accomplishment of each mission depends upon teamwork among all aviation and ground personnel. Aviators must know, understand, and appreciate the responsibilities of members on the ground in order to provide instantaneous support when required. Likewise, ground personnel must be fully cognizant of the requirements, procedures and hazards inherent with specialized helicopter techniques and tactics. This understanding can be established and maintained by aggressive liaison between aviation and ground elements.

Section II
Organization

8-4. GENERAL

Organization of a task force conducting special operations must provide for sufficient personnel and equipment to accomplish the assigned missions. Flexibility is the keynote to the sucess of special operations and it is imperative that flexibility be built into the task force structure.

8-5. PERSONNEL

a. Air Mission Commander. Normally the airlift platoon commander providing support will act in the capacity of Air Mission Commander (AMC). He is in command of all aviation personnel and equipment, both organic and attached, and is responsible for the conduct and accomplishment of assigned aviation missions. He is also the advisor to the Ground Mission Commander on aerial tactics, aircraft utilization and factors affecting the successful accomplishment of the air mission.

b. Operations Officer. Normally an aviator from the airlift platoon providing support, who schedules crew members and aircraft in the conduct of the mission, supervises the collection of forms and records and the dissemination of required daily or special reports and monitors the requirement for courier and/or administrative support missions.

c. Operations Dispatcher. Assists in the scheduling of aircraft and crews, transmits reports as required and effects close coordination with supported tactical operations center.

d. Intelligence Officer. Collects and disseminates intelligence on a daily basis as required to insure maximum dissemination to activities and agencies requiring this information.

e. Armed Helicopter Element Commander. Commands all armed helicopter activities in support of each mission, provides rapid reaction fire teams in support of local area defense or as otherwise directed by the Air Mission Commander. Missions originating from other than the assigned operation must be approved by the Ground Mission Commander.

f. Maintenance Officer/NCOIC. Normally the platoon maintenance officer/NCO of the airlift platoon providing lift support is responsible for effective aircraft maintenance and must continually keep the Air Mission Commander advised of the changing maintenance status. He must insure that maximum aircraft are available at all times, that maximum advantage is taken of slack periods of activity and the conduct of running scheduled maintenance checks and inspections is practiced to the greatest degree possible.

g. Maintenance Support. It is recommended that a maximum number of aircraft mechanics accompany each support element to remote Forward Operational Bases. Maintenance support personnel from the service platoon will assist in the performance of unscheduled maintenance and supervision of all daily, intermediate and post flight inspections of aircraft. At a minimum this team should include:

(1) 3d echelon mechanics (2).

(2) Technical inspector (1).

(3) Avionics representative. At least one avionics specialist, for field repair or replacement of raido equipment and maintenance of ADF homing electronic devices, must be included in the maintenance team.

(4) Armorer. This individual, organic to escort platoon or parent unit, is tasked with the repair of aircraft weapons systems, resupply of repair or replacement parts and to supervise and assist in the maintenance of weapons systems.

h. Ammunition Officer/NCOIC. Normally a member of the escort platoon providing armed helicopter support. He is tasked with the itmely resupply of rockets, small arms and machine gun ammunition, and other munitions to include smoke and illumination parachute flares.

i. Supply Officer. Normally an aviator organic to the airlift platoon providing support. He is responsible for the requisition and accountability of all required supplies and equipment.

8-6. AIRCRAFT

The optimum number of aircraft for specialized missions varies based on the scope and estimated duration of each operation. The ideal task organization is eight troop-carrying helicopters and four armed helicopters (UH-1C or AH-1G). This organization provides from six to seven insert helicopters, allowing the insertion of up to platoon size patrols, and the utilization of one helicopter as the command and control (C&C) aircraft. This organization also provides for at least one replacement, emergency and or recovery aircraft. Various task organizations can be used with less than the optimum number of helicopters; however, the following criteria should be considered in order to provide adequate backup and protection for aviation and ground elements and sufficient aircraft to accomplish each mission at remote launch sites:

a. As the number of patrols simultaneously deployed in the area of operations (AO) increases, the need for reserve aircraft to handle emergency extractions increases.

b. If only single-ship insertions are scheduled (five or six man patrols), four troop-carrying helicopters will suffice (one insert, two recovery and one C&C helicopter).

c. If twelve to fourteen-man patrols are scheduled, normally six troop carrying helicopters will provide adequate assets for reinforcement, emergency extraction or recovery of downed crews. The preferred minimum number of lift helicopters for nearly all specialized operations is six.

d. A minimum of four armed escort helicopters is required at each launch site. In addition to providing minimum continuous coverage for all planned insertions and extractions, it provides the capability of covering two or more patrols requesting emergency extraction and/or making contact at the same time. A minimum of one light fire team (LFT) must be available at all times.

e. For each special operation, normally one fixed wing radio relay pilot is attached to the ground unit. Much benefit can be derived if the fixed wing radio relay pilot is proficient in the adjustment of artillery. Artillery is extremely effective when utilized in support of patrols in contact.

Section III
Preparation

8-7. GENERAL

Establishing a base of operations requires the attention to detail that is normally found in a complete unit displacement. Although special operations are on a smaller scale, functions must be provided for and planned accordingly.

8-8. FORWARD OPERATIONAL BASES (FOB)

Since FOBs, also referred to as launch sites, are normally situated in outlying Special Forces Camps or in other allied base camp areas with regular aviation facilities, it will often be necessary to construct facilities commensurate with aviation requirements.

a. Aircraft Revetments: Normally constructed of empty 55 gallon drums filled with dirt and/or sandbags. If engineer equipment is available, berm type revetments can be constructed in an extremely short period of time. Adequate dispersal between revetments is mandatory because of the likehood of indirect fire weapons attacks on outlying camps when helicopters are deployed to these locations.

b. Protective Bunkers. It will be necessary to construct protective personnel bunkers. The use of culvert and sandbags has been found to be the most expedient means.

c. Flare Revetments: Since the aircraft flare is utilized extensively in night extractions, it is necessary to construct a flare bunker in close proximity to the C&C helicopter. This bunker should have protective walls on all four sides and adequate overhead cover.

d. Tentage: Used extensively in field operations of this nature and will normally be transported from the aviation unit's home base of operations; not normally available from the supported unit.

e. Perimeter Defense: On occasion, aviation personnel will assist in manning the launch site's perimeter defense utilizing organic M-60 machine guns and individual weapons. Aircraft revetments must be located at distances greater than hand grenade range from the defensive perimeter, and if possible, small protective fighting bunkers should be constructed next to the aircraft revetments to be utilized by personnel given the responsibility of protecting individual aircraft from sapper attacks.

f. Helipad Lighting Systems: The use of the emergency lighting set with battery powered lights is used most frequently at the forward launch sites. Sophisticated lighting systems are not normally necessary.

8-9. SUPPLY AND LOGISTICS

a. It will be necessary to utilize organic aviation assets for the resupply of rations, clean clothing, repair parts, etc., from the aviation unit's home base of operations.

b. In the event potable water is not available and must be field treated, a qualified medic should be located at the forward launch site.

c. Normally a courier aircraft from the home base of operations or an aircraft returning to home base for periodic maintenance will accomplish these missions and return all aircraft forms and records and required operational reports.

d. Because of normally dusty conditions at forward launch sites it is mandatory that a facility be established for the washing of aircraft. This facility can be a water trailer, necessary hoses, and a water pump (all of which are in the AHC TOE).

e. Normally messing and mess facilities will be provided by the supported unit; however, it may be necessary for the aviation element to provide the supported unit with mess personnel.

f. Ammunition/flare resupply. If operating from a brigade base camp area, the availability of ammunition to include armed helicopter ammunition, is normally limited. If operating from small isolated outposts or camps, all armed helicopter ammunition and flares must be transported to the launch site. Close coordination with the supported unit and/or the parent aviation battalion is required.

8-10. COMMUNICATIONS

a. Home base to launch site. AHCs with organic high frequency, single side band radio have a capability (utilizing the whip antenna) for voice and radio teletype communications for 50-55 miles from their home base of operations. Comparable equipment will normally be situated at brigade base camp areas but not at remote outposts or camps. When supporting Spceial Forces Detachments, this equipment may be available if a FAC is attached, since this type equipment with operator will normally be located with the FAC at the forward launch site.

b. FM Net. The FM net will be utilized by the Ground Force Commander from the C&C aircraft to his launch site operations center and to the forces on the ground. He may utilize the organic aircraft FM radio (ARC-54; range 45-50 miles) or an AN/PRC-77 located in the passenger compartment. Emphasis should be placed on the use of secure voice equipment whenever possible.

c. UHF Net. The UHF net (ARC-51BX; range 45-50 miles) will be utilized for air-to-air communications between the armed helicopters and only when coordinating their aerial manauver and fire support. NOTE: It is imperative that strict communications discipline be adhered to during the conduct of these operations. (On occasion, the ground elements has been forced to utilize its URC-10 emergency radio for emergency communications with the C&C helicopter).

e. Automatic Direction Finding Facility: Since the nature of these operations dictate flights at any time of day or night and under varying weather conditions, it is imperative that a navigation facility be established at each launch site. Each AHC has organic automatic direction finding beacon equipment with a signal sending capability of approximately 75 miles in the high power setting. The avionics repairman at the launch site should have the capability of establishing, monitoring and maintaining this equipment.

8-11. AIRCRAFT MAINTENACE SUPPORT

Each forward launch site should have its own limited maintenance capability. (See paragraph 8-5 f and 8-5 g above). The maintenance supervisor assures the Air Mission Commander that proper maintenance practices and procedures are being adhered to in the field; he supervises the daily, intermediate and post flight inspections; coordinates with the maintenance officer at the home base of operations for repair parts, aircraft replacement and additional maintenance support as it become necessary. It is imperative that close coordination between home base operation/maintenance and the FOB be effected for scheduling and replacement of aircraft in the field. Without this coordination, an effective scheduled maintenance program will be impossible. Downed aircraft recovery requests will pass from the Air Mission Commander to the maintenance officer at the home base of operations to the recovery unit. During the actual recovery the parent battalion's UHF or FM radio frequency should be utilized by the Air Mission Commander and the rigging and recovery element, enabling the parent battlion to monitor this critical operation.

8-12. FLIGHT OPERATIONS CENTER (FOC)

This facility must be established and will normally be an integral part of the supported unit's launch site operations center. An operations officer (normally the platoon operations officer of the airlift platoon providing support) will schedule the aircraft and crews for the Air Mission Commander. He will check and monitor all aircraft forms and records prior to their return to the home base. An operations specialist (from company operations) will coordinate via either radio or land line communications, all requirements with company operations at home base. He is also given the responsibility of insuring that tactical flight plans are field. This operations specialist is also responsible for keeping an up-to-date flight scheduling board.

Section IV

Conduct of Operations

8-13. GENERAL

Special Operations are characterized by unconventional tactics and procedures which can not be predicted by the enemy. Every attempt must be made to conceal intentions, mislead the enemy and perform the unexpected. Ingenuity of the Air Mission Commander and teamwork by all members participating in the operation will establish a firm base for successful mission accomplishment.

8-14. VISUAL AERIAL RECONNAISSANCE (VR)

The conduct of a VR is highly desirable prior to all tactical insertions. It is essential to obtain as much information as possible, but every precaution will be taken to prevent compromising an LZ, especially when inserting LRRP's. Such techniques as high altitude recon and low level pass will be employed. This VR may be conducted utilizing light fixed wing aircraft; however, the use of a C&C helicopter is preferable. During the conduct of the aerial reconnaissance, it is imperative that a readily identifiable release point (RP) be selected. The success of a tactical insertion may hinge on the proper selection of an RP; the importance of proper selection cannot be overemphasized.

a. The route of flight to the LZ from the RP must be one which affords the least probability of observation from the ground. If high ground dominates the area of operations (AO), with the possibility that the enemy is situated on that dominating terrain, it may be necessary for the insert helicopters to fly low level from the launch site to the RP and then to the LZ.

b. The LZ should be the smallest one available into which a resonable safe approach and landing may be made. It should preferably be one with heavy foliage surrounding it in order to provide immediate concealment to the air landed reconnaissance element. Large bomb craters in the jungle of rain forest are often suitable LZs. It may be necessary to made an LZ by using Air Force fighter strikes utilizing large bombs or daisy cutters.

c. The Air Mission Commander must be assured that he can identify the LZ and should mark any readily identifiable check points on his map to assist him.

d. The most critical operations for the Air Mission Commander is to locate the insert helicopter when inbound, and at the same time keep his LZ identified. If there is any question as to the suitability of the area during the high recon, a final low recon may be made by establishing an azimuth and heading to the LZ from a distance and then flying directly over the LZ at tree top level. The flight should be extended so that the exact point being reconnoitered along the route of flight will not be obvious to the enemy.

e. An alternate LZ must be selected. Both the primary and alternate LZs must be agreed upon by Air Mission and Ground Force Commanders.

f. The Air Mission Commander. Ground Force Commander (launch office), reconnaissance team leader and the insert helicopter Aircraft Commander should be the minimum personnel to be carried on the visual reconnaissance. A light fire team should accompany the reconnaissance helicopter whenever possible, especially if a known enemy antiaircraft capability exists within the AO.

8-15. MISSION BRIEFING

A joint briefing of aviator, ground force personnel, forward air controller and radio relay pilot is essential takeoff times, check points, orbit points, final approach azimuth, flight formation and emergency extraction plans, to include signaling, are the minimum elements of essential information that must be covered. Normally all items listed in Section IV, paragraph 1, (Air Mission Commander Checklist) should be covered in the aviation portion of the mission briefing. Enough time should be allotted before takeoff to permit additional map study. Reconnaissance photographs of the mission area should be obtained and studied whenever possible. The aviation chain of command should be designated at this time. The normal command structure is as follows: Air Mission Commander, Escort Platoon Commander or Fire Team Leader, and insert helicopter Aircraft Commander.

8-16. NAVIGATION

a. Navigation over flat open areas, such as delta regions, is accomplished primarily by heading, time and distance to the target area, or release point utilizing villages, rivers, roads, trails and canal lines as reference points.

b. Navigation over heavily vegetated areas is difficult but not impossible. Prominent open areas, rivers, definable roads and trails and high ground are usually prevalent within most heavily vegetated operational areas.

c. As discussed proviously, the installed aircraft FM raido with a homing capability and the automatic direction finding beacon are navigational aids used extensively and very successfully during the conduct of these operations.

d. If partial enroute low level flight is called for, navigation will be supplied by the C&C ship by use of vectoring method.

8-17. INSERTIONS

a. Minimum Helicopter Requirements

(1) Five or six man reconnaissance team: One insert helicopter, one recovery helicopter, one C&C helicopter, one light fire team for escort, and one light fire team on strip alert. If two light fire teams are not available, a heavy fire team should be the minimum available in order to maintain constant cover over a ground force in contact, taking into consideration refueling and rearming requirements. It is normal procedure that when continuous cover is required, one of the three armed helicopters of the heavy fire team will return early for rearming and refueling. It will then replace a second armed helicopter on station who will do likewise.

(2) Twelve to fourteen man reconnaissance team: Two insert helicopters, two recovery helicopter requirements as outlined in subparagraph (1) above.

(3) Reconnaisance or patrol forces from platoon minus, to reinforced platoon size: One insert helicopter for every seven indigenous troops, two American and five indigenous troops, or six American troops; one C&C helicopter and armed helicopter requirements as previously outlined.

(4) Insertions of more than two helicopters should be considered normal combat assault operations, since secrecy may not be possible. Exception: Night insertions if properly planned and executed. Normal combat assault operations utilize LZ preparations of Air Force strikes, artillery concentrations, armed helicopter pre-strikes and/or any combination of the above. Full suppression from the troop carrying helicopter doorgunners will normally be authorized, commencing on final approach to the LZ.

b. Procedures—Basic Day Insertions

(1) The C&C helicopter should depart from the launch site approximately five minutes prior to the departure of the insert, recovery and armed helicopters so that the Air Mission Commander will have an opportunity to check weather conditions, pinpoint the RP, LZ and made a final analysis of terrain features and obstacles. The C&C helicopter must stay as for away from the route of flight and LZ as possible during the weather check and terrain analysis.

(2) The insert and recovery helicopters, followed by the light fire team, should depart the launch site in a nonstandard flight formation. Aircraft should depart individually and rendezvous at the first check point. Formations which may be used will normally be some variation of the standard staggered trail or echelon formation.

(3) The insert and recovery helicopters, followed by the light fire team will proceed to the RP located from three to five kilometers from the LZ. This flight should be made at a safe altitude of 1200 to 2000 feet above the ground unless the enemy occupies high ground dominating the area of operations, in which case it may be advantageous to fly at low level from the launch site. The light fire team will cover the insert helicopter during descent from the rear. The insert aircraft will report "RP, low level", to the Air Mission Commander and will then turn to the preplanned heading to the LZ.

(4) At the RP, the recovery aircraft will proceed at altitude to the predetermined orbit point in an area of from five to ten kilometers from the LZ.

(5) The Air Mission Commander, flying at an altitude of approximately 1,500 feet above ground level (weather permitting) will visually identify the insert aircraft at the RP and will vector him to the LZ by giving him changes in headings, distances remaining to the LZ, and speed reductions in order to bring him directly over the LZ in an altitude and at an airspeed to allow minimum termination preparation on the part of the insert aircraft. The C&C helicopter should remain at a distance of approximately one kilometer to one side of the final approach vector and should attempt to keep the insert aircraft over the most heavily vegetated terrain and, if possible, away from open areas.

(6) As the insert aircraft makes his landing into the LZ the armed helicopters will position themselves to provide cover while the insert aircraft is disembarking the ground element.

(7) The insert Aircraft Commander must understand that he the final authority to insert or abort. He must not risk damage to his aircraft on insertion since it might jeopardize the mission, as well as the crew and reconnaissance team. If the landing is aborted, the Launch Officer, riding in the C&C helicopter, will make the decision as to whether a landing will be attempted into the alternate LZ. If the decision is made to land in the alternate LZ, the Air Mission Commander will then direct the insert aircraft to his alternate LZ utilizing the same vectoring techniques.

(8) After disembarking the reconnaissance element, the Air Mission Commander will give the insert aircraft a departure heading from the LZ and will vector him low level over the most heavily vegetated areas until it is determined that a safe climb to altitude should be initiated. The insert aircraft will then proceed along the most suitable route to join the recovery aircraft at their orbit point. If the insert aircraft climbs to altitude immediately upon departing the LZ, there is a good possibility that the reconnaissance element may be compromised.

(9) The light fire team will not orbit the LZ, but will give passing protection during the time the insert aircraft is in the LZ. In the event the insert aircraft

is fired upon during landing, the mission will normally be aborted and the light fire team will suppress the hostile area. If the landing has been successful, the light fire team will escort the insert aircraft to their orbit point and will join the orbit.

(10) The C&C helicopter will move to an orbit point in the vicinity of the insert, recovery and armed helicopter orbit. All aircraft will normally remain at that location, at a safe altitude, until the reconnaissance team leader is satisfied that the mission has not been compromised, at which time all aircraft will return to the launch site. The release will be given by the Ground Element Commander.

(11) If more than one helicopter is being inserted into a single ship LZ, the same procedures will be adhered to with the following innovations. When the first insert aircraft departs the RP at low level, the remaining insert aircraft will orbit in the vicinity of the RP at altitude until the Air Mission Commander orders them to descend and proceed inbound from RP to LZ. The light fire team must provide adequate escort into and out of the LZ for all insert aircraft. The Air Mission Commander may elect to utilize two fire teams, if available, during this particular type insertion.

(12) When a Forward Air Controller is available he will normally be airborne during all insertions and extractions to be utilized to direct fighter strikes if necessary.

(13) Experience has proven that last light (EENT) insertions are most effective. However, if the mission is compromised, a difficult night exteraction will probably be necessary. The last light insertion is extremely critical when the reconnaissance or patrol element is of less than platoon strength and when numerous enemy forces are known to be located within the AO.

c. Procedures—Alternate Day Insertions

(1) When conservation of forces is demanded, terrain permits, crews are experienced, and other factors are suitable, inserts can be accomplished with one aircraft and a light fire team.

(2) When the LZ is easily identifiable and the trees are so high and dense as to obstruct enemy observation, a near-normal approach can be made to the LZ.

(3) The insert aircraft remains at such an altitude after passing the RP so that he can see the LZ and establish an inbound heading. It arrives at a treetop level a thousand meters short of the LZ at suitable final approach speed.

(4) Normal light fire team support protection is afforded the insert aircraft until out of the LZ, at which time he will proceed to his orbit area, remaining until released.

(5) This mission can be flown without a C&C helicopter; however, it is strongly recommended that one be utilized if available.

(6) Insertions can be made utilizing rope ladders or by rappelling when landing zones are not available. Although rappelling is more rapid than a rope ladder insertion, both are undesirable primarily because of the time the insertion helicopter must hover over the target area.

d. Procedures—Night Insertions

(1) Night insertions are extremely difficult when operating in heavily vegetated areas. It is very difficult, if not impossible, to land into a confined single-ship LZ without the use of the helicopter landing light or flare illumination. If lights are used, the mission is no longer a clandestine operation.

(2) In open delta areas night insertions are possible and afford the ground force element a degree of concealment. The pre-planned visual recon and mission briefing are extremely critical. The RP must be readily identifiable and upon reaching the RP the insert aircraft may or may not descend to low level. A position report will be given at the RP. Once identified by C&C the insert aircraft will be vectored to the LZ by C&C. This vector is normally a straight line azimuth from the RP to the LZ. (Innovations and alternate methods of light identification of the insert ship should be tried.)

(3) All remaining procedures are basically the same as those outlined for day insertions.

(4) If night insertions of platoon or large units are initiated, normal night combat assault procedures should be followed. The LZ area will be illuminated by the use of flares, and Air Force, artillery and armed helicopters may be utilized.

(5) Rope ladder insertions or insertions by rappelling at night are extremly difficult and should be used only as a last resort in cases of tactical emergencies.

8-18. EXTRACTIONS

a. Normal Extractions

(1) Normal extractions will be planned in detail and will be conducted essentially as the insertion, except that it is not alway necessary to approach the pickup zone (PZ) at treetop level. Armed helicopters may circle the PZ during extractions since compromise of the ground element is no longer of concern. Armed helicopters should be utilized during all extractions and can be sent to reconnoiter the PZ prior to arrival of the extraction aircraft.

(2) The orbit area will be moved much closer to the PZ than it was in the case of the insert LZ.

(3) Rope ladder and/or McGuire Rig rope extractions will be made when there is no suitable LZ. Additional helicopters will have to be committed, since the aircraft will not normally be able to sustain a high hover with a full load. Remaining extraction aircraft must be ready to proceed inbound immediately after the preceding helicopter departs. Therefore a successful technique is for the remaining extraction

helicopters to remain at altitude observing the operation until time for approach to the LZ.

(4) Rope ladder and McGuire Rig extractions should be utilized only as a last resort.

(5) Extractions at night are critical and will be accomplished utilizing landing lights and flare illumination, since compromise of the ground element is no longer of concern. Because of the prime target being presented expeditious accomplishment is essential.

b. Emergency Extractions

(1) Emergency extractions will be conducted in basically the same manner as normal extractions with the exception that the time for planning and briefing will be nonexistent. When a recconnaissance element is compromised, or becomes engaged with the enemy, an expeditious extraction must be initiated immediately. It is extremely important that RPs, orbit points and likely extractions areas be considered during the planning for the original insertions.

(2) Emergency extractions may be required at any time during the day or night. Consequently, radios must be preset on the proper frequencies and aviators must be well briefed. The airfield must be kept mission ready and the crews must have the capability of becoming airborne within a matter of minutes after the alert, or after the request for immediate extraction had been made. For night operations the C&C helicopter will be rigged with flares prior to darkness.

(3) When the operations center at the launch site has been notified by the ground element that an immediate extraction of emergency nature is requested the C&C helicopter, with the command group aboard, will become airborne immediately. One light fire team and the FAC will proceed with the C&C helicopter to the location of the ground element.

(4) The extraction and recovery aircraft and second light fire team (if available) will normally start engines and monitor the operational net.

(5) If the ground element is in contact, the light fire team will immediately engage the enemy on direction of the ground element.

(6) The extraction and recovery aircraft and second light fire team (if available and required) proceed on command to the LZ. The recovery and armed helicopters remain in orbit in the immediate vicinity of the LZ to provide rapid response as the C&C orders. It may be considered more advantageous to approach from altitude rather than at tree top level. If the ground element is, or has been in contact, the low level approach may prove to be the better choice. Armed helicopters—both light fire teams if necessary—take up a tactical formation and maneuver in order to provide suppressive fire as required.

(7) It is extremely important to remember that attempts must be made to provide an element of security within the PZ prior to the landing of the extraction aircraft.

(8) It is normal procedure for the armed helicopters to place constant suppressive rocket, grenade and mini-gun fire around the periphery of the PZ as the extraction aircraft approach, land and depart. Suppressive fires must be utilized if there is any indication that the enemy is in the vicinity of the PZ.

(9) If the tactical situation dictates that Air Force and/or artillery strikes are required prior to the extraction, the command group will coordinate these efforts directly with the FAC and supporting artillery unit.

(10) Rope ladder and McGuire extractions are more prevalent during emergency situations than during normal extractions. If this type of extraction is required because of the lack of a suitable PZ, one extraction helicopter is normally required for reach group of three troops. Each extraction helicopter will utilize one additional crewmember, referred to as a "bellyman". The "bellyman" is usually a trained medic organic to the ground unit being supported. He assists the aviator in positioning his helicopter over the extraction point; he advises the aviator as to the location of obstacles and assists the personnel being extracted as they ascend the rope ladder or position themselves in the McGuire Rig.

(11) Night emergency extraction procedures are identical to those utilized during the day with the C&C helicopter employing flare illumination during the conduct of the entire operation. If the extraction cannot be completed within approximately thirty minutes, a second helicopter with a flare load should be dispatched. If not available an Air Force flare ship should be immediately requested by the FAC.

(12) Emergency extractions are often necessary during adverse weather conditions or inherent low ceiling and reduced visibility. On occasion it might be necessary for the C&C heilcopter, flying low level because of reduced ceilings. to locate the imperiled ground element by utilizing his aircraft FM radio with homing capability to home to the transmissions being emitted by the ground element MF field radio. It may be necessary to initiate armed helicopter strikes at low altitudes if the ground forces are in contact. After adequate suppressive fires have been placed upon the enemy, either the C&C helicopter or one of the armed helicopters may be required to return and load the extraction aircraft into the area, via low level flight, to the PZ.

(13) A nondirectional beacon at the launch site can be effectively utilized to guide aircraft to and from a PZ during adverse weather conditions.

8-19. IDENTIFICATION TECHNIQUES (Signals)

a. Day

(1) The mirror is the most commonly used method if sufficient sunlight is available to reflect a signal to the searching aircraft.

(2) The marking panel is extremely effective if the ground element is situated in an open area of sufficient size and has the capability of positioning a man undetected within the clear area. When an open area is not available, it might be necessary to position the panel on top of a tree.

(3) Smoke grenades are normally utilized only after contact is imminent or has been made. The reconnaissance team will mark its location with smoke and if suppressive fire is necessary, will direct armed helicopter and/or Air Force strikes by giving an azimuth and distance from the smoke to the enemy positions. It is extremely important that the ground element notify the aircraft that smoke is out; the aircraft then identifies the color of the smoke and so states. If the ground element is attempting to break contact and move to a PZ with the enemy in pursuit, smoke grenades may be periodically dropped, enabling armed helicopters and/or Air Force fighters to strike the area to the ground element's rear as they move on a particular azimuth to a PZ. NOTE: Yellow smoke grenades have been found to be most effective for ease of identification form the air in jungle, delta and rain forest areas.

(4) Pen flares, hand-held flares, etc., may be utilized as a last resort during daylight hours if all other methods are ineffective or it is determined that smoke, with its lingering effect, should not be used.

b. Night

(1) The strobe light is the most commonly used device and is extremely effective. Extraction aircraft can land to, and armed helicopter and/or Air Force strikes can be easily directed from, this signal.

(2) Pen flares, hand-held flares, etc., are effective for initial identification but are easily detected by the enemy.

(3) A system for effecting pinpoint landings to the ground element's exact location has been developed by using a flashlight (preferably red lenses) aimed through an M-79 grenade launcher barrel.

(4) Flashlights and cigarette lighters have also been employed successfully.

8-20. ARMED HELICOPTER TACTICS

a. The success of any airmobile operation is greatly dependent upon the proficiency and state of training of the organic armed helicopter crews.

b. Armed escort helicopters should be employed during the conduct of all insertions and extractions regardless of the size of the ground element being employed.

c. Because of the nature of this type of operation, armed helicopters are required to place aerial supporting fires in extremely close proximity to the supported ground force. Often times this close support requires the armed helicopters to overfly and initiate their firing runs at extremely close ranges to the target.

d. The armed helicopters must be in position to effectively cover the insertion and extraction aircraft at all times.

e. Experience has shown that during the conduct of these operations armed helicopters are most effective, and can stay on target for longer periods of time if they employ the tactic of firing single pairs of 2.75 inch folding fin aerial rockets (17 pound point detonating warhead) and one 7.62mm mini-gun at a time. The M-5 system (40mm grenades) will normally be used in bursts of from eight to fifteen rounds.

8-21. DIVERSION

a. The primary consideration during insertions is getting the reconnaissance element on the ground undetected; the primary consideration during extractions is getting the team out expeditiously. It is not possible to insert quietly; however, the movement of aircraft over a general area can be such that the enemy in the AO cannot tell at which point the team was inserted or that an insertion did in fact take place.

b. A decoy helicopter may be used both as a guide over the LZ and to see if hostile fire is drawn prior to the approach of the insert aircraft.

c. Diversionary artillery preparations and armed helicopter and Air Force strikes of decoy LZ areas within the AO can be made.

d. Smoke-producing aircraft may be employed by providing diversionary smoke screens within the AO just prior to the insertion.

e. Multiple touchdowns or an additional insert without dropping off personnel may also prove advantageous.

8-22. TACTICAL AIR AND ARTILIERY SUPPORT

a. TAC Air

(1) Air Force fighter strikes can be used extensively if ground elements become engaged.

(2) During the conduct of all insertions and extractions, the FAC should be airborne within the AO. The possibility of immediate contact upon landing is rare; however, such a situation may arise and immediate extraction, because of the tactical situation, may not be possible without Air Force fighter strikes and/or artillery support.

(3) Air Force strikes may be utilized to strike LZs prior to the conduct of combat assault.

(4) When the ground element is in contact it is normal for the FAC to employ his fighters with direct coordination between himself and the team leader on the ground.

(5) During critical extractions, when the ground element is, or has been, in contact, it may not be possible for the Air Mission Commander to simultaneously vector the extraction aircraft to their PZ and employ the armed helicopters. In this particular situation, the FAC may direct the armed helicopter effort.

b. Artillery

(1) Artillery support can be effectively employed in basically the same manner as described in the above paragraph.

(2) Many times the AO, in its entirety, will not be located within an artillery fan.

(3) The command group has the capability of adjusting artillery, but can be more effectively adjusted from another aircraft. The use of the radio relay aircraft (O-1 fixed wing) for the coordination and adjustment of the artillery effort can be quite effective.

(4) Air Force strikes and artillery can also be used to assist in breaking contact when the ground force is maneuvering to a PZ.

(5) 175mm guns, 8 inch, 155mm and 105mm howitzers and 4.2 inch mortars can be effectively employed in support of these operations.

8-23. MISSION DISCIPLINE AND DEBRIEFING

a. Mission Discipline

(1) Mission discipline and orientation are important factors to consider in the conduct of these unconventional operations. The capabilities and requirements of the assigned air assets (aircraft and crews), the ground element being employed, and other available support such as Air Force and artillery must be understood and appreciated by every person involved in the operation.

(2) A combined ground element and air element SOP is essential. Radio procedures and discipline are extremely critical. The appreciation and understanding of the need for successful mission accomplishment, pride in professional mission accomplishment and the desire to excel should be felt by all.

b. Debriefing

(1) Debriefings are conducted after each insertion and extraction with both ground and aviation personnel attending. Important intelligence may have been accumulated prior to the extraction of the reconnaissance element.

(2) Crewchiefs and doorgunners have been very valuable sources in the intelligence gathering effort during the conduct of these missions. This fact points out the need for a thorough briefing of all aviation personnel prior to the start of the operation in order that an understanding of what is to be accomplished and what might be encoutered is understood by all.

8-24. RECOVERY OF DOWNED AIRCRAFT

a. Aviation Unit Responsibilities

(1) If an aircraft is forced down within the AO because of hostile fire or mechanical difficulty, it is the responsibility of the aviation element to provide armed helicopter cover, dispatch assets to evacuate the crew and coordinate maintenance support to include a rigging team and CH-47 recovery helicopter if necessary.

(2) The downed crew will remove all weapons, radios and ammunition, prior to being extracted from the location of the downed helicopter.

b. Supported Unit's Responsibilities

(1) The ground unit will provide troops to secure the downed aircraft utilizing supporting helicopters.

(2) The coordination of Air Force and artillery support, if required, is also the responsibility of the supported unit.

8-25. CLASSIFIED OPERATIONS

a. Preparation

(1) Insertions and extractions of a classified nature are conducted in basically the same manner as those operations previously discussed. However, since classified operations are extremely dangerous and are militarily and politically critical, extensive preparation and pre-planning cannot be overstressed.

(2) All available intelligence must be considered and carefully analyzed, with emphasis on aerial photographs of the target area.

(3) The detailed map study along with aerial photograph comparsion and a detailed terrain analysis should indicate possible entry and return routes, check points and release points.

(4) An aerial reconnaissance may or may not be feasible dependent upon the area involved, penetration distance to the target and the strength of enemy forces in the area.

(5) Known or suspected enemy anti-aircraft positions such as the 12.7mm gun, and in particular, the 37mm radar controlled antiaircraft gun, may preclude extensive aerial reconnaissance. If there is cloud coverage (approsimately 50 percent) at the time of the reconnaissance, IFR flying can provide some concealment for the reconnaissance aircraft.

b. Conduct of the Operation

(1) If the penetration distance is not too great, the insertion aircraft may proceed from the RP (located in controlled or protected territory) to the LZ without armed helicopter escort. If the penetration distance is greater than two kilometers it is recommended that armed helicopter penetrate with the insertion aircraft and provide armed escort to the target and back to the orbit point.

(2) All available armed helicopters, (never less than two light fire teams) should be at their orbit point (within controlled territory) if not engaged in the escort role. The required number of recovery aircraft do likewise.

(3) During insertions and extractions all helicopters execpt the C&C will fly low level once they have made the penetration.

(4) The C&C aircraft is most susceptable to enemy fire since it will be necessary for him to fly at altitude

and penerate with the insertion aircraft if the penetration distance is greater than 500 meters.

(5) If contact with the enemy is made in the objective area, all armed helicopters should be employed as necessary and extraction aircraft directed to the ground element as soon as the ground tactical situation permits.

(6) Air Force and artillery support will not normally be available during the conduct of classified operations.

(7) It is imperative that all aircraft be extensively checked prior to these missions since downed aircraft place both the aviation and ground elements in an extremely critical situation. Downed aircraft may not be recoverable and may have to be destroyed.

Section V
Planning

8-26. AIR MISSION COMMANDER CHECKLIST

a. Azimuth from launch site to release point.

b. Coordinates of release point.

c. Estimated time en route from launch site to release point.

d. Coordinates of check points.

e. Azimuth from release point to primary landing zone.

f. Coordinates of the primary landing zone.

g. Estimated time en route from release point to primary landing zone.

h. Azimuth from release point to alternate landing zone.

i. Coordinates of the alternate landing zone.

j. Estimated time en route from release point to alternate landing zone.

k. Azimuth from primary landing zone to alternate landing zone.

l. Coordinates of the gunship orbit point.

m. Coordinates of the recovery helicopter orbit point.

n. Total estimated time en route (fuel consumption).

o. Navaids available in the immediate area.

p. Signaling techniques to be utilized.

q. Call sign of the forward air controller.

r. Call sign of the radio relay pilot (fixed wing).

s. Call sign of the elemt to be inserted.

t. Locations, frequencies, call signs of medical teratment facilities and DUSTOFF.

u. Locations, frequencies, call signs of available supporting artillery.

v. Known or suspected enemy locations.

w. Known friendly locations and/or positions.

x. Local area weather forecast and previous day and night weather conditions.

y. On station time: Crank time: T/O:
C&C Primary lift Recovery lift
Guns

8-27. BRIEFING CHART

A standard briefing chart is necessary to insure that during the aviation portion of the mission briefing (given after the visual reconnaissance has been completed and prior to takeoff the Air Mission Commander disseminates all required essential elements of information. The briefing chart includes all items listed in paragraph 1 of this section; in addition, the takeoff times for the C&C helicopter and the armed helicopters. Adequate space should be allowed on the chart for a grease pencil diagram of the primary and alternate landing zones.

8-28. PRE-RECONNAISSANCE PLANNING

The Air Mission Commander meets with the Ground Force Commander upon receipt of the mission. A map study is made, utilizing aerial photographs if available, and an aerial reconnaissonce of the mission area is planned. Tentative landing zone areas, check points and routes are selected.

CHAPTER 9
SUPPORT OF AVIATION UNITS

Section I

9-1. GENERAL

This chapter provides information on intelligence, logistics, aeromedical, safety, and communication activities for the aviation commanders and their staffs.

Section II

Intelligence

9-2. INTELLIGENCE COLLECTION AND DISSEMINATION IN RVN

a. In RVN, as in all other countries, the best intelligence information concerning the activities of the inhabitants and guerillas operating in the country will come from the inhabitants and guerillas themselves, which means that the intelligence information base in RVN must be Vietnamese-oriented. The most current, detailed, and reliable information will come from Vietnamese sources. It is rare, if not impossible, for a non-Vietnamese to know as much about the habits, cultural patterns, superstitions, aspirations and whims of the Vietnamese as another Vietnamese. Therefore, we must make every attempt to exploit, improve and refine the information we receive from Vietnamese sources. Every effort must be made to train Vietnamese personnel involved in collecting intelligence information to report quickly and accurately. Not only will it benefit us in our combat operations, but the Vietnames Armed Forces will themselves gain by our efforts. If our ARVN intelligence sources are not reliable, they must be improved or new sources must be found.

b. Intelligence information in RVN, is, and will remain, Vietnamese-oriented and U.S. Army Aviation units must thoroughly explore Vietnamese intelligence source before any airmobile or other type combat operation can be planned or executed. The ideal situation is to have such close and continuous liaison with ARVN intelligence sources and systems that questions asked concerning an area in which an operation is contemplated, will seem routine. The RVN intelligence sources, agencies and collection systems are like others the world over: parts of it are poor, other parts are exceptionally good. The using intelligence agency must decide which parts are reliable and treat information received accordingly.

c. The basic agency for collecting and monitoring intelligence in RVN is the sector headquarters. The ARVN sector S2 and his U.S. advisor are responsible for staying abreast of all intelligence activities in their sector. Therefore, the sector S2 advisor should be consulted prior to planning and executing an operation in that sector.

d. Sector S2s and their U.S. advisors often report intelligence information directly to the ARVN division headquarters in whose tactical area the sector is located. They often report directly to the ARVN Corps headquarters in whose tactical area the sector and the division are located. The reporting channel is not standardized throughout RVN. Therefore, it is possible for an ARVN division G2 and his U.S. advisor not to know what is happening in a sector, even though it is located in the division's tactical area; and, the corps headquarters may be fully informed of the activity in a sector and not inform the sector in whose area the activity took place.

e. The aviation unit commander must determine what intelligence collection and distribution system is being used in his area and make every effort to extract from it what he needs. He should never consider the system unreliable, and should not, therefore, discard it. No matter how unwieldly the local system may appear, if it produces results the task of the aviation unit will be made easier. If the local RVN/ARVN system is ignored, the aviation unit commander will lose a possible source of timely, accurate information that could be used to produce needed combat intelligence.

f. At ARVN corps headquarters, intelligence dissemination options and variations are similiar to those found at sector and division. Information orignating at corps may not be disseminated to the lower headquarters even though it is of interest to them. Sectors, divisions and corps should send information laterally to other interested headquarters.

(1) Sector S2s and their advisors, through parallel ARVN and U.S. advisor channels, should simultaneously send duplicate copies of all intelligence information directly to ARVN division and corps headquarters. If the information concerns adjacent sectors, it should be dispatched directly to these sectors without regard for division and corps boundaries. Ot the same time, the U.S. advisor should pass the information to any U.S./FWMAF aviation unit located in the sector area.

(2) At division level, the ARVN division G2 and his advisor, through parallel channels, could send summaries of information from sectors along with complete reports of information orginating at division level, to the corps G2. If the information concerns adjacent divisions or corps headquarters, it should be dispatched

directly to those divisions or corps without regard for corps boundaries. The advisor should pass the information to any interested major US/FWMAF aviation unit headquarters located in the RVN division tactical area. The AAE located in each ARVN division TOC can be made responsible for insuring that this is accomplished.

(3) The ARVN corps G2 and his U.S. advisor, through parallel channels, send daily intelligence summaries, together with complete copies of any unusual report, to their headquarters in Saigon. If the information concerns adjacent corps it should be dispatched directly to these corps headquarters. The U.S. advisor should pass the information to any interested major US/FWMAF aviation unit headquarters located in the corps tactical area. The AAE located in the corps TOC can be made responsibile for insuring that this is accomplished.

(4) Spot reports of intelligence information requiring immediate action or reaction will be dispatched to the appropriate headquarters without delay. Normal time for routing of routine intelligence information from sector and division to corps should not exceed 24 hours. Routine routing time from corps to Saigon should also not exceed 24 hours. If an air-courier system is not presently established in each corps area to accomplished timely routing, one should be instituted.

g. The intelligence collection/distribution system mentioned above is not new. It is immediately recognizable as a variation of the standard vertical and lateral system used by U.S. Forces. It is assumed that all U. S. aviation units will brief and debrief their aviators and observers, particularly in aviation intelligence units such as O-1 and OV-1 units, and will pass all information to higher, lower, and adjacent units as required. It is also assumed they will establish necessary liaison with other U.S. units to include Special Forces units.

h. The basic intelligence information collection agency in RVN is the sector headquarters. US/FWMAF aviation units must understand this system if all available intelligence sources are to be exploited. US/FWMAF aviation units have the same responsibility to keep ARVN forces informed as they have to obtain information from ARVN forces. Maximum use will be gained from the system only if aviation units learn how the system functions in their area and maintain aggressive liaison, through the U.S. advisor or AAE, with the headquarters controlling the system.

9-3. REPORTS

The collection and dissemination of information and intelligence between aviation units are accomplished primarily by the receipt and transmission of spot and incident reports, and intelligence summaries. Reports currently required are discussed below:

a. Intelligence Summaries

(1) Each aviation unit will submit a daily intelligence summary containing those items of intelligence information produced or collected.

(2) Aviation battalion headquarters will consolidate the summaries and transmit them to their group headquarters.

(3) Group headquarters will cosolidate the summaries received from battalion and transmit a summary to brigade headquarters.

(4) The format for the daily intelligence summary is outlined in LOL (Preparation of Intelligence Summaries) Headquarters, 1st Aviation Bridgade, dated 4 Dec 1969.

b. Ground Fire Hits/Incidents

(1) All ground fire hits or incidents will be reported as outlined in MACV Directive 381-34, dated 26 April 1968.

(2) In addition to the formal report required, all aviation units will maintain a current hit/incident overlay showing known areas of concentrated enemy ground fire. The overlay will be conspicuously displayed in each aviation unit's flight operations and used as part of the preflight briefing for all aircrews.

c. Spot Reports

Spot reports will be made by aircrews and aviation units to transmit intelligence information of immediate tactical value. Spot reports should answer the questions: who, what, where and when.

9-4. REFERENCES:

a. FM 30-5, Combat Intelligence

b. FM 105-5, Staff Organization and Procedure.

c. MACV Directive 381-34, dated 26 April 1968. Joint Services Anti-Aircraft Fire, Incident, and Damage Report (JSIDR).

d. LOI, Headquarters, 1st Aviation Brigade, (Preparation of Intelligence Summary), dated 5 Dec 1969.

Section III
Logistics

9-5. GENERAL

The logistics officer is responsible for planning and coordinating all types of supply with the maneuver force and the supporting unit. An airmobile force can be resupplied over land, by air, over water, and in some cases, by commercial delivery. Prestock points are also available as a source of supply. Supplies should, whenever possible, be moved by a method which will reduce loading and unloading time; such as nets, palletized loads, and external sling loads. As a guide, supplies should always be moved as far forward as possible by wholesale delivery agents. "Throughput" delivery, direct to the user from the logistical base, should be employed. This system will reduce deadhead flying time. Aviation units operating from base/staging areas receive supplies from logistical supporting units. When ground movement is possible, supply point distribution is employed. The flow of supplies

is from logistical support facilities foward to the base/staging area. The logistics officer routinely monitors operations for the battalion or separate companies.

9-6. AVIATION POL

a. When operating in support of divisional units, aviation units coordinate POL support with the division's logistical representative.

b. When in support of other than divisional units, coordination is made through the supported unit's logistics representative to the area support facility. Whenever possible, "through-put" distribution from the POL distribution point to selected forward refueling areas is utilized.

c. It is the responsibility of aviation unit commanders and their supply officers to periodically forecast class III supply requirements.

d. In planning POL support for airmobile operations consideration must be given to displacing refueling areas well forward to provide responsive support for airmobile forces.

e. Planning factors: See Annex A.

9-7. CLASS V SUPPLIES

a. Current Class V priorities considers the unit distribution system. Supply and ammunition officers at all echelons should monitor ammunition basic loads and usage rates. The success of mission completion is highly dependent upon adequate Class V planning and follow through.

b. Definitions:

(1) Basic Load: The basic load is a specific amount of ammunition prescribed by Department of the Army to be in the possession of each type organization. It includes ammunition carried by the individual soldier, ammunition stowed in self-propelled weapons, ammunition carried in prime movers, and ammunition stowed at gun positions and in unit dumps. (Reference FM 9-6)

(2) Required Supply Rate: The required supply rate in the amount ammunition estimated to be required to sustain operations without restriction for a specified period stated in appropriate terms of measurement. (Reference FM 9-6)

(3) Available Supply Rate: The rate of consumption of ammunition that can be allocated considering supplies and facilities available, for a given period expressed in appropriate terms of measurement. (Reference AR 320-6)

c. The available supply rate must be monitored carefully by logistics and ammunition officers and considered in planning all operations. Particular emphasis must be placed on all items included in current allocation listings.

d. Planning Factors: See Annex A.

9-8. AIRCRAFT MAINTENANCE

a. The success of airmobile operations is largely dependent upon the continued high availability the aircraft required to carry out these operations. High availability can be realized only if the same attention is paid to the planning of maintenance support that is paid to the tactical aspects of the operation. This planning is the responsibility of the unit commander and the aircraft maintenance officer at each level of command.

b. Day-to-day planning

(1) The goal of such planning is to provide commanders with an acceptable number of operational ready aircraft as established by USARV and 1st aviation Brigade critria. At the same time, it provides the aircraft maintenance officer with guidelines within which he may program his maintenance requirements.

(2) Scheduled maintenance services must be programed to provide a steady level of high aircraft availability rather than peaks of high availability which attempt to match periods of intense operations. Maintenance programming cannot be accomplished by the maintenance officer alone, but must be a joint function of command, operations and maintenance representatives. Aircraft should be scheduled into maintenance with the same regularity that they are scheduled on operational missions.

(3) This planning also includes other areas which directly affect maintenance operations, such as:

(a) Timely requistioning of time-change components and other items for which a known future requirement exists.

(b) The periodic evaluation of assigned maintenance assets in terms of personnel, equipment and facilities.

(c) The establishment and continual review of realistic stocks of aircraft, avonics, armament repair parts, and maintenance supplies.

(d) The effective utilization of supervisory personnel, technical inspectors, manufacturers' technical representatives, and in theater schools for programs of technical training.

(4) Consideration must also be given to the maintenance time that is lost whenever an aviation unit's operating base is displaced during tactical operations. At least one day's maintenance is lost whenever a unit's organic and direct support maintenance elements are required to move.

c. Planning for airmobile operations.

(1) The maintenance officer and the DSU commander, if possible, should be present during the initial planning for any operation. He must advise the commander on projected aircraft availability for the operation and then orient aircraft maintenance activities to the location, duration, and special requirements of the operation.

(2) Evacuation of downed aircraft.

(a) Field recovery and maintenance evacuation of aircraft are the responsibility of the Transportation

Battalion having maintenance responsibility for the area in which the downed aircraft was operating. Personnel, aircraft, and special equipment will be provided by the Transportation Battalion for all airlift recovery operations; however, a Combat Aviation Battalion or Combat Support Aviation Battalion may be called upon to provide the recovery aircraft if necessary. The unit which has a downed aircraft is responsible for performing limited repair on those aircraft which can be flown out to a secure area after minor maintenance or component change.

(b) Units requesting aircraft recovery will submit the following information to the Recovery Section of the Transportation Battalion:

1. Parent Unit
2. Name of requester
3. Type and serial number of aircraft
4. Location of aircraft
5. Extent of damage
6. Air to air frequency and call sign
7. Type of security in area
8. Where the downed aircraft is to be taken

(c) The Air mission Commander will provide security for the recovery operation to include armed aircraft and ground forces as necessary. The recovery aircraft will not be called in until the downed aircraft is ready for pickup. If the damage to the aircraft can be evaluated to be beyond the capability of the owning unit and its maintenance detachment to repair, it will be immediately evacuated to the supporting Direct Support Maintenance Company location, thus avoiding multiple lifts.

(d) If geographical conditions make recovery by the Transportation Battalion impractical, the authority to perform recoveries may be delegated to organizations possessing a recovery capability. In thase cases, guidance and assistance in training of personnel will be provided by the Transportation Battalion if requested.

(e) Each company size unit will maintain a trained rigging crew and the necessary equipment for rigging the type aircraft assigned. The rigging crew and equipment will be available on a standby basis to rig aircraft for recovery if limited repairs will not place the aircraft in a flyable condition and if ready response by the Transportation Battalion cannot be obtained during tactical operations. Direct contact with the Army Aviation Element (AAE) requesting a recovery helicopter will be made to provide the information listed in paragraph (2) (b) above. If an aircraft goes down during an airmobile operation, the mission commander is responsible for controlling the recovery. In other cases, AAE will control the recovery operation or designate a responsible unit.

(f) When necessary to evacuate the crew prior to the recovery of an aircraft, all weapons, communications equipment and ammunition will be removed from the disabled aircraft. Recoverable aircraft will not be destroyed unless sensitive equipment and automatic weapons will be captured intact by the enemy. Destruction of a downed aircraft may be ordered only by aviation battalion/squadron commanders or higher authority. Every effort will be made to complete evacuation of a downed aircraft prior to darkness. Night recoveries may be made only when the tactical situation dictates and then only by approval of the battalion/squadron commander.

(3) In addition to the maintenance being conducted at the base field, maintenance during the conduct of a combat operation normally consists of operator/crewchief maintenance and the organizational and direct support maintenance provided by a tailored direct support maintenance team supporting the operation. To be fully effective, such a team must be as responsive and as airmobile as the elements it supports. Special measures which contribute toward such responsiveness and mobility include:

(a) Assigning suitable air transportation for the team's use. Normally one UH-1 aircraft per company is designed for this purpose.

(b) Limiting repairs in the forward area to those in which the equipment can be returned to operational status within 4 hours.

(c) Orienting forward area repair toward modular and component replacement.

(d) Maintaining contact and communications between operational and maintenance elements throughout the operation.

(4) During the assault phase of an operation, this team-serving as both a mobile maintenance element and an aircraft recovery crew—orbits above or near the area of the most concentrated activity and is immediately responsive to calls from participating aircraft. During larger operations, a battalion maintenance aircraft is also employed. This aircraft provides the link between the home base and the forward base area. It monitors and assists subordinate maintenance elements and, during assaults, provides a central point of contact for maintenance or recovery support.

(5) Brief operations can often be supported by small maintenance teams. However, more extended encounters, or those which occur at substantial distance from the unit's home base, required the forward displacement of major portions of the unit's aircraft maintenance elements (both organizational and direct support), including an avionics and armament support capability. Avionics maintenance should be oriented toward rapid component replacement through the use of float stock and direct exchange of components with the direct support element. The use of lightweight airmobile shelters and equipment and the careful selection of tools, parts, and personnel (which will operate from the unit's forward base) is essential in preserving the mobility and responsiveness of this maintenance support.

d. Lessons learned during airmobile operations are not limited to those affecting the tactical aspects of

the operation. Experience gained (as it relates to aircraft maintenance and recovery techniques) must be recorded and if it is to be effective, disseminate. It is this experience which becomes the basis for improvement.

e. Effective utilization of the aircraft made available to the commander is a responsibility of that commander. Those plans are unrealistic which contemplate the use of more aircraft which past experience and current estimates project as being operational ready. Operations which utilize more aircraft than can be maintained operationally ready on a prolonged basis could jeopardize future operations. The number of aircraft which may be employed is not the only guideline which must be followed; the number of flying hours consumed relates directly to future aircraft availability. Department of the Army establishes the number of flying hours that current maintenance assets and programmed levels of supply will support. Maintenance officers at all levels must, in conjunction with operations personnel, keep their commanders regularly informed of the status of their flying hour programs. Commanders, on the other hand, must insure that the aircraft are used for intended purposes and that every flying hour is used to its fullest advantage.

9-9. VEHICULAR MAINTENANCE AND OTHER MAINTENANCE

a. Ground vehicle maintenance is performed by the owning organization and includes operator as well as organizational maintenance. This maintenance normally consists of inspection, cleaning, servicing, preserving, lubricating, and adjusting as required. It also may include minor parts replacement, not requiring highly technical skills or extensive, complicated, or bulky test equipment.

b. During the conduct of combat operations, normal operator maintenance is performed. Those repair requiring extensive downtimes are evacuated to base camps. Maintenance planning should provide for responsive support from the base for the accomplishment of those necessary repairs where evacuation is not possible or desirable. Unit prescribed load lists (PLL) should be avialable to the organization during combat operations.

c. Maintenance of individual equipment, to include clothing, footwear, shelter half, and weapons/ammunition, must be conducted by the user of the equipment. Preventive maintenance will assure continued availability of needed combat essential equipment. This maintenance is particularly important in airmobile operations where priority movement of supplies is generally limited to rations, ammunition and POL products.

9-10. MEDICAL SERVICE

During the conduct of assault operations, medical evacuation is normally effected by the supporting air ambulance unit. Coordination for this support is made during the planning phase of the operation to insure that medevac helicopters are located for responsive and timely support wherever a casualty occurs. Lacking the ready availability of an air ambulance unit, organic aircraft of the airmobile unit must be used for revacuation of serious casualties. Procedures are established at the initial planning conference for providing air evacuation during and after the assault phase.

Section IV
Aeromedical Support

9-11. GENERAL

Aviation medicine is preventive and occupational in nature. The goal of aeromedical support is the maintenance of the health and efficinecy of the Army aviator and aviation support personnel in order to facilitate the successful completion of the unit's mission. This section will discuss the responsibilities of the flight surgeon which must be fulfilled to develop basic aeromedical support for his unit. The aeromedical checklist in Appendix 2 should be used for each operational mission of the unit.

9-12. FLIGHT SURGEON RESPONSIBILITIES

a. Evaluate current health status of personnel (Aeromedical Surveillance).

(1) In order to detect any deviation from normal health or behavior that may affect the aviators' ability to fly safely, the flight surgeon must live with the aviators, know them on a personal basis, and participate, as required, in the accomplishment of their missions.

(2) The medical and dental records of each aviator should be reviewed and indicate examinations completed by the flight surgeon so that any existing medical problems can be monitored. All records must be checked for current medical flight clearances.

b. Apprise the commander of the health of the command.

(1) Frequent reports will be given to the commander regarding the overall sanitation and nutritional status of his command. Recommendations for corrections of any deficiencies should be submitted with each report.

(2) The commander will be informed of all medical restrictions or suspensions from flying in order that an accurate picture of personnel strength is maintained.

(3) Unusual medical problems or trends that may affect the health of the command will be reported to the commander with the proper recommendations.

c. Maintain active preventive support program.

(1) Frequent medical inspections of the total aviation environment will be conducted. This inspection must include a search for health and safety

hazards in aircraft and maintenance areas, human factor problems, environmental sanitation, and personal hygiene of the command.

(2) The flight surgeon will conduct regular training for all aviation personnel in emergency first aid. This training will include the proper techniques and procedures for evacuation of the injured.

(3) The flight surgeon will actively participate in all unit safety programs. Such a program may include but not be limited to, discussions of various pathological conditions, physiological and psychological stresses and their relation to safe flying.

(4) The flight surgeon must stress the use of personnel protective and survival equipment. He must be knowledgeable on the effectiveness of present equipment and the deveolpment of new equipment. The importance of these items as life saving devices will be stressed to the aviator at every opportunity.

d. Surveillance of organic medical posture.

(1) The flight surgeon will supervise and train organic medical personnel on a continuing basis in order to be responsive to all medical problems including mass casualties.

(2) A member of the medical section will be present on all battalion size airmobile missions and on company size missions whenever deemed appropriate. Close coordination with the battalion and company commanders will be needed for this aspect of medical support.

(3) In order to provide the best of aeromedical support to the unit, close control of medical supplies and equipment will be maintained by the flight surgeon.

(4) In addition to maintaining his own medical facility to provide continuing daily emergency medical support, the flight surgeon will be familiar with all available medical treatment facilities in the operational areas of his unit. This information will be made available to the mission commanders during the briefing phase of each mission.

e. Preparation of specfic SOPs and policies.

(1) The flight surgeon will establish a SOP for the operation of his medical treatment facility.

(2) Policies regarding sick call, flight physicals and all other clinical aspects of aviation medicine will be developed by the flight surgeon to best meet the needs of his unit.

f. Aeromedical evacuation is the responsibility of the Army Medical Department. Requirements for evacution aircraft are determined and submitted through separate medical channels by the ground commander with the aid and advice of his surgeon.

(2) Helicopter ambulances are immediately available to aviation units upon request to the medical group supporting the area. SOIs must provide the radio frequencies designated for these requests and a checklist of information needed by the medical units providing the support. The need for special equipment such as hoists or forest penetratores must be made known at the time of the request.

(3) Coordination will be made with the airmobile commander to establish the chain of evacuation to be followed by any tactical aircraft that may be utilized for medical evacuation purposes. The SOI should list the radio frequencies and capabilities of medical facilities nearest each operational area.

(4) Whenever a tactical aircraft is used for emergency evacuation, the casualties will be taken to the nearest treatment facility. Emergency first aid is to be rendered by the nearest personnel, e.g., crewchief, gunner, etc. If medical personnel are available and landing is feasible, transfer to the aircraft bearing injured personnel should be accomplished.

(5) Whenever possible, the receiving treatment facility will be notified as to the number and type of casualties en route and if any special requirements such as blood, resucitation, or the need for a medical officer to meet the aircraft is necessary.

g. The flight surgeon must be alert for aeromedical problems that may arise during the course of unit operations. He must reserach these problems and realize that his solutions will pay dividends in the accumulation of new data and techniques for dissemination to the field.

Section V
Aviation Safety

9-13. GENERAL

The purpose of the 1st Aviation Brigade Aricraft Accident Prevention Program is to sustain the Army Combat potential through conservation of its personnel and materiel resources. Aircraft accident prevention is a command responsibility. The degree of success of the accident prevention effort is a direct measure of unit efficiency and operational effectiveness. Human factors continue to be the major single cause of aircraft accidents. Conversely, this area is most susceptible to command action. Education and training devoted to the development of sound attitudes, judgment and operational techniques are the commander's tools in minimizing human factors as accident causative agents. The accident prevention effort must provide for responsive mission accomplishment while operating in the safest possible manner. An impractical sense of urgency must not override good judgment regardless of the nature of the mission.

9-14. CRASH INJURY PREVENTION

a. The following protective clothing and equipment should be worn by crewmembers on all flights:

(1) Fatigues (Nomex flight suit when available) with sleeves rolled down.

(2) Gloves

(3) Leather combat boots

(4) Flight helmet with clear visor (Chin and nape straps must be snug). Visors should be down as follows:

(a) On all combat assault missions

(b) All armed helicopter missions

(c All missions where hostile fire is anticipated

(d) While refueling (The visors in the down position would preclude facial burns on all crewmen in close proximity should a flash fire erupt. All crewmen should have visors in the down position).

(5) Chest plate armor should be worn on all missions where the possibility of hostile fire exists.

b. The following survival equipment is considered minimum essential and should be in the aircraft and in operable condition:

(1) Individual survival kit. The individual survival kit ahould be attached to the crewmember. (One each Aircraft Survival Kit, Hot, may be used in lieu thereof)

(2) Light marker, distress, 1 per aircraft

(3) Pen flare gun, 1 per aircraft

(4) Radio, RT-10, 1 per aircraft (URC-10 radio may be used in lieu thereof).

(5) Survival knife, 1 per crewmember.

(6) .38 caliber revolver or .45 caliber pistol, 1 per aviator.

(7) DOD evasion chart, 1 per crewmember.

(8) XM 61-1 (blood chit), 1 per crewmember.

c. The number of occupants of each aircraft should not exceed the number of seat belts available. Each occupant should be properly secured during all landing and takeoffs (may not be practical during combat assault missions). Gunners, whose duties may preclude the use of seat belts, must be secured by a gunner's harness. Safety belts and shoulder harnesses must not be unbuckled until the aircraft is securely brought to a stop on the ground. Protective Mask (CBR) should be worn by at least one crewmember at all times when toxic chemical munitions are on board the aircraft during flights. Masks must be readily available at all times for all crew members on board during operations involving chemical munitions. One mask should be on board the aircraft during all flights.

9-15. AIRCRAFT REFUELING

Refueling of helicopters may be accomplished with engines running and rotors turning; however, the following precautions should be taken:

a. Doors should be open and pilot's seat armor retracted to the rear.

b. All passengers, the gunner, crew chief and flight engineer (if applicable) will dismount. The pilot or copilot will dismount and supervise the refueling operations. The aviator who remains in the aircraft remains physically on the controls.

c. Fire extinguishers must be readily available.

d. The gunner, flight engineer or crewchief will perform the refueling while the other enlisted crewmember monitors the fuel guage. In the case of AH-1G the pilot will normally accomplish refueling. Refueling of the CH-47 will be accomplished simultaneously by the crewchief on one side and the gunner on the other. The flight engineer will monitor the operation and remain plugged into the intercom system.

e. The aircraft must be properly grounded prior to removing the aircraft fuel tank receptacle cap. All crewmembers will have sleeves rolled down, helmet visors down, and gloves on.

f. Crewmembers performing the refueling must not leave the refueling nozzle unattended.

g. Refueling nozzles should have the locking lugs removed.

9-16. CREW INSPECTIONS

The following special inspections should be performed by the crew in addition to these associated with normal operations:

a. FOD Inspection: A thorough inspection of the plenum chamber and particle separator will be performed at each intermediate inspection. Cleaning of the particle separator and plenum chamber will be accomplished by the crew chief and will be inspected and signed off as completed by a qualified technical inspector on the DA Form 2408-13. When operating in an area that is extremely dusty or if the aircraft has been subjected to extensive debris (grass, leaves) the FOD inspection will be performed on a daily basis or when deemed necessary. Any nonscheduled maintenance requiring safety wire and other materials to be brought to the pylon area or cabin roof area will require an FOD inspection. Units are encouraged to organize and publicize their own FOD program in line with guidance listed above.

b. Safety of Flight Inspections: In order to minimize the potential for incipient mechanical failures, all helicopters will shut down and be inspected after very five hours of flight or after every second refueling. Inspections shoud be as thorough as time and the situation will permit. As a minimum the following will be inspected:

(1) Transmission fluid levels

(2) Main rotor system

(3) Tail rotor system

(4) Control rods

(5) Engine oil levels

(6) Engine air intake for FOD

(7) Aircraft for battle and operational damage

Commanders may grant exceptions to this policy when the tactical situation renders compliance infeasible.

9-17. CREW REST CRITERIA

The following flight time limitations should be observed:

a. Individual aviator flight time should not exceed 140 hours in any consecutive 30 day period.

b. Flight time should not exceed 10 hours in any 24 hour period or 15 hours in any 48 hour period, except in cases of tactical necessity.

c. Flight surgeous will closely check the physical and mental condition of all aviators who have reached 90 hours flight time in any consecutive 30 day period.

9-18. PRACTICE AUTORATATIONS AND SIMULATED ANTI-TORQUE CONTROL FAILURE OPERATIONS

Practice touchdown autorotations and simulated anti-torque control failures will be performed only under the following conditions:

a. During authorized transition training, or during 98 day tactical proficiency flight checks, on a minimum proficiency basis.

b. Conducted in dual control helicopters with a qualified instructor pilot at one set of controls.

c. Aircraft should be loaded to a minimum operating weight with only the instructor pilot and pilot on board, except in the case of the CH-47 aircraft which will also have a crewchief.

d. Conducted at designated landing areas with crash/rescue equipment available.

e. With the execption of individual weapons, no ordnance or ammunition will be in the aircraft.

f. No touchdown autorotations should be made when the density altitude is in execess of 4900 feet, with zero headwind. In areas where daytime density altitudes normally exceed 4000 feet, the following altternate maximum limits may be used.

(1) Density altitude 4000-4500 feet with minimum of five (5) knots surface headwind component.

(2) Density altitude 4500-5000 feet with a minimum of 10 knots surface headwind component.

(3) Density altitude 5000-5500 feet with a minimum of 15 knots surface headwind component.

(4) In no case will autorotation practice be conducted at density altitude exceeding 5500 feet.

g. All power recoveries from autorotations will be initiated at least 300 feet above the ground.

h. Radio contact will be maintained with the tower.

i. Touchdown autorotations and simulated anti-torque control failure operations should not be made on PSP surfaced runways.

j. Touchdown autorotations should be limited to straight in approaches. One hundred an eighty degree side and ninety degree side approaches should be terminated with power, except when a qualified standardization instructor pilot is aboard the aircraft.

k. Touchdown practice autorotations should not be performed downwind or during excessive cross wind conditions (excess of 15 knots, 90° degree crosswind component).

l. Unanticipated or "surprise" practice hovering autorotations should be prohibited execpt for formal IP training.

m. For autorotations under simulated IMC, power should be applied in order to complete final recovery no lower than 700 feet above the ground.

n. Practice aborted takeoffs and autorotations during climb-out should be prohibited.

9-19. FIXED WING SIMULATED FORCED LANDINGS

Power should be applied in sufficient time to effect recovery no lower than 200 feet above the ground or obstacles in the flight path.

9-20. TEST FLIGHTS

a. Daylight test flights should be conducted in accordance with TBAVN 23-16.

b. Night test flight should be conducted only if the following conditions can be met:

(1) The aviator should be experience in maintenance test flight functions.

(2) Test flights should be conducted in the traffic pattern.

(3) Autorotative descents should be made in such a manner that touchdown can be made on the active runway in event of malfunction. Test flight autorotations should be terminated with a power recovery.

(4) As much of the test flight as possible should be performed at a hover.

(5) Test flights should not be combined with operational missions.

(6) No passengers will be aboard during test flights and crew should be only those required to assist in the flight.

(7) Weather during the test flight should be VMC.

(8) For night test flight a co-pilot should accompany the pilot on all flights.

9-21. DOWNWIND OPERATIONS

Downwind operations should not be conducted unless absolutely dictated by the tactical situation or the terrain. If downwind operations must be conducted, the maximum gross weight should be reduced to enable hovering out of ground effect (Approximately 1000 lbs for the UH-1).

9-22. COCKPIT PROCEDURES AND CREW DUTIES

a. During all landings and takeoffs from tactical sites where hostile fire may be encountered, both the aircraft commander and the pilot should be on the controls. The aircraft commander should designate specifically which member is to fly the aircraft and which crewmember will monitor critical instruments and follow through on the controls, being prepared to take over in the event of an emergency. In addition, shoulder harnesses should be locked, helmet visors should be down and the force trim should be on.

When an IP is performing IP duties he is considered the commander of the aircraft. Accordingly, all responsibilities shown above pertaining to aircraft commanders are responsibilities of the instructor pilot when he is performing in this capacity.

b. During all landings and takeoffs from secure areas, one aviator should monitor the critical instruments while the other should control the aircraft, directing his attention to the outside.

c. The crewchief and gunner should observe to the side, rear and below the aircraft and inform the pilot of any hazards that may be encountered.

d. No turns or maneuvers should be made on the ground or in the air until the crewchief/gunner has cleared the aircraft in the direction of the turn or maneuver, i.e., "clear left" or "clear right."

9-23. RPM CONTROL ON UH-1 AIRCRAFT

As a standardization measure, 6600 RPM should be used at all times by aviation units operating UH-1 aircraft.

9-24. MONITORING OF FLIGHT CONTROLS DURING GROUND OPERATIONS

There should be one aviator physically on the flight controls of any helicopter while rotors are turning during ground operations.

9-25. HELICOPTER OPERATIONS IN CLOSE PROXIMITY TO RUNWAYS

Rotary wing aircraft should remain at minimum RPM and pitch when standing in close proximity to runways in order to insure minimum disturbance from rotor downwash to operating aircraft.

9-26. "HOVER" TAKEOFF CHECK FOR UH-1+AH-1G AIRCRAFT

a. The Hover Takeoff Check should be utilized by UH-1 and AH-1G aircraft. Whenever a dust hazard exists or the tactical situation clearly precludes this check, the aircraft commander should ensure that his aircraft is not overloaded for the existing conditions. This hover check will be performed IAW the GO-NO-GO procedures in the appropriate operators manual. In addition, a vertical takeoff may be attempt if the N1 required to hover at two feet is at least 1% less than that listed on the placard for the appropriate OAT and SOPSI of TORQUE is not exceeded. If the N2 RPM falls below 6400 RPM the takeoff should be aborted and the load reduced.

b. The following statement will be attached to the instrument panels of all UH-1 Aircraft except "B" and "C" model gunships.

"For Vertical T/O Subtract 1% N1"

9-27. DOOR GUNNERS ON ADMINISTRATIVE FLIGHTS

Due to the requirement to provide security and to insure proper clearance, aircraft on flight of an administrative nature should have two properly equipped and qualified gunners aboard whenever possible. For purposes of this requirement, the crewchief is considered a gunner.

9-28. USE OF NAVIGATION LIGHTS

Navigation lights will be utilized during the hours of darkness to reduce the hazards of mid-air collision. Aircraft entering areas of high density traffic will position navigation lights to "Bright"—"Flashing.".

9-29. ARMED AIRCRAFT OPERATIONS

a. Armed aircraft should be armed/de-armed in a designated area which facilitates facing the aircraft in a direction which will provide minimum risk to personnel and property.

b. Aircraft should be shut down during arming/dearming and armament switches should be kept in the "OFF" (COLD) position, with circuit breakers pulled, if armament breakers are present. Commanders may waive the requirement for shutdown in specific cases when the tactical situation clearly renders compliance infeasible; however, the requirement for armament for armament switches to be "OFF" and the breakers to be pulled must remain in effect.

c. Maintenance should never be conducted with the battery switch "ON" or external power sources utilized within the revetment or maintenance area on an armed aircraft. Prior to maintenance being performed on an aircraft in the maintenance or revetment area which requires electrical power being placed on any aircraft system, the aircraft should be moved to the arming/de-arming point and all systems de-armed (all ammunition removed).

d. Arming/de-arming should only be accomplished under the supervision of a rated aviator who is thoroughly familar with the armament systems on the aircraft.

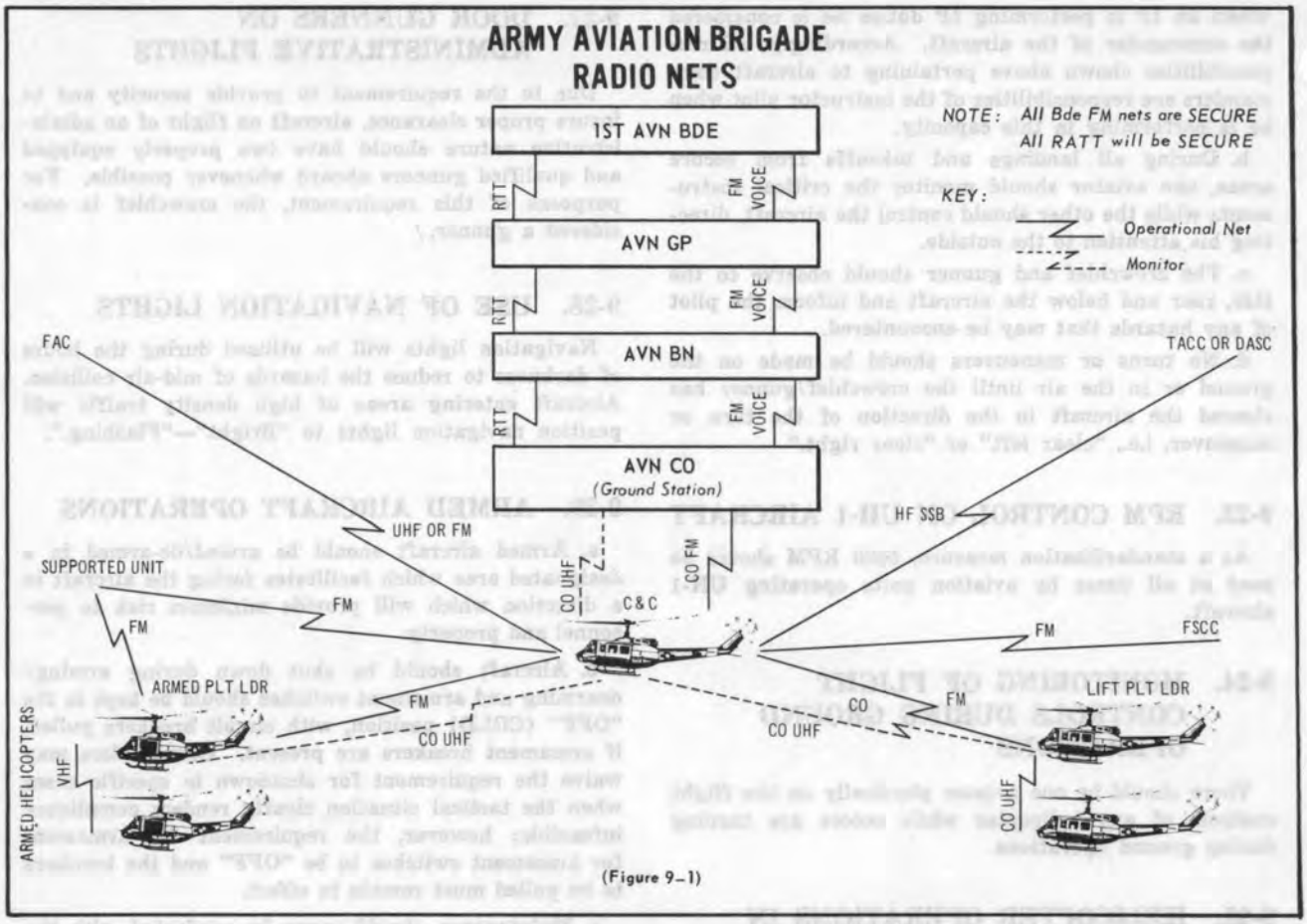
e. "L" shaped revetments should be made avialable to the maximum extent for all armed helicopters.

f. Units should maintain records of ammunition lot numbers.

g. Dropped or otherwise mishandled rocket warheads or motors should not be used.

h. Crews should insure that warheads are properly torqued to rocket motors.

i. In order to insure safety of armament systems prior to landing, tower operators should advise aviators to "Check armament circuit breakers out and guns cold" when giving landing instructions. The aviator, after double checking, should acknowledge, "Armament



(Figure 9–1)

circuit breakers are out and guns are cold" or in the case of troop carriers without circulit breakers "Guns are cold."

j. Armed helicopter crewmembers should not place guns in a "HOT" configuration while en route to the area of operations, but should only do so just prior to utilizing armament systems. Armament should immediately be returned to the "COLD" configuration when their use is no longer required. Reference 1st Aviation Brigade Regulation 95-8.

Section VI

Communications Electronics

9-30. GENERAL

a. The purpose of this section is to provide guidelines for the establishment of internal communications systems with the 1st Aviation Brigade. These systems must be flexible to meet the changing tactical situations and the commander's desires; however, under no circumstances will standard signal practices be discarded or compromised.

b. The intent of this is not to establish unwieldy rules or procedures that limit the imagination and ingenuity of commanders at any level.

9-31. TYPE RADIO NETS

a. Brigade level, Figure 9-1 00

(1) FM (secure) Command Net:

The Brigade FM Command Net provides the primary means of radio voice communication between brigade headquarters and groups within range of FM radio.

(2) High Frequency Command/Operation Net:

This net provides 24 hour voice, radio teletype (secure) CW and voice from Headquarters, 1st Aviation Bridgade to the headquarters of each aviation group and separate battalion. This net is the backup means of communication for the sole user point to point secure teletype circuits between the bridgade and each group and separate battalion. Each headquarters served by this net will provide a telephone patching facility to augment the Army Area Communications System (AACS) telephone circuits.

b. Group Level:

(1) FM (secure) Command Net:

The Group FM Command Net provides the primary means of radio voice communication between group headquarters and subordinate battalion headquarters. Maximum effort should be made to establish this net and to operate it on a 24 hour basis.

(2) High Frequency Command/Operations Net:

Each group net provides secure radio teletype, voice and CW from each aviation group headquarters to their subordinate battalions. This means will be used primarily when sole user circuits within the AACS are not feasible or available. This net also provides backup for the FM Command Net should terrain and/or distance limit the use of FM.

c. Battalion/Squadron Level:

(1) FM (secure) Command Net:

The Battalion FM Command Net is the primary means of radio communications between battalion headquarters, subordinate companies and attached units.

(2) High Frequency Command/Operations Net:

The Battalion HF Net provides RATT between the battalion forward and rear command post and the companies. This net also provides backup voice communications for the battalion FM command net should terrain or geopraphical separation limit the use of FM.

d. Company/Troop Level:

(1) FM (secure) Command Net:

The Company/Troop FM Command Net is the primary means of radio communnication between company/troop headquarters and its subordinate elements.

(2) UHF Operations Net:

The Company/Troop UHF Operations Net is the primary means of radio communication between company/troop aircraft for air-to-air coordination and under normal circumstances will be used air-to-air only.

(3) VHF Gunship Operations Net:

The Company/Troop VHF Armed Helicopter Operations Net is the primary means of radio communication between armed helicopters for air-to-air coordination.

e. Command and Control Aircraft:

(1) Command and Control aircraft at all levels of command will have as a minimum the ability to monitor simultaneously 3 FM, 1 UHF, 1 VHF and HF channel. To achieve this minimum communication capability at least one of three different aircraft command consoles plus the aircraft systems must be used.

(2) Command and Control Aricraft Nets:

Normally command and control aircraft will operate in the following nets:

(a) Aviation (group, battalion, or company) FM Command Net.

(b) Supported unit FM Command Net.

(c) Fire Support Coordination Section (FSCS) or Fire Direction Center (FDC) FM Net.

(d) Forward air controller (FAC) UHF or FM Net.

(e) Tactical air Control Center (TACC) or direct air support center (DASC).

9-32. RADIO DISCIPLINE

The effectiveness of radio communications is directly related to radio discipline. Radio discipline is accomplished through the use of proper radio procedures, through practice and sound judgment of the radio operators and active supervision by leaders. Radio discipline is the means of eliminating unnecessary and confusing traffic and thereby leaving the net clear for essential traffic. Rules for operators which will assist them in attaining radio discipline are:

a. Plan the message before attempting to transmit. The message should be accurate, clearly stated, and brief. Remember KISS (keep it short and simple).

b. Listen before transmitting to avoid blocking another station's transmission.

c. Use secure radio systems whenever possible and particularly when transmitting information which may be of value to the enemy.

d. Operate only in those nets in which you are authorized unless an emergency requires you enter another net.

e. When transmitting a message which must be copied or when it is obvious your transmission is weak or broken, speak slowly and distinctly.

f. Do not waste net time by reading back messages for possible correction when it is obvious that you have received the message, or by making unnecessary communications checks.

g. Standard or routine reports will be made in standard sequence using a standard format to avoid confusion and to use minimum transmission time.

h. "IF IT DOESN'T NEED TO BE SAID DON'T SAY IT."

9-33. GENERAL OPERATION AND INSTALLATION HINTS

a. When operating from a fixed location, stable central power with generator backup should be used rather than vehicular power sources.

b. All equipment will be properly grounded to prevent shock hazards.

c. If the set is in a vehicle, make sure the battery voltage is correct. Keep the engine running to charge the battery.

d. Equipment should be ventilated and kept as cool as possible. The use of a fan blowing on the equipment is an excellent method of aiding the cooling. Never remove equipment from its case for extra cooling since equipment cases are designed to enhance cooling.

9-34. ANTENNAS

a. Antennas are generally the weakest link in any radio system.

b. All HF installations will utilize horizentally polarized, half wave length antenna system in accordance with TM 11-666 and FM 24-18.

c. All fixed base FM systems will utilize the RC-292 ground plane antenna assembled in accordance with the chart in on page 2-4 TM 11-5820-343-15, shown in part, at the end of this chapter.

d. Increasing the antenna height above ground and obstacles is the most effective way of improving marginal FM radio circuits. Maximum antenna height possible is limited only by line loss of coaxial cable used.

e. Moving the antenna location a few meters may improve circuits.

f. Each antenna system should be inspected and cleaned of corrosion at least monthly.

g. No circuit should be considered "in" until the circuit works loud and clear with the squelch "on".

9-35. WIRE

a. The brigade will depend on the area communication system for long line service. Secure teletype circulits will be operated from brigade headquarters to groups and separate battalions. Groups will also provide secure teletype to subordinate battalions. These circuits will be backed up by RATT using command HF (SSB) nets.

b. Sole user telephone circuits will be provided from AAE of FFV to group and battalion operations centers, when possible, using the area communications system.

c. Command post wire installations will be installed by organic personnel when time and the situation permits. This system will normally include the commander, staff sections and liaison officers.

9-36. SOI EGTRACT

a. A standard type of pocket SOI extract will be published by major aviation headquarters such as brigade, group, and separate battalion. The purpose of the boklet is to provide aviators with a compact ready reference to communication data required during flight operations. The specific data contained in the extract will be determined by the normal area of operations of the major unit, although the format will be standard. The use of a standard format makes it easier for an aviator to use the local edition in the area in which he is operating.

b. The following types of information is contained in the SOI exeract:

(1) Frequency channel identification.

(2) Call sings and frequencies of aviation units and major supported headquarters.

(3) Artillery advisory service.

(4) Emergency instructions.

(5) An authentication and numerical code from the local edition of the KAC-Q series.

9-37. SCHEDULED AND UNSCHEDULED COURIE R SERVICE

Air courier service will normally be established at brigade and group level. Message centers will maintain a copy of the scheduled route and times of courier service serving their headquarters. Groups and battalions may established their own air courier service when the situation warrants.

ANTENNA AND GROUND PLANE ELEMENTS

OPERATING FREQUENCY	ANTENNA SECTIONS				GROUND PLANE SECTIONS			
30 – 36.50 mhz	AB–21	AB–22 1	AB–23 1	AB–24 1	AB–21 2	AB–22 1	AB–23 1	AB–24 1
36.50 – 50.50 mhz	0	1	1	1	1	1	1	1
50.50 – 75.95 mhz	0	1	0	1	0	1	1	1

ANNEX A

POL/Ammunition Planning Factors

a. POL Data:

(1) Fuel capacity and consumption rate for type aircraft.

TYPE A/C	GR FUEL	FUEL CAPACITY	*MAXIMUM HOURLY FUEL CONSUMPTION RATE
OH–6A	JP–4	61.5 GAL/400 LBS	22 GAL/146 LBS
OH–58A	JP–4	70 GAL/455 LBS	29 GAL/190 LBS
UH–1B	JP–4	171.4 GAL/1092 LBS	75 GAL/479 LBS
UH–1C	JP–4/5	246 GAL/1573 LBS	100 GAL/636 LBS
UH–1D/H	JP–4/5	224.3 GAL/1430 LBS	85 GAL/542 LBS
CH–47A	JP–4	621 GAL/4036 LBS	342 GAL/2120 LBS
CH–47B	JP–4	621 GAL/4036 LBS	427 GAL/2780 LBS
CH–47C	JP–4	1131 GAL/7351 LBS	476 GAL/3038 LBS
CH–54A	JP–4/5	1353 GAL/8794 LBS	446 GAL/2843 LBS
AH–1G	JP–4/5	251 GAL/1600 LBS	84 GAL/533 LBS
AH–56A	JP–4	438 GAL/2847 LBS	140 GAL/900 LBS

JP–4 computed at 5.375 lbs per gallon.

(2) Daily/POL Aircraft Planning Factors per type unit:

Type Unit	*POL Factors in Gallons
AHC	6400
AWC (Armed)	3600
ASHC	3200
ACS (3 Air Cav Troops)	9500

***Planning data based on 75% of assigned aircraft flying an average of 5 hours per day. The ACS POL planning factors include requirements for 3 Air Cavalry Troops plus HHT.**

b. Daily Ammunition Planning Factors per type unit:

Type Unit	*Ammo in Tons
AHC	12.0
AWC (Armed)	30.0
ACS (3 Air Cav Troops)	54.6

***Combination of 2.75 inch Rockets, 7.62mm Mini-Gun and 40mm. Data based on 75% assigned armed helicopters flying, an average of 5 hours per day. The ACS ammunition tonnage factor includes requirements for "D" Troop.**

CHAPTER 10
SURVIVAL, ESCAPE AND EVASION

Section I
General

10-1. GENERAL

a. This chapter establishes policies and procedures for implementing the survival, escape and evasion program within the 1st Aviation Brigade.

b. Life support, survival, E&E (Escape and Evasion) is a command function at all levels and is a staff function of the Flight Surgeon, Safety Officer, and E&E Officer at 1st Aviation Brigade Headquarters.

10-2. RESPONSIBILITIES

a. Each unit down to, and including, companies will appoint an E&E Officer on published orders. E&E Officers will be responsible for the initiation and dissemination of all Survival and E&E training information and will be responsible for all procedures and matters pertaining to this program.

b. Flight surgeons, safety officers, and supply officers at all echelons will provide specialist support to Escape and Evasion Officers in the solving of problems and continually improving the program.

c. Escape and Evasion Officer and S-2:

(1) Advise the commander and staff on all intelligence and counterintelligence aspects of escape, evasion, survival, search and rescue program.

(2) Provide guidance to subordinate units in establishing a survival and E&E program in coordination with the S-3.

(3) Dissemination of information concerning survival, E&E search and rescue.

(4) Conduct staff visits and inspections of subordinate units to determine the effectiveness of the overall program.

(5) Conduct E&E briefings for all newly assigned aviators to help them understand the policies and procedures pertinent to their unit and its area of operations.

d. S-3:

(1) Allocate school quotas to the various survival schools.

(2) Determine training requirements and insure that an effective training program is conducted at unit level.

e. S-4:

(1) Assist units in expediting requests for authorized survival equipment.

(2) Conduct staff visits to check on authorized allowances on hand or on requistion.

f. Surgeon. Review E&E debriefing reports.

g. Unit E&E Officer:

(1) Exercise over-all supervision of survival and life support programs.

(2) Advise the commander on training and maintain an effective training program for survival, E&E training, and be responsible for all procedures and matters pertaining to survival and life support equipment.

(3) Insure all survival and life support system equipment is inventoried and inspected at regularly scheduled intervals.

(4) Review records of supply actions to insure current inventories are being recorded and outstanding requisitions and follow-up actions are carried out.

(5) Insure that the unit has an effective E&E SOP (Standing Operating Procedures). This SOP should contain as a minimum:

(a) Duties and responsibilities of the E&E Officer.

(b) Procedures for periodic inventories and inspections of survival equipment.

(c) Specify minimum survival equipment to be carried on board each aircraft.

(d) Specify minimum survival equipment for each person.

(e) Procedures for control of "blood chits".

(f) Procedures for reporting the loss of "blood chits".

(g) Manner in which the E&E Code Letter with permament backup is disseminated.

10-3. SURVIVAL EQUIPMENT

a. The following guidance is provided as minimum survival equipment to be carried by Army aircraws:

(1) Knife (survival/hunting type).

(2) Medical/Survival kit.

(3) Some items of signaling:

(a) Survival radio, RT-10/URC-10/URC-68.

(b) Mirror.

(c) Smoke flares (pen flare gun).

(4) An appropriate map or chart.

(5) Compass.

(6) Insect repellent.

(7) Canteen of water.

(8) Water purification tablets.

(9) Strobe light.

b. The OV-1 survival vest and light-weight individual survival kits (leg type) contain most of the items mentioned above. The vest kits should be worn at all times while participating in any aerial mission. The items that can be expected to survive an aircraft crash are those items which are secured to the aircrew members.

c. All rotary wing aircraft not equipped with a hoist will carry 100 feet of 5/8 or 3/4 inch manila or nylon rope for use as either a rescue sling or safety rope. The bound end of the rope is to be secured to the helicopter structure and is to be provided with an appropriate means of quick release. The free end is to be provided with a loop approximately 2 feet in diameter formed by a secure splice or bowline knot. Additionally, the first 6 feet of the line above the loop is to be knotted at 18 inch intervals in order to provide firm hand holds.

Section II

Precedures

10-4. SEARCH AND RESCUE

a. Initiation of search and rescue procedures is the responsibility of the first commander who becomes aware of a lost or overdue aircraft.

b. U.S. Air Force SAR (Search and Rescue) will be notified through the nearest Corps Air Support Operations Center (ASOC) or notified direct by telephone and provided with all pertinent information available. As much of the following information as is available will be provided:

(1) Position of emergency (geographic coordinates and radar fix if possible).

(2) Call sign of distressed aircraft.

(3) Status of crew.

(4) Weather in area.

(5) Hostile forces (size force and type of antiaircraft fire).

(6) Type of terrain and vegetation.

(7) Friendly forces in area (ground and air).

c. Aviation in flight, observing downed aircraft or receiving emergency signals, will report information to the first U.S. Army or USAF flight following or tower facility that they are able to contact.

d. SAR operations are the responsiblity of the USAF and will be conducted in accordance with 7th Air Force Regulation 55-20. Although the U.S. Army has no specific SAR units, the inherent capabilities of Army Aircraft make them extremely valuable to SAR operations. IAW AR 95-10, aviation unit commanders will, within limitations of operational requirements, make their assets available to assist in SAR operations when required.

10-5. CONTINGENCY PLANNING

a. In the event the operational situation precludes the timely arrival of SAR personnel, each helicopter unit is required to designate a rescue crew in each flight, echelon or other operational formation.

b. The required rescue crew will be a normal part of the formation in which designated and will participate in the mission until rescue efforts may be necessary.

(1) The designated rescue aircraft will be positioned in the formation to visually monitor the activities of all other aircraft in the formation.

(2) Unit commanders will be responsible for determining the parameters within which rescue will be attempted and safety measures which will be observed.

c. Preplanning by aircraft commanders and crews will enhance their chances of survival in the event of a crash landing. Such preplaning should include but is not limited to procedures for jettisoning external stores, inflight disposal of extra ammunition and other impediment so as to arrive at the lowest gross weight possible prior to impact.

d. Flight crews should practice crash drills so that the crew members instinctively react to perform prearranged tasks in preparation for emergency landing and escape from the aircraft.

10-6. RECOMMENDED PROCEDURES FOR RESCUE FROM THE WATER

a. Unless circumstances dictate, do not approach personnel in the water at a hover. It is perferable to execute a steep approach and establish a hover so as to encompass personnel in the water within the perimeter of the roter down-wash. Experience has shown that rotor wash causes a wind and water storm on the water surface which greatly increases the difficulties of personnel attempting to remain afloat and may have an adverse effect on injured personnel.

b. Personnel should not be permitted to begin climbing into the helicopter until the loop of the rescue line has been secured to the front of the lift vest or securely positioned under the arms with the knot or splice to the front. Numerous documented instances exist of tragic endings to apparently routine rescue attempts due to personnel being either over eager or over confident of their own strength.

c. Crews of rescue aircraft must remain constantly aware of both personnel and aircraft limitations. Water rescue demands quick decisions and immediate action to preclude losses by drowning. The paramount factor is safe aircraft operation to prevent additional losses and failure of the mission.

d. Injured or exhausted personnel in the water shall be afforded all possible assistance, to include assistance in the water by a member of the rescue crew. The

favorable psychological impact of the in-the-water assistance is an important consideration. However, failure to take proper precautions prior to furnishing such assistance may result in an aggravated situation. Rescue personnel should not enter the water without proper preparation, such as removing heavy equipment, inflating the life vest and being secured by the safety line. At no time should rescue personnel in the water voluntarily detach themselves from the safety line.

e. The problems and safety hazards involved in towing downed personnel to shore are so numerous that the technique should be considered only as a last resort.

10-7. RECOVERY OF REMAINS

a. On accasion it will be necessary for unit personnel to recover or assist in the recovery of the remains of crewmembers of downed aircraft. Specific criteria for such operations are detailed in FC 10-63. Operational requirements and enemy activity will govern the extent to which these directions will pertain.

b. Remains are to be removed from the aircraft with as little additional damage to the wreckage as possible. Damage or movement of wreckage associated with removal of remains shall be documented and a report submitted to the accident investigation board.

c. Personal effects and other identifying objects found on the remains should be sealed in an effect bag to be kept with the remains from which they were taken to insure against loss, pilgerage, or damage by body fluids or the elements. Protection of personal effects and identifying objects requires a military escort and/or guard.

d. Each assault helicopter company and air cavalry troop is required to have on hand 4 each, pouch, human remains. FSN 9930-170-1492 and 4 each, bag personal effects, FSN 8105-174-0808.

10-8. SURVIVAL, ESCAPE AND RECOVERY DEBRIEFING

a. The E&E Intelligence Report and Debriefing should be a timely and comprehensive examination of each E&E experience, which provides details and cirmumstances surrounding a downed aircrew's use of survival aids, and equipment. It will be made clear to all participants that the purpose of the E&E debriefing is to allow other aviators to profit from their experiences and not be used as evidence of prosecution. Following the completion of the debriefing a Report of Lessons Learned will be given wide dissemination so that other aircrew members may benefit from the survival experience. Formal detailed counterintelligence, and intelligence debriefings will be conducted by trained interrogators.

b. The unit E&E Officer to which the aircrew is assigned or the intelligence officer (S-2) will normal conduct the debriefing.

c. The debriefing will be conducted as soon as possible after the aircrew members or individual is recovered. In the event the recovered aircrew is retained by medical personnel for treatment, the E&E or S-2 officer will contact the medical personnel for an appointment to debrief the individual. The debriefing report when completed will be expedited to 1st Aviation Brigade Headquarters, ATTN: E&E Officer.

10-9. EVASION AND ESCAPE AIDS

As a general rule aviators should stay near a downed aircraft to facilitate location by airborne search and rescue. Immediately after landing and administering emergency first-aid to injured personnel, individuals must plan for their rescue and take immediate steps for their survival. Personnel must avoid panic by careful, deliberate execution of survival actions. See FM 21-77 and TM 55-8465-206-13.

10-10. BLOOD CHITS

a. Use: It is intended that blood chits be used as a last resort when all other methods of independent evasion and survival have failed.

b. Payment of blood chit reward: See FM 21-77A.

c. Blood chits are expendable nonrecoverable property items, free of pecuniary liability. The loss of a blood chit does not require a formal investigation. Blood chits are to be controlled even though they are expendable.

Section III
References

10-11. REFERENCES

a. AR 95-1 (Army Aviation General Provisions).

b. AR 95-10 (Use of Army Aviation in SAR Operations).

c. FM 20-105 (National Search and Rescue Manual).

d. FM 10-63 (Handling of Deceased Personnel in Theaters of Operations).

e. MACV Directive Number 350-2 (Education and Training Survival, Escape and Evasion).

f. USARV Regulation 95-2 (Survival Equipment and Seach and Rescue).

g. USARV Regulation 95-4 (Recovery of Downed Aircraft).

h. 7th Air Force Regulation 55-20 (Search and Rescue Operations).

CHAPTER 11
AIR FORCE CLOSE AIR SUPPORT

Section I
General

11-1. GENERAL

The purpose of this chapter is to provide the ground commander, the Army Aviation commander, and their staffs with the basic knowledge required to plan, request and use Air Force close air support (CAS).

11-2. MISSION

The primary role of tactical air in RVN is to provide CAS for ground forces and to strike enemy encampments and routes of communication. Tactical air also performs reconnaissance and can provide assault airlift as required.

11-3. ARMAMENT AVAILABLE

Tactical CAS aircraft can deliver a variety of ordnance in the target area. The various types and a brief description of their uses are:

a. High explosive bombs varying from 250 to 1000 pounds are used when destruction of a target is desired.

b. Napalm is an effective antipersonnel weapon. Although it will neither collopse or destroy reinforced bunkers. it will usually kill the occupants.

c. Fragmentation bombs are particularly effective against exposed personnel or personnel in open trenches or foxholes. They are excellent preassault and area suppression munitions.

d. Air-to-surface missiles are used against fortifield positions and other point targets. To date only a few VC targets suitable for destruction by air-to-surface missiles have been located.

e. 20mm guns installed on most tactical aircraft provide highly accurate firepower effective against a larger variety of ground targets.

f. 2.74 inch rockets are also available; they are effective against personnel and lightly constructed fortifications.

Section II
Operations

11-4. OPERATING TECHNIQUES

a. Tactical Air Control System

(1) The USAF Tactical Air Control Center (TACC) is collocated with the MACV Army Tactical Air Support Elements (TASE) and is the combined USAF-VNAF facility which plans and coordinates the entire tactical air effort in RVN.

(2) USAF Direct Air Support Centers (DASC) are collecated with the Army TASEs at each ARVN Corps and each Field Vietnam (FFV) headquarters. The primary function of each DASC is to process all requests for immediate close air support and to assist in coordination and control of tactical air in its area.

(3) USAF Tactical Air Control Parties (TACP) are attached to each ground combat battalion or higher tactical headquarters. The TECP at separate brigade and division level includes an AF air liaison officer (ALO). The TACP at battalion level includes one forward air controller (FAC). All TACPs have communications personnel and equipment. A FAC is also attached to each sector advisory team in Vietnam. He advises the province chief on the use of tactical air, and he controls air strikes within that province. TACPs are normally located with the unit fire support coordination center (FSCC) or tactical operations center (TOC) as appropriate. Duties of TACP personnel are as follows:

(a) The ALO advises the ground unit commander on all matters pertaining to the capabilities and employment of tactical air.

(b) The FAC is an experienced tactical fighter pilot who has extensive knowledge of tactical air ordnance capabilities and fighter delivery techniques. He has been especially trained to perform his primary mission of directing air strikes. Experience in Vietnam has shown that the FAC is most effective in directing air strikes when he is airborne. Normally the Army aviation commander and the supported ground commander will coordinate with either the ALO or FAC in requesting tactical air support and in controlling its use in airmobile operations. Frequency the FAC will fly an I-1, O-2, or OV-10 aircraft or he may perform his mission from an Army helicopter.

b. CAS Request Procedures

(1) Requests for immediate air strikes (see annex A & B) may originate at any echelon and are forwarded through normal communication channels to the battalion CP. The requests are validated by the battalion commander or his representative and given to the TACP for submission directly to the DASC at ARVN Corps or FFV. TACPs at province, brigade and division levels monitor all requests, acknowledge them and coordinate with the FSCC at their level. If no higher echelon disapproves the request, the DASC

completes necessary coordination and orders the mission. In the event AF communications are not operational, requests may be forwarded through Army air request channels which parallel the AF request nets. Coordination between FSCCs and TACPs, and the TASE and DASCs remain the same. Immediate requests normally will be filled from ground alert aircraft. These aircraft are located at each fighter airfield and are on 15 minute alert. Reaction time, from request approval, is 5 minutes (alert time) plus flying time from the airfield to the target. In emergency situations the ARVN Corps or FFV G3 may fill immediate requests by diverting missions which are airborne in his Corps area. When this occurs he must notify the requestor of the diverted mission and attempt to replace it from ground alert aircraft.

(2) Preplanned requests for CAS (see Annex C & D) are forwarded through the same channels as immediate missions. except they are forwarded through the Army air request nets. Preplanned requests are processed, however, at each echelon and checked to determine if other means of fire support are more available or appropriate. If the request is approved at that level it is given a priority and sent to the next higher echelon where the same processing occurs. Each intermediate level has the authority to disapprove requests. Only the MACV TASE echelon has final approval authority.

(3) General information pertaining to all missions is as follows:

(3 All mission requests will be forwarded using the format prescribed on the CAS Request Form (See Annex E).

(b) When a mission does not have a requirement to expend all ordnance, there is a requirement to list a secondary target.

(c) All requests must be cleared politically, tactically and for safety before they can be approved. This final clearance mormally will occur at corps level. The G3 Air or G3 advisor accepts full responsibility for these clearances when he forwards the request to MACV TASE.

(d) Preplanned missions must be forwarded to MACV-TASE not later than 1400 hours on the day prior to the mission. They may be forwarded as soon as a requirement is known.

(e) Interdiction mission may be preplanned or listed as secondary targets.

(f) Army ground commanders at all levels down to battalion have available the advice and planning assistance of an AF representative (FAC or ALO) and artillery representative (LNO and FSCC). These Army and AF representatives must cooperate extensively to insure complete and coordinated fire support planning.

11-5. CONTROL

a. All tactical air support missions are controlled as prescribed in MACV Directive 95-4 (classified).

b. Marking of forward elements of friendly forces will be in accordance with existing unit SOPs or SOIs. When friendly positions are to be marked in conjuction with an air strike, the information will be recorded on the request form (only target marking procedures approved by SOP, SOI or operations order may be used).

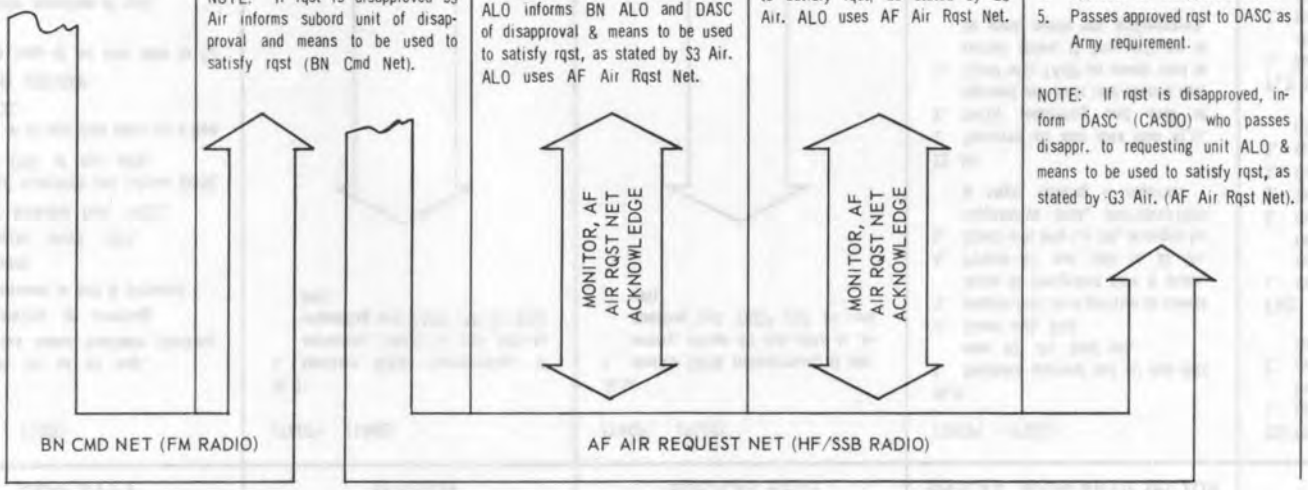
c. Maximum use should be made of marking rounds to identify targets. Necessary procedures will be established to preclude possible enemy compromise of target marking procedures.

d. Pilots delivering air fire power in support of ground operations will be briefed prior to takeoff or will be given an inflight briefing concerning the ground situation, locations of enemy and friendly elements, and marking of front lines prior to making a strike.

IMMEDIATE CAS REQUEST ACTION

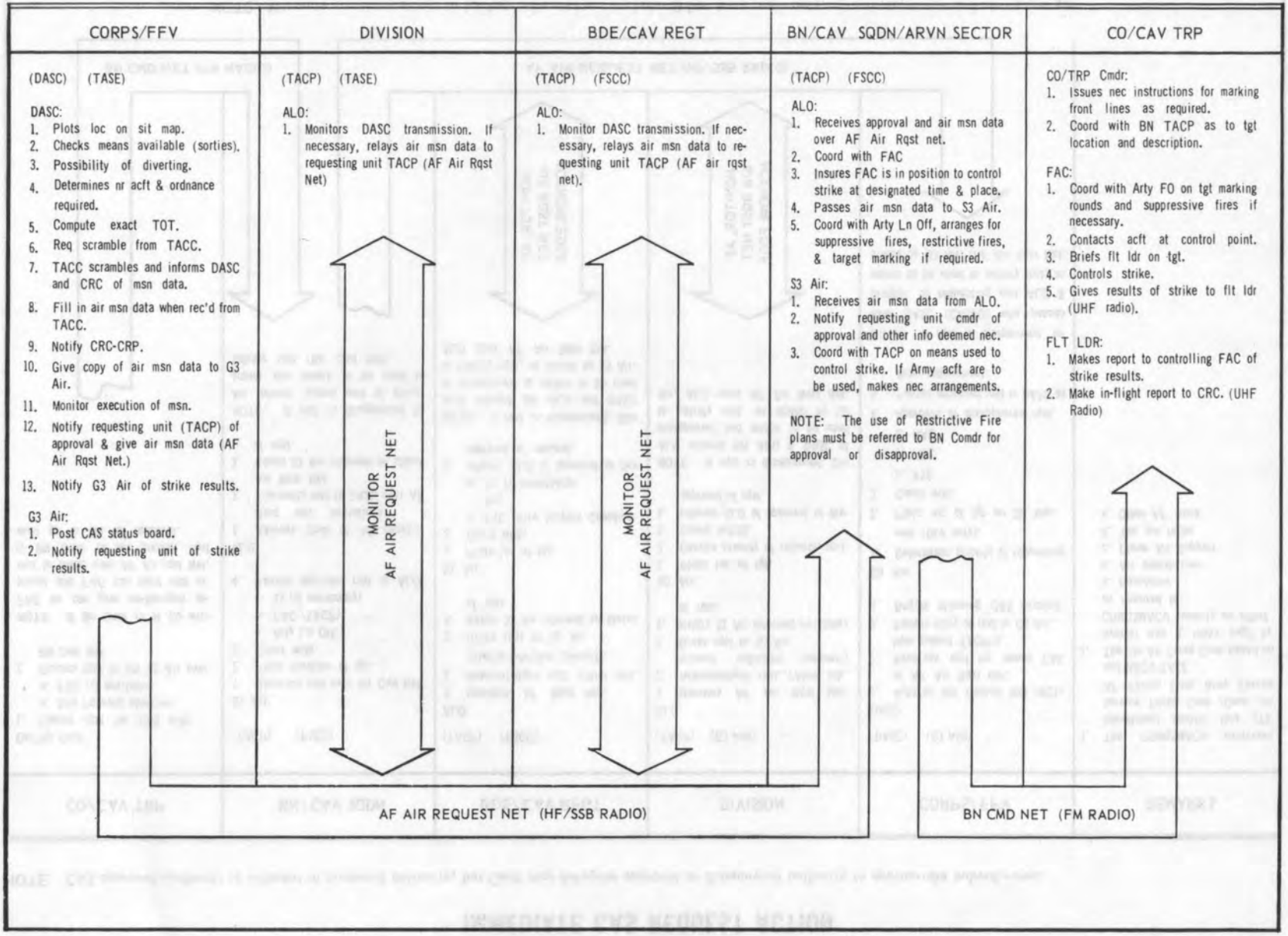
NOTE: CAS approval authority is inherent in command authority, but Cmdr may delegate approval or disapproval authority to appropriate subordinates.

CO/CAV TRP	BN/CAV SQDN	BDE/CAV REGT	DIVISION	CORPS/FFV	REMARKS
Co/Trp Cmdr: 1. Coords rqst for CAS with: a. Arty Forward observer. b. FAC (If available) 2. Passes rqst to BN S3 Air over BN Cmd Net. NOTE: If Bn Cmdr is at Co with FAC he can give on-the-spot approval and FAC can send rqst direct to DASC over AF Air rqst Net. If BN Cmdr is not present, rqst must go to BN for approval.	(TACP) (FSCC) S3 Air: 1. Receives rqst over BN Cmd Net 2. Plots location of tgt. 3. Coord with: a. Arty Ln Off. b. FAC (TACP) c. S3 (if necessary) 4. Passes approved rqst to ALO. ALO: 1. Advises Cmdr on AF capabilities and limitations. 2. Transmits rqst to DASC over AF Air Rqst Net. 3. Keeps S3 Air informed on status of rqst. NOTE: If rqst is disapproved S3 Air informs subord unit of disapproval and means to be used to satisfy rqst (BN Cmd Net).	(TACP) (FSCC) ALO: 1. Monitors AF Rqst Net. 2. Acknowledges rqst. (After ack, silence indicates consent). 3. Gives rqst to S3 Air. 4. Keeps S3 Air informed on status of rqst. S3 Air: 1. Plots loc of tgt. 2. Coord with: a. FSC (Fire Support Coordinator) b. S3 (if necessary) 3. Informs ALO of approval or disapproval of request. NOTE: If rqst is disapproved, Bde ALO informs BN ALO and DASC of disapproval & means to be used to satisfy rqst, as stated by S3 Air. ALO uses AF Air Rqst Net.	(TACP) (G3 AIR) ALO: 1. Monitors AF Air Rqst Net. 2. Acknowledges rqst. (After ack, silence indicates consent.) 3. Gives rqst to G3 Air. 4. Keeps S3 Air informed on status of rqst. G3 Air: 1. Plots loc of tgt. 2. Checks priority of request. unit. 3. Coord w/FSE. 4. Informs ALO of approval or disapproval of rqst. NOTE: If rqst is disapproved, Div ALO informs BN ALO & DASC of disapproval and means to be used to satisfy rqst, as stated by G3 Air. ALO uses AF Air Rqst Net.	(DASC) (G3 AIR) DASC: 1. Acts as Net Control Stat (NCS) of AF Air Rqst Net. 2. Receives rqst for immed CAS from subord TACP's. 3. Passes copy of rqst to G3 Air. 4. Begins planning CAS mission. G3 Air: 1. Determines priority of requesting unit (DIV only). 2. Plots loc of tgt on Sit Map. 3. Coord with: a. FSE b. ADE c. AAE 4. Approves or disapproves rqst. 5. Passes approved rqst to DASC as Army requirement. NOTE: If rqst is disapproved, inform DASC (CASDO) who passes disappr. to requesting unit ALO & means to be used to satisfy rqst, as stated by G3 Air. (AF Air Rqst Net).	1. The COMUSMACV exercises operational control thru JTF Service Force Cmdr (Cmdr 7th AF Force) Cmdr Army Forces and MACV TASE 2. The 7th AF Force Cmdr based on overall msn & tasks asgd by COMUSMACV commits air effort, as required to: a. Counterair b. Air Interdiction c. Close Air Support d. Tac air recon e. Other AF msns



NOTE: Alternate communications to backup indicated net include: Other Army radio nets, wire lines, motor and air messenger.

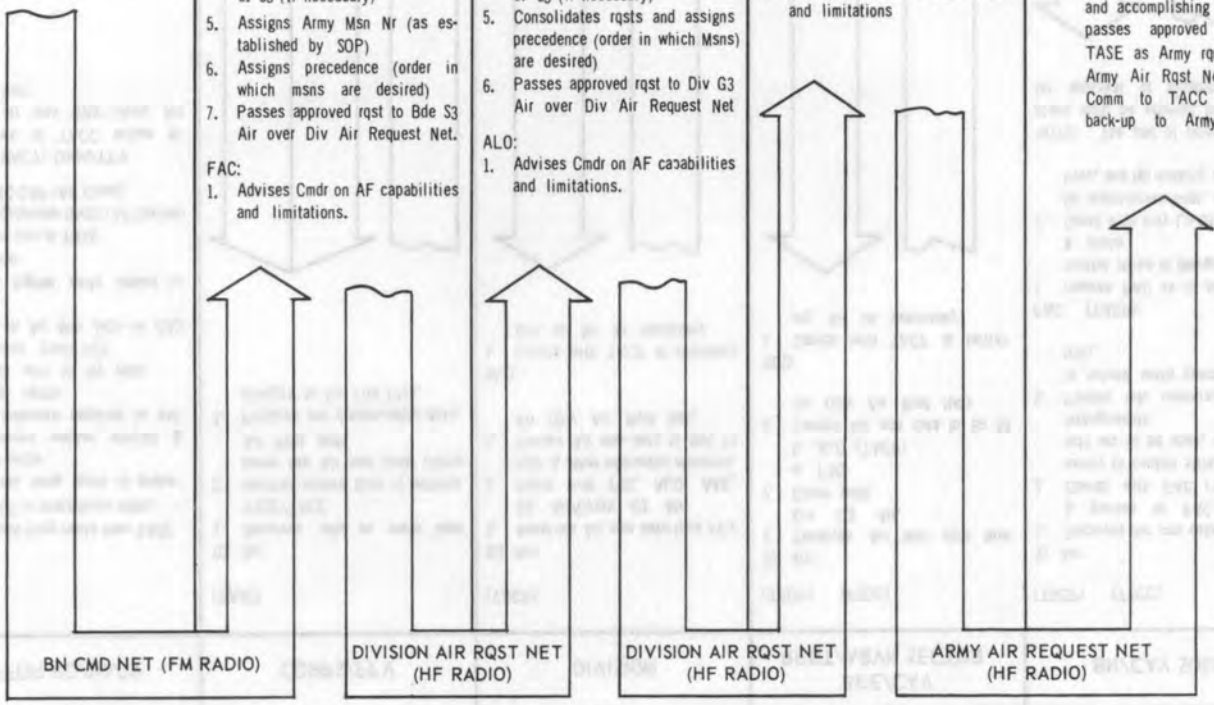
IMMEDIATE CAS EXECUTION ACTIONS



PREPLANNED CAS REQUEST ACTIONS

NOTE: CAS approval authority is inherent in command authority, but CMDR may delegate approval & disapproval authority to appropriate subordinates.

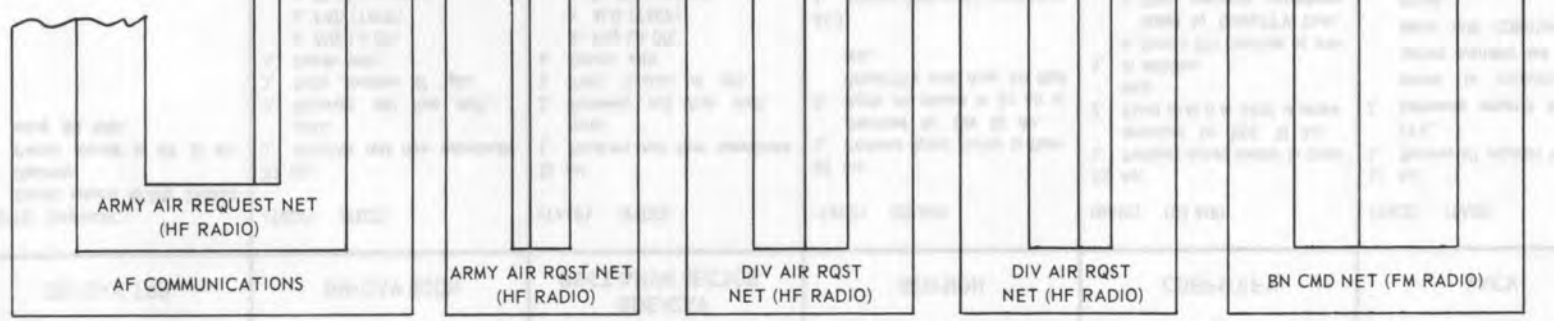
CO/CAV TRP	BN/CAV SQDN	BDE/CAV REGT/ARVN SECTOR	DIVISION	CORPS/FFV	MACV
CO/Trp Commander: 1. Coords request w/Arty Forward Observer. 2. Passes request to BN S3 Air using BN Nets.	(TACP) (FSCC) S3 Air: 1. Receives rqst from subordinate units. 2. Receives rqst from staff. 3. Plots location of tgts. 4. Coords with: a. Arty Ln Off. b. FAC (TACP) c. S3 (If necessary) 5. Assigns Army Msn Nr (as established by SOP) 6. Assigns precedence (order in which msns are desired) 7. Passes approved rqst to Bde S3 Air over Div Air Request Net. FAC: 1. Advises Cmdr on AF capabilities and limitations.	(TACP) (FSCC) S3 Air: 1. Receives rqst from subordinate units. 2. Receives rqst from staff. 3. Plots location of tgts. 4. Coords with: a. Arty Ln Off. b. ALO (TACP) c. S3 (if necessary) 5. Consolidates rqsts and assigns precedence (order in which Msns) are desired) 6. Passes approved rqst to Div G3 Air over Div Air Request Net ALO: 1. Advises Cmdr on AF capabilities and limitations.	(TACP) (G3 AIR) G3 Air: 1. Performs duties similar to those described for Bde S3 Air. 2. Rqsts are passed to G3 Air at Corps/FFV over Army Air Rqst Net. ALO: 1. Advises Cmdr on AF capabilities and limitations	(DASC) (G3 AIR) G3 Air: 1. Performs duties similar to those described for BDE S3 Air. 2. Coord w/ALO or DASC if necessary. 3. In addition: a. Checks Div priorities as prev stated by Corps/FFV Cmdr. b. After assigning precedence and accomplishing nec coord, passes approved rqsts to TASE as Army rqmts. Uses Army Air Rqst Net. (DASC Comm to TACC used as back-up to Army Comm).	(TACC) (TASE) J3 Air: 1. Receive all requests from corps FFV. 2. Determine requests to be approved in conjunction with sorties available and in accordance with COMUSMACV priorities. 3. Pass approved requests to TACC. TACC: Provide number of sorties available to TASE.



NOTE: Alternate communications to back-up indicated net include: Other Army radio nets, wire lines, motor & air messengers.

PREPLANNED CAS EXECUTION ACTIONS

AFFOR HQ/MACV	CORPS/FFV	DIVISION	BDE/CAV REGT/ARVN SECTOR	BN/CAV SQDN	CO/CAV TRP
(TACC) TACC: 1. Receives Army rqmts from TASE in TACC in precedence order. 2. Satisfies Army rqmts in precedence order 3. Determines number aircraft & type ordnance required to satisfy tgt rqmts. 4. Selects unit to fly msn. 5. Computes exact TOT. 6. Fills in Air Msn data on CAS Form. 7. Frags fighter units tasked to fly msn. 8. Passes info to TASE: a. Appropriate DASC (AF Commo) b. CRC-CRP (AF Como) J3 AIR (MACV) Corps/FFV 1. Notifies of TACC action to incl air msn data (Army Air Rqst Net)	(DASC) G3 Air: 1. Receives info on msns from TASE/TACC 2. Notifies subord Divs of actions taken and Air msn data. (Army Air Rqst Net) 3. Prepares and disseminates daily changes to Air Fire Plan.	(TACP) G3 Air: 1. Receives Air msn data from FFV G3 Air/Corps G3 Air. 2. Coord with FSE, ALO, AAE, ADE & other interested elements. 3. Passes Air msn data to Bde S3 Air (Div Air Rqst Net) ALO: 1. Coords with TACP at initiating Bde or Bn as necessary	(TACP) (FSCC) S3 Air: 1. Receives Air Msn data from Div G3 Air. 2. Coord with: a. FSC b. ALO (TACP) 3. Passes Air msn data to Bn S3 Air (Div Air Rqst Net) ALO: 1. Coords with TACP at initiating Bn as necessary	(TACP) (FSCC) S3 Air: 1. Receives Air msn data from Bde & passes to FAC. 2. Coords with FAC (TACP) on means to control strike. If Army acft are to be used, makes nec arrangements. 3. Passes info concerning strike to subord units concerned (Bn Net). FAC (TACP): 1. Insures FAC is in position to control strike at designated time & place 2. Coord with Arty Ln Off. arranges for suppressive fires, restrictive fires, and tgt marking if required. NOTE: The use of restrictive fire plans must be referred to Bn Cmdr for approval or disapproval.	CO/TRP Cmdr: 1. Informs assigned and attached units of impending CAS strike 2. Prepares to receive and brief TACP as required. 3. Takes action to mark friendly units as required. FAC: 1. Coord with Arty FO on tgt marking and suppressive fires (if necessary) 2. Contacts acft at control point. 3. Briefs flt ldr on tgt. 4. Controls strike. 5. Gives results of strike to flt ldr (UHF radio) FLIGHT LEADER: 1. Makes report to controlling FAC of strike results. 2. Makes in-flight report to control and reporting center (CRC) (UHF radio.)



NOTE: Alternate communications to backup indicated net include: Other Army radio nets, wire lines, motor and air messenger.

CLOSE AIR SUPPORT REQUEST FORM

SECTION I *(Request Data)*

1. REQUEST NUMBER	2. IMMEDIATE PRECEDENCE	PREPLANNED PRIORITY NO.	3. TARGET COORDINATES
	1. _____ 2. _____ 3. _____		*a. Primary _____ b. Alt _____

4. TARGET DESCRIPTION
*a. Primary
b. Alternate

*5. DESIRED TOT	7. FAC	8. TARGET WEATHER
6. LATEST ACPT TOT	*a. Call Sign _____ *b. Frequencies _____ c. Airborne _____ Type Aircraft _____	☐ GOOD ☐ MARGINAL

*9. REMARKS	10. DESIRED RESULTS
	a. Destroy _____ c. Neutralize _____ b. Interdict _____ d. Harass _____

RECEIVED FROM		RECEIVED FROM		ACKNOWLEDGED
PASSED TO	DTG	PASSED TO	DTG	BDE _____ DIV _____

SECTION II *(Army Action)*

1. G-3/AIR	2. REMARKS
Approval _____ Disapproval _____ *DTG _____	

SECTION III *(Air Force Action)*

1. TARGET LOCATION CHECKED BY	2. REQUIRED CONTROL	*3. RECOMMENDED A/C & ORDNANCE
	FAC _____ CRC _____ Other _____	

4. APPROVAL CHECKED BY	IF DISAPPROVED STATE REASON	DISAPPROVAL PASSED TO
		DASC/ALO/FAC _____

5. REMARKS

SECTION IV *(Air Mission Data)*

1. AF MISSION NUMBER	2. FLIGHT CALL SIGN	3. NUMBER & TYPE A/C
4. ORDNANCE	5. EST/ACT TAKEOFF	6. EST TOT

7. SPECIAL RESTRICTIONS	8. REMARKS

RECEIVED FROM	RECEIVED FROM	RECEIVED FROM
PASSED TO	PASSED TO	PASSED TO

** Items required for Immediate scrambles by TACC*

MACV FORM 361 (11 MAY 66)

ANNEX E

EXPLANATORY NOTES
FOR TACTICAL AIR REQUESTS

1. This request form is prescribed for requesting tactical air support. ARVN units may translate and use this form. Local reproduction of this form is authorized.

2. Classification: Confidential when completed.

3. This form will be completed in the following manner:

a. Section 1—Request Data.

Item 1—Request number, unit designation or numbering system as prescribed by Corps or FFV.

Item 2—Indicate for immediate request the precedence and for preplanned the priority will be indicated by approving headquarters.

Item 3—6 digit coordinates. (Example YT000111). Submit alternate coordinates when requesting missions that may not expend, ie., air cover. Normally this will be on preplanned request.

Item 4—Give complete target description, ie., include terrain features in target area if this information would assist in evaluating the target for ordnance load to include fuze settings for desired results on target. Submit alternate target when requesting missions that may not expend, ie., air cover. Normally this will be on preplanned request.

Item 5—Desired time on target. (Local date time group).

Item 6—Latest acceptable time on target.

Item 7—As indicated.

Item 8—Target weather—important for immediate requests.

Item 6—Remarks—Any additional information required to properly obtain the results desired as indicated in Item 10. If in support of an operation the name and/or number will be entered in this item.

Item 10—Indicate desired results.

b. Section II—The final approval for immediates will be at Corps or FFV. The preplanned will be approved or disapproval at MACV (TASE).

c. Section III—For DASC action on immediates and TACC for preplanned requests.

d. Section IV—This information will be transmitted to the originator of the request if approved.

PART TWO

CHAPTER 12

Section I

Introduction

12-1. PURPOSE

The purpose of Part TWO of the Aviation Operational Procedures Guide is to provide a ready reference for commanders and staff officers on divisional aviation units and on USARV nondivisional/nonbrigade aviation units employed in the Republic of Vietnam.

12-2. SCOPE

a. Part TWO, consists of three chapters which includes the organization, capabilities and employment of divisions and other USARV aviation assets. This information may be used by commanders and staffs in planning for the use of such assets should they be made available to them for support.

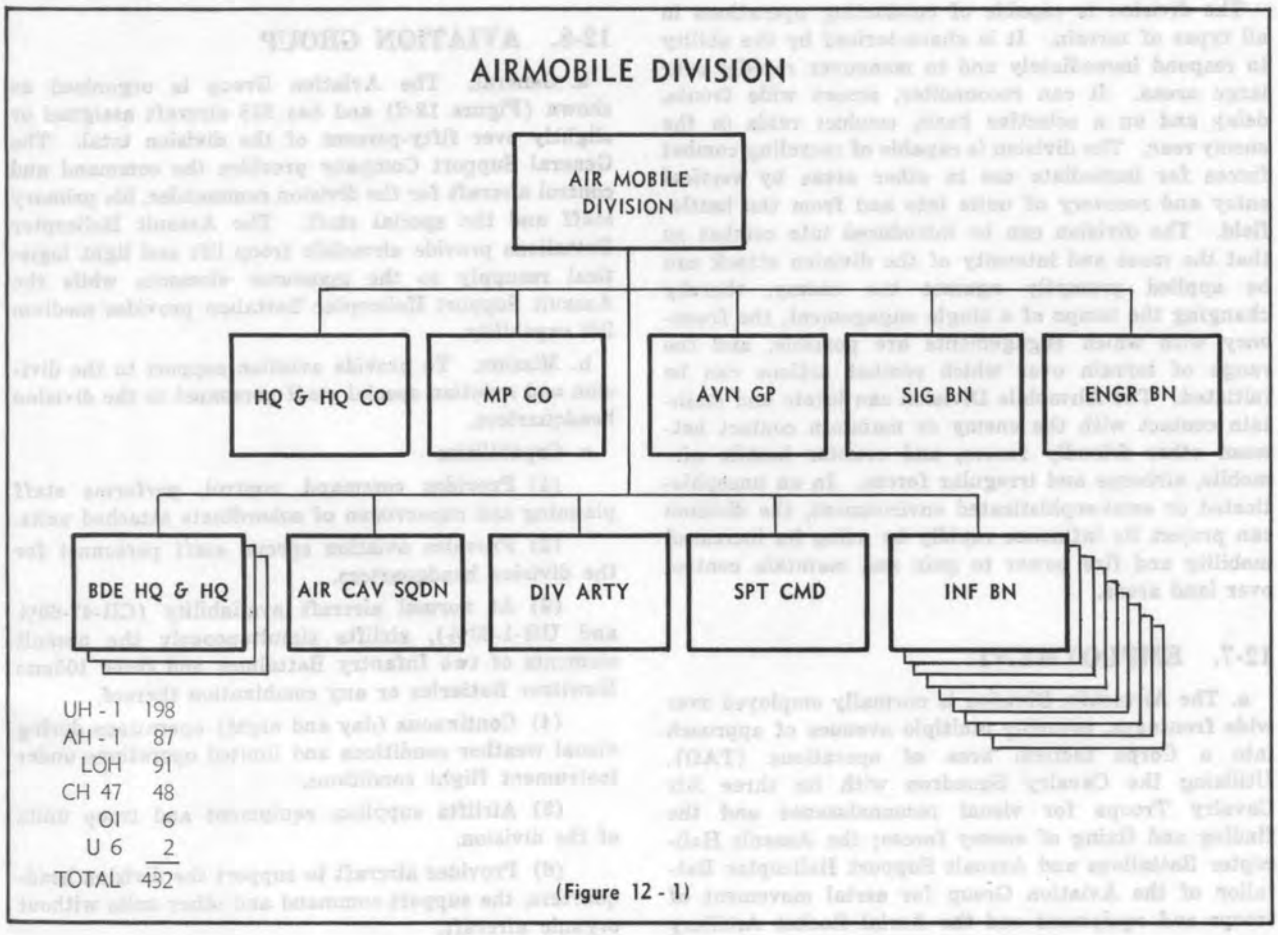
b. It is not the intent of Part TWO to reiterate material contained in Part ONE; the planning sequences, checklists, capabilities of aircraft are equally valid for Part TWO such changes as may occur are a result of local SOP's and procedures for specific area of operations.

Section II

The Airmobile Division

12-3. GENERAL

This chapter provides information and guidance for commanders and staffs concerning the mission, organization and capabilities of the airmobile division. The



(Figure 12 - 1)

information contained herein will assist in the successful planning for and utilization of airmobile division assets should they be attached or placed in support of non-divisional combat operations.

12-4. ORGANIZATION

The Airmobile Division is organized as shown (Figure 12-1). The division has 432 aircraft authorized with the majority of the aircraft being in the Aviation Group, the Cavalry Squadron and Divisional Artillery. These elements provide the airmobile lift capability, tactical responsiveness and fire support for the division. The remaining aircraft are utilized primarily in the function of command and control and aeromedical evacuation.

12-5. MISSION

The mission of the Airmobile Division is to provide reconnaissance and security for larger units, to participate in stability, low and mid intensity operations and to control an area including its population resources.

12-6. CAPABILITIES

The division is capable of conducting operations in all types of terrain. It is characterized by the ability to respond immediately and to maneuver rapidly over large areas. It can reconnoiter, screen wide fronts, delay and on a selective basis, conduct raids in the enemy rear, The division is capable of recycling combat forces for immediate use in other areas by vertical entry and recovery of units into and from the battlefield. The division can be introduced into combat so that the mass and intensity of the division attack can be applied promptly against the enemy, thereby changing the tempo of a single engagement, the frequency with which engagements are possible, and the range of terrain over which combat actions can be initiated. The Airmobile Division can locate and maintain contact with the enemy or maintain contact between other friendly forces, and counter hostile airmobile, airborne and irregular forces. In an unsophisticated or semi-sophisticated environment, the division can project its influence rapidly by using its increased mobility and fire power to gain and maintain control over land areas.

12-7. EMPLOYMENT

a. The Airmobile Division is normally employed over wide frontages, covering multiple avenues of approach into a Corps tactical area of operations (TAO). Utilizing the Cavalry Squadron with its three Air Cavalry Troops for visual reconnaissance and the finding and fixing of enemy forces; the Assault Helicopter Battalions and Assualt Support Helicopter Battalion of the Aviation Group for aerial movement of troops and equipment and the Aerial Rocket Artillery Batteries of Division Artillery for support. Its employment is characterized by rapid response of personnel and fire power to tactical situations while maintaining unit integrity.

b. Command and control is furnished to the division commander's primary and special staff by the ten UH-1's and ten LOH's of the General Support Company, Aviation Group. The several helicopters located within DISCOM provide command and control aircraft for the logistical commanders of the division.

c. The organic aviation assets assigned to the division are sufficient to provide normal light and medium lift requirements in a combat situation. In cases where heavy lift is required it may be attained from the Corps by having a HHC or elements thereof attached, in direct support or OPCON to the division for a specified period of time. Reinforcement by light or tached to, in direct support of, or OPCON to the Aviation Group.

d. When the division is tasked to support nondivisional units with aviation assets these assets normally come from the Aviation Group. The group capability of light or medium lift is then reduced by the amount and type of lift required for non divisional support. The overall effect is to reduce the responsiveness and flexibility in employment of the division.

12-8. AVIATION GROUP

a. General. The Aviation Group is organized as shown (Figure 12-2) and has 218 aircraft assigned or slightly over fifty-percent of the division total. The General Support Company provides the command and control aircraft for the division commander, his primary staff and the special staff. The Assault Helicopter Battalions provide airmobile troop lift and light logistical resupply to the maneuver elements while the Assault Support Helicopter Battalion provides medium lift capability.

b. Mission. To provide aviation support to the division and aviation special staff personnel to the division headquarters.

c. Capabilities

(1) Provides command, control, performs staff planning and supervision of subordinate attached units.

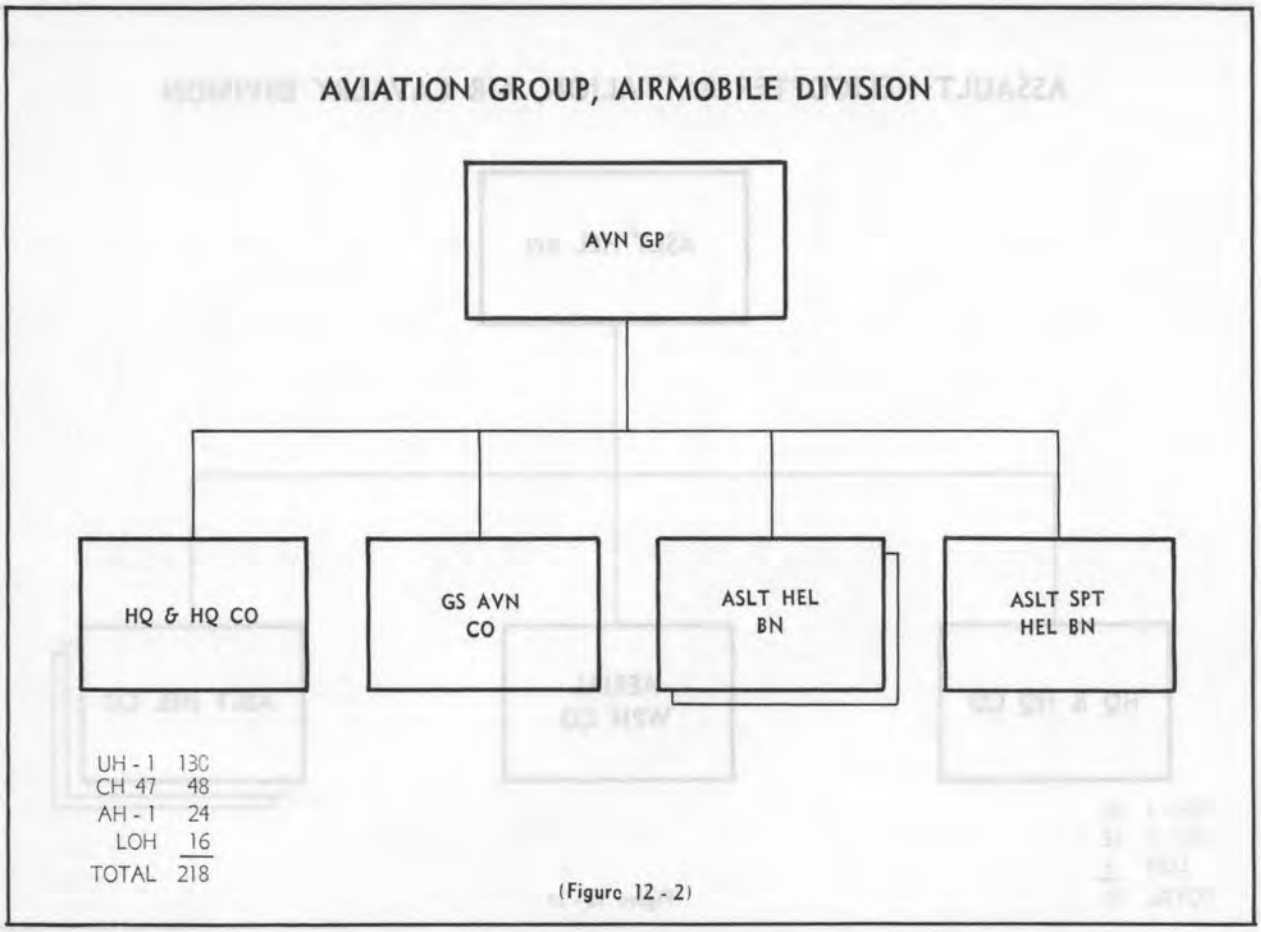
(2) Provides aviation special staff personnel for the division headquarters.

(3) At normal aircraft availability (CH-47-60% and UH-1-80%), airlifts simultaneously the assault elements of two Infantry Battalions and three 105mm Howitzer Batteries or any combination thereof.

(4) Continuous (day and night) operations during visual weather conditions and limited operations under instrument flight conditions.

(5) Airlifts supplies, equipment and troop units of the division.

(6) Provides aircraft to support the division headquarters, the support command and other units without organic aircraft.



(Figure 12 - 2)

(7) Provides aircraft for general support reinforcement to units with organic aircraft.

(8) Augments aeromedical capability of the Medical Battalion by providing air transportation of non-emergency type patients at the request of the appropriate command surgeon.

(9) Provides pathfinder support for the division.

(10) Provides armed aerial escort for the Airmobile Division.

d. Employment

(1) The Aviation Group is normally employed in general support of the division. It in turn normally places an Assault Helicopter Battalion or portion thereof in direct support of each committed brigade or task force. The Assault Support Helicopter Battalion is normally kept in the general support role, however, elements of that battalion may also be placed in direct support, OPCON, or attached to a larger force for a specified period of time.

(2) Mission requests for aviation support are received by the division G3 and passed thru the Army Aviation Element to the Aviation Group. The Group in turn consolidates requests and passes them as missions to the appropriate battalions.

(3) The Pathfinder Platoon is utilized for control in landing zones, pick-up zones and fire support bases. Their purpose, function and employment is fully discussed in Part ONE, Chapter 4, Pathfinder Operations.

(4) The five GCA teams of the communications platoon are utilized to establish instrumented airfields and/or to provide surviellance radar affording radar control of night tactical missions and flare drops within the division AO.

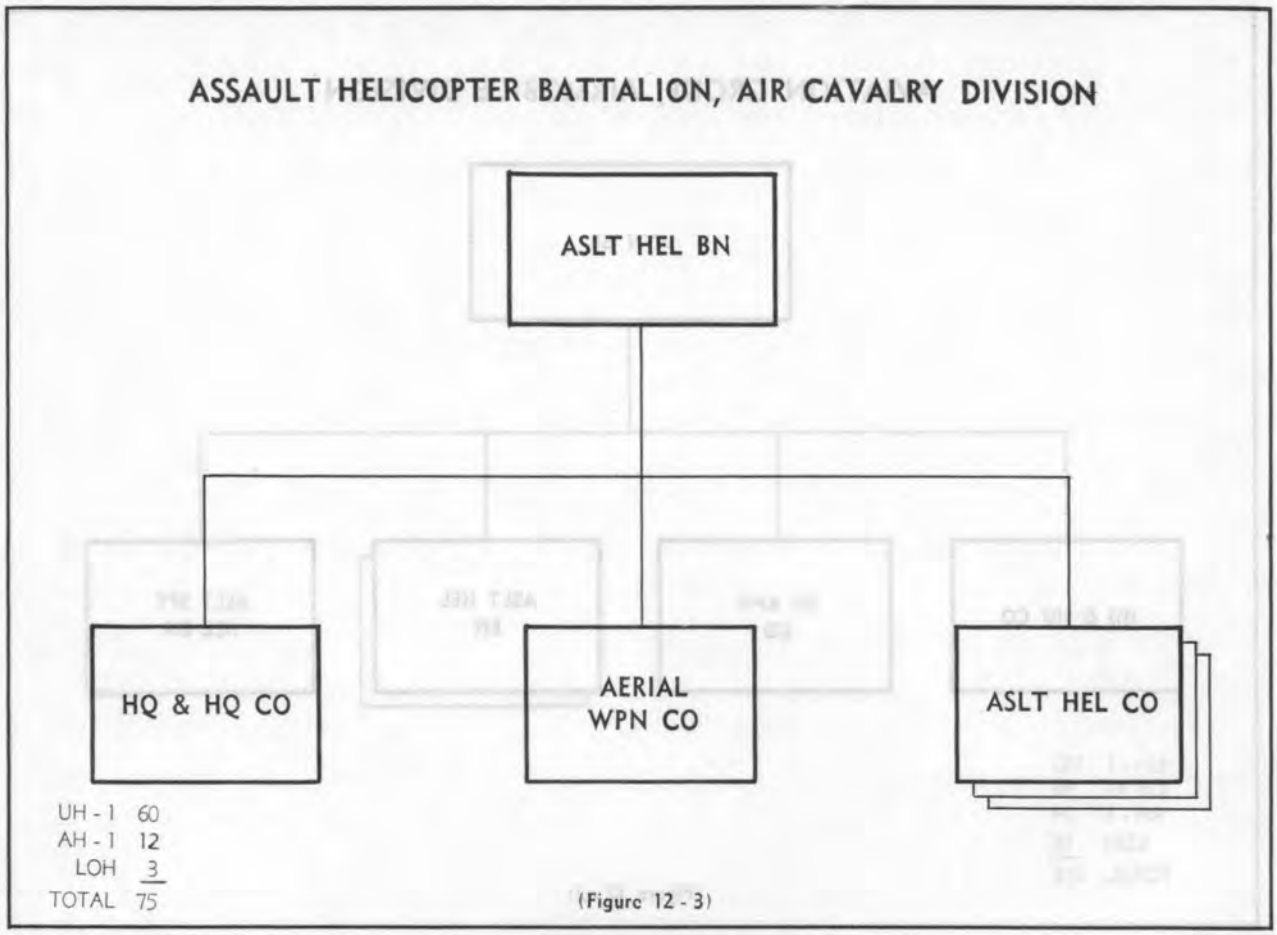
12-9. ASSAULT HELICOPTER BATTALION

a. General. The Assault Helicopter Battalion is organized as shown (Figure 1-3). The three Assault Helicopter Companies provide the troop lift capability. The Aerial Weapons Company provides the gunship escort and the three LOHs are utilized for command and control.

b. Mission. To provide tactical mobility for combat troops, supplies and equipment of the division during the conduct of combat and airmobile operations.

c. Capabilities

(1) Provides continuous (day and night) operations during visual and marginal weather conditions



(Figure 12 - 3)

and limited operations under instrument weather conditions in support of the division in the forward aras of the combat zone.

(2) Based on eighty percent aircraft availability, provides in a single lift, airlift for the assault elements of one Infantry Battalion.

(3) Augments aero-medical evacuation from the immediate battlefield.

(3) Provides armed aerial escort for airmobile operations within the combat zone.

d. Employment

(1) Normally employed under group control and placed in direct support of a brigade. When tasked to support more than one brigade, companies are put in direct support of the brigades with the battalion (—) in general support. Aerial weapons support, in both instances, is furnished on a mission basis. When supporting a single brigade, liaison is established from the battalion to the supported unit. When more than one brigade is supported, liaison is furnished from the Direct Support Company to the supported unit. In all instances missions are processed thru battalion with group monitoring the requests.

(2) Mission requests involving troop lifts from supported units will automatically have elements of the Aerial Weapons Company assigned on a mission basis and need not request this support. Other type missions such as Command and Control, logistical, psy-ops, sniffer and flare drops do not automatically include "gunship" escort. Aerial weapons will be assigned to these single ship type missions based on the current enemy situation in the designated area of operations. If not requested by supported unit this determination will be made at the supporting battalion level.

(3) Special type missions such as Hunter/Killer Teams made up of LOH's from the brigade aviation platoon and AH 1's from the Aerial Weapons Company are utilized within the brigade AO. Night Hawk, a UH-1 equipped with a minigun, 50 cal machine gun, an infa red/white light, searchlight and a night observation device (NOD) is used during hours of darkness in areas of suspected enemy troop movement. An AH-1 is normally the escort on this mission. Missions such as these are generated by the brigade, coordinated through battalion and executed by a company.

12-10. ASSAULT HELICOPTER COMPANY

a. General. The Assault Helicopter Company is organized as shown (Figue 12-4). Its two Assault Helicopter Platoons furnish the troop lift capability of the company. The Service Platoon provides all organizational and most of the direct support maintenance for one company. In addition to the Service Platoon, each company now has a Direct Support Maintenance Detachment assigned to it. This has the effect of providing immediate field maintenance support resulting in higher aircraft availability.

b. Mission. To provide tactical mobility for combat troops, supplies and equipment of the division during the conduct of airmoble operations.

c. Capabilities

(1) Provides continuous (day and night) operations during visual and marginal weather conditions, and limited operations under instrument weather conditions, in support of the units in the combat zone.

(2) Based on eighty percent availability of organic aircraft, provides, airlift for assault elements of one Rifle Company including the Infantry Supporting Weapons in a single lift.

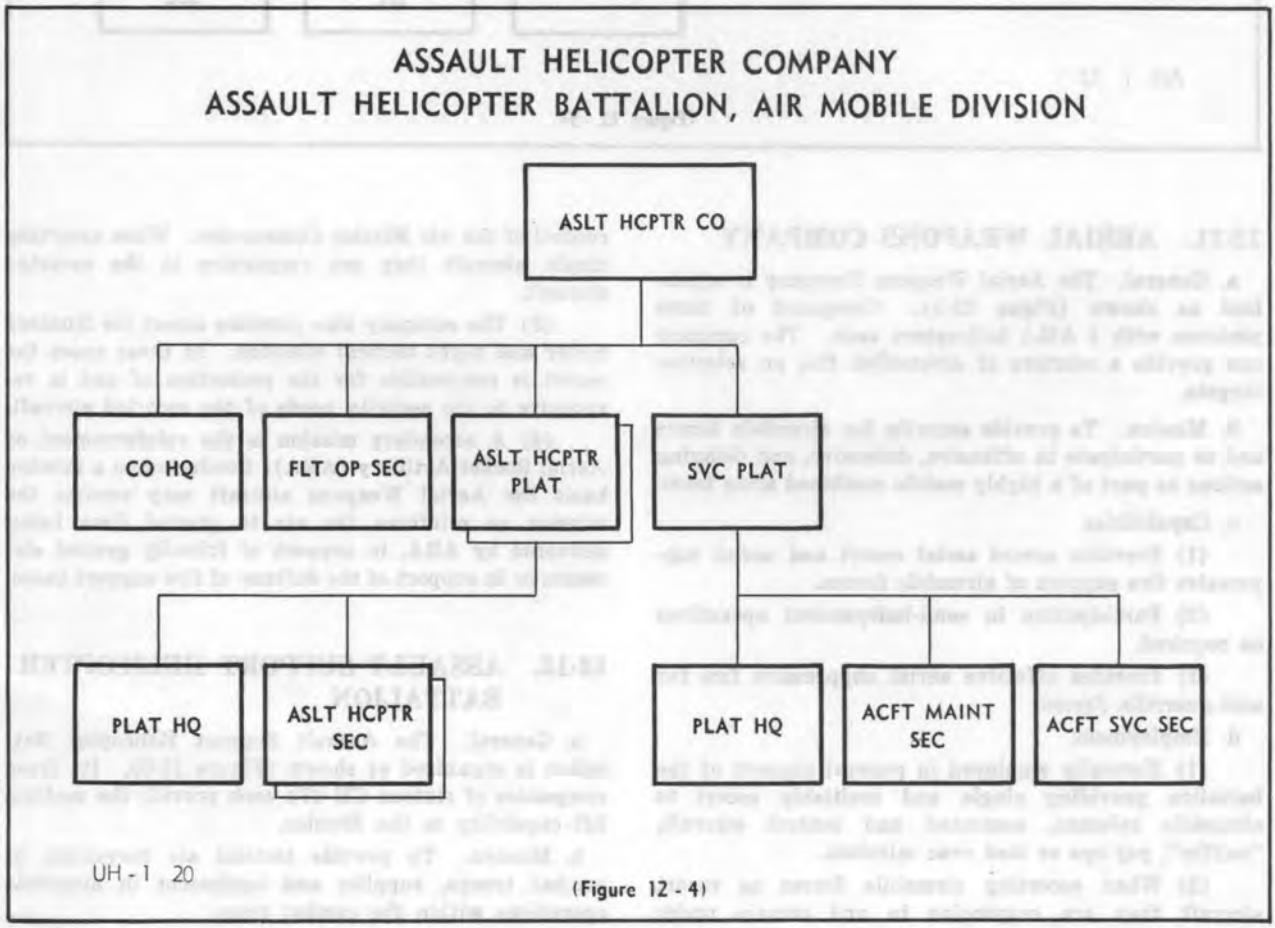
(3) Provides air movement of troops, supplies and equipment within the combat zone.

(4) Augments aeromedical evacuation from the immediate battlefield.

d. Employment

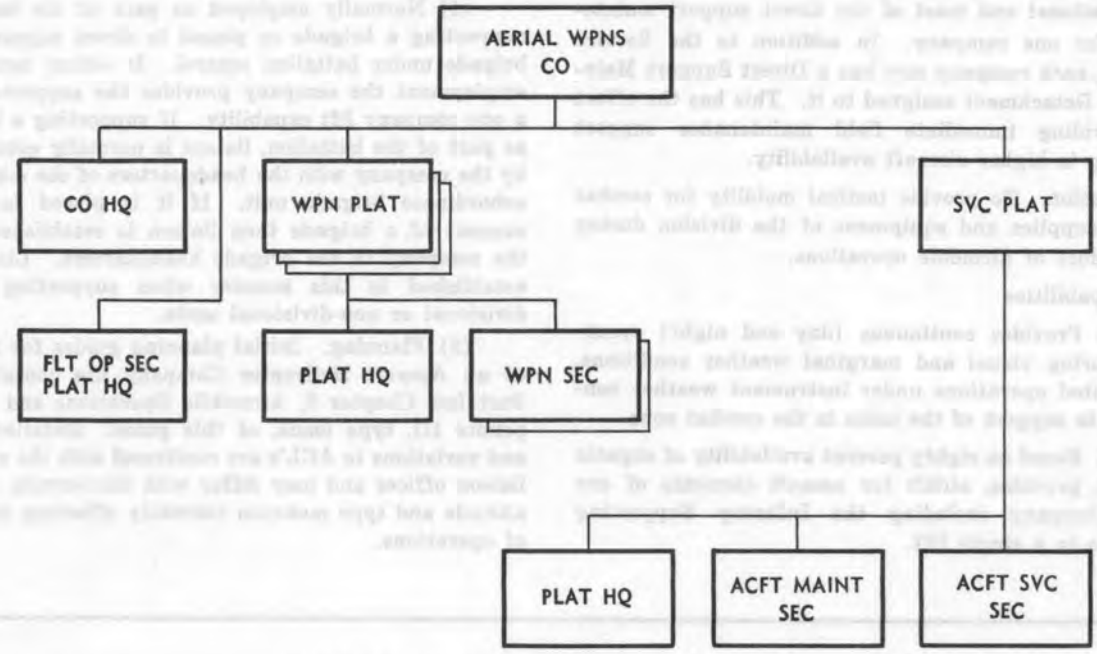
(1) Normally employed as part of the battalion supporting a brigade or placed in direct support of a brigade under battalion control. In either method of employment the company provides the supported unit a one company lift capability. If supporting a brigade as part of the battalion, liaison is normally established by the company with the headquarters of the supported subordinate brigade unit. If it is placed in direct support of a brigade then liaison is established from the company to the brigade headquarters. Liaison is established in this manner when supporting either divisional or non-divisional units.

(2) Planning. Initial planning guides for the use of an Assault Helicopter Company are contained in Part Ine, Chapter 2, Airmobile Operations and in Appendix III, type loads, of this guide. Detailed plans and variations to ACL's are confirmed with the aviation liaison officer and may differ with the terrain, density altitude and type monsoon currently effecting the area of operations.



(Figure 12 - 4)

AERIAL WEAPONS COMPANY, ASSAULT HELICOPTER BATTALION AIRMOBILE DIVISION



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(Figure 12 - 5)

12-11. AERIAL WEAPONS COMPANY

a. General. The Aerial Weapons Company is organized as shown (Figue 12-5). Composed of three platoons with 4 AH-1 helicopters each. The company can provide a mixture of diversified fire on selective targets.

b. Mission. To provide security for airmobile forces and to participate in offensive, defensive, and delaying actions as part of a highly mobile combined arms team.

c. Capabilities

(1) Provides armed aerial escort and aerial suppressive fire support of airmobile forces.

(2) Participation in semi-independent operations as required.

(3) Provides effective aerial suppressive fire for anti-guerrilla forces.

d. Employment

(1) Normally employed in general support of the battalion providing single and multiship escort to airmobile columns, command and control aircraft, "sniffer", psy-ops or med evac missions.

(2) When escorting airmobile forces as escort aircraft they are responsive to and remain under control of the Air Mission Commander. When escorting single aircraft they are responsive to the escorted aircraft.

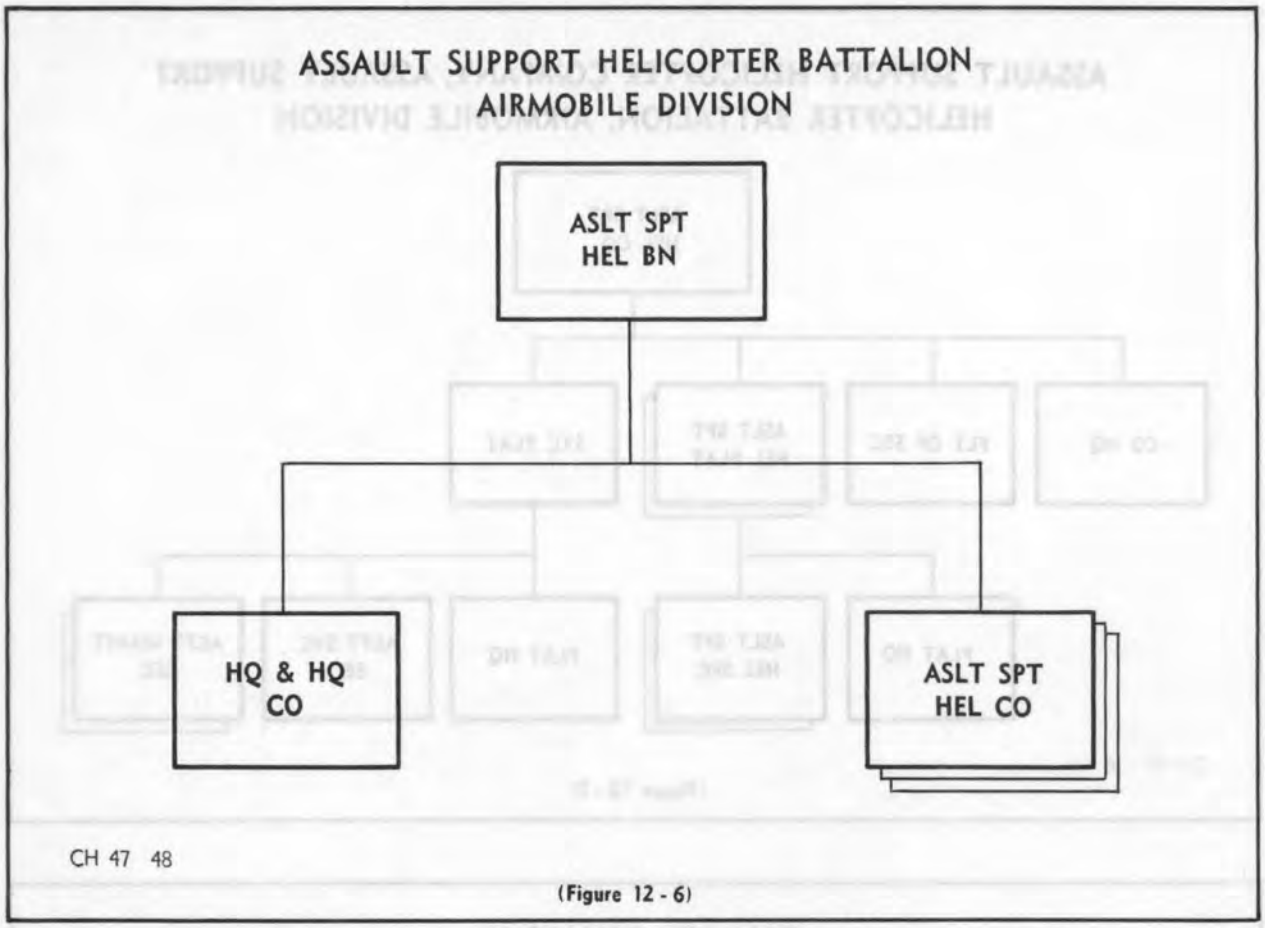
(3) The company also provides escort for Hunter/Killer and night tactical missions. In these cases the escort is responsible for the protection of and is responsive to the security needs of the escorted aircraft.

(4) A secondary mission is the reinforcement of Aerial Rocket Artillery (ARA). Conducted on a mission basis the Aerial Weapons aircraft may assume the mission or reinforce the air to ground fires being delivered by ARA, in support of friendly ground elements or in support of the defense of fire support bases.

12-12. ASSAULT SUPPORT HELICOPTER BATTALION

a. General. The Assault Support Helicopter Battalion is organized as shown (Figure 12-6). Its three companies of sixteen CH-47's each provide the medium lift capability to the division.

b. Mission. To provide tactical air movement of combat troops, supplies and equipment in airmobile operations within the combat zone.



(Figure 12 - 6)

c. Capabilities

(1) Provides continuous (day and night) operations during visual weather conditions and limited operations under instrument weather conditions.

(2) Provides in a single lift, airlift for the assault elements of two Infantry Battalions (960 combat equipped troops), the combat elements of three 150mm Howitzer Batteries, 90,000 pounds of cargo or an equivalent logistical load or any combination thereof.

(3) Augments aero medical evacuation as required.

d. Employment. Normally employed under Aviation Group control in general support of the division. See Part One, Chapter 3, Support Operations and Appendix III, Type Loads for a detailed discussion on capabilities, limitations and employment considerations.

12-13. ASSAULT SUPPORT HELICOPTER COMPANY

a. General. The Assault Support Helicopter Company is organized as shown (Figure 12-7). Its two platoons of eight CH-47's each furnish medium lift of various classes of supply to the various division units.

b. Mission. To provide tactical mobility for combat troops, supplies and equipment of the division during the conduct of combat and airmobile operations.

c. Capabilities

(1) Provides continuous (day and night) operations during visual and marginal weather conditions and limited operations under instrument weather conditions in support of the division.

(2) Provides in a single lift, airlift for the assault elements of two Infantry Companies (320 combat equipped troops), the combat elements of one 150mm Howitzer Battery, 30,000 pounds of cargo or an equivalent logistical load or any combination thereof.

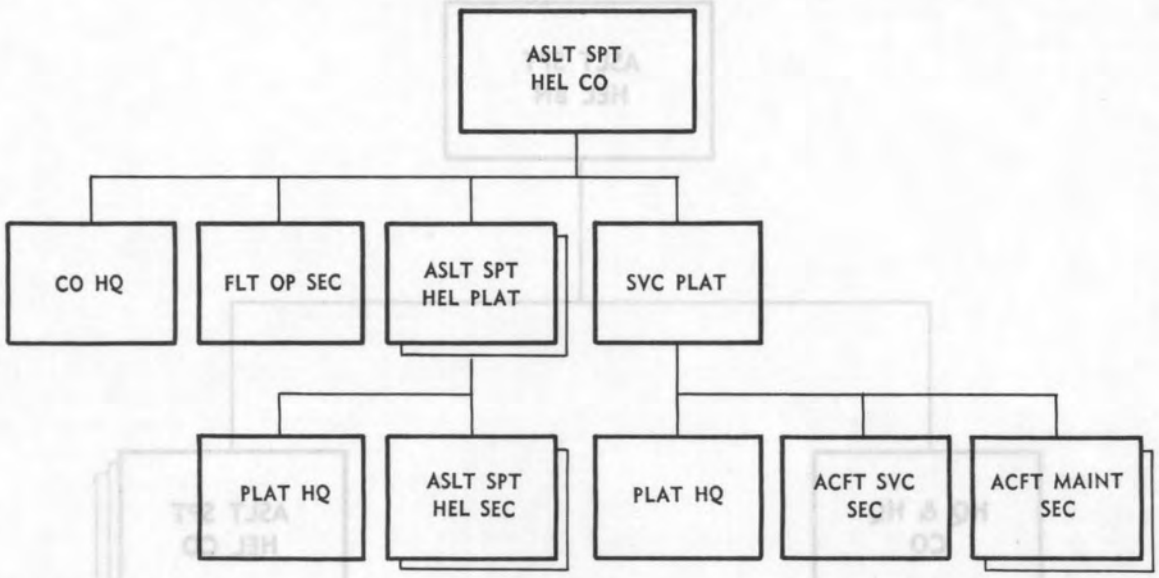
(1) Augments aeromedical evacuation as required.

d. Employment

(1) Normally employed under battalion control it may be placed in direct support of one or more brigades for limited periods of time. When this occurs liaison is normally effected with the brigades Forward Support Element (FSE) for coordination of the logistical moves.

(2) Missions are received from battalion and liaison is effected as required with the supported unit.

ASSAULT SUPPORT HELICOPTER COMPANY, ASSAULT SUPPORT HELICOPTER BATTALION, AIRMOBILE DIVISION



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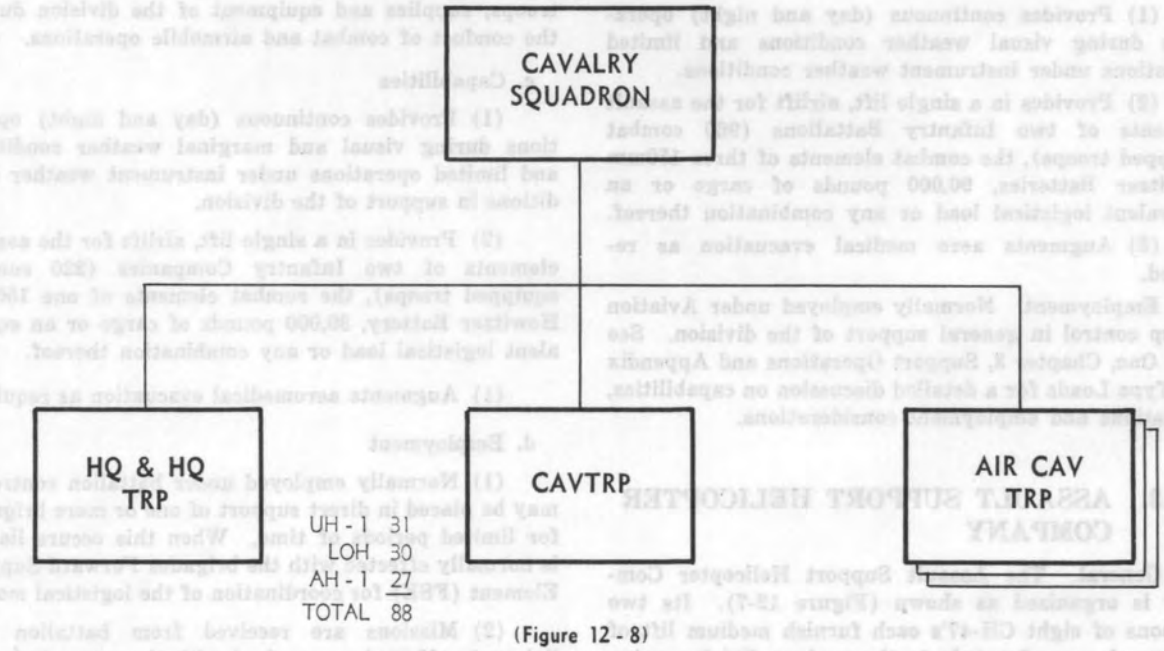
(Figure 12 - 7)

CAVALRY SQUADRON AIRMOBILE DIVISION



(Figure 12 - 8)

12-14. CAVALRY SQUADRON

a. General. The Cavalry Squadron is organized as shown (Figure 12-8). Its three Air Cavalry Troops and one cavalry troop provide maximum flexibility in employment in all types of terrain. A highly mobile force it can easily tailor its subordinate units to perform a variety of missions.

b. Mission. To perform reconnaissance and to provide security for the division or its major subordinate combat elements; to engage in combat as an economy-of-force unit; and to provide limited air and ground anti-tank defense for the division.

c. Capabilities.

(1) Performs air and ground reconnaissance and provides security for unit to which assigned or attached.

(2) Conducts offensive, defensive or delaying combat operations as required.

(3) Provides limited air and ground anti-tank defense for the unit to which assigned or attached.

d. Employment.

(1) Normally employed under division control to provide security to the front flanks and rear. To find the enemy, provide early warning of his approach, to fix him in place and deceive him as to the true location of the divisions main line or resistance but not to become decisively engaged.

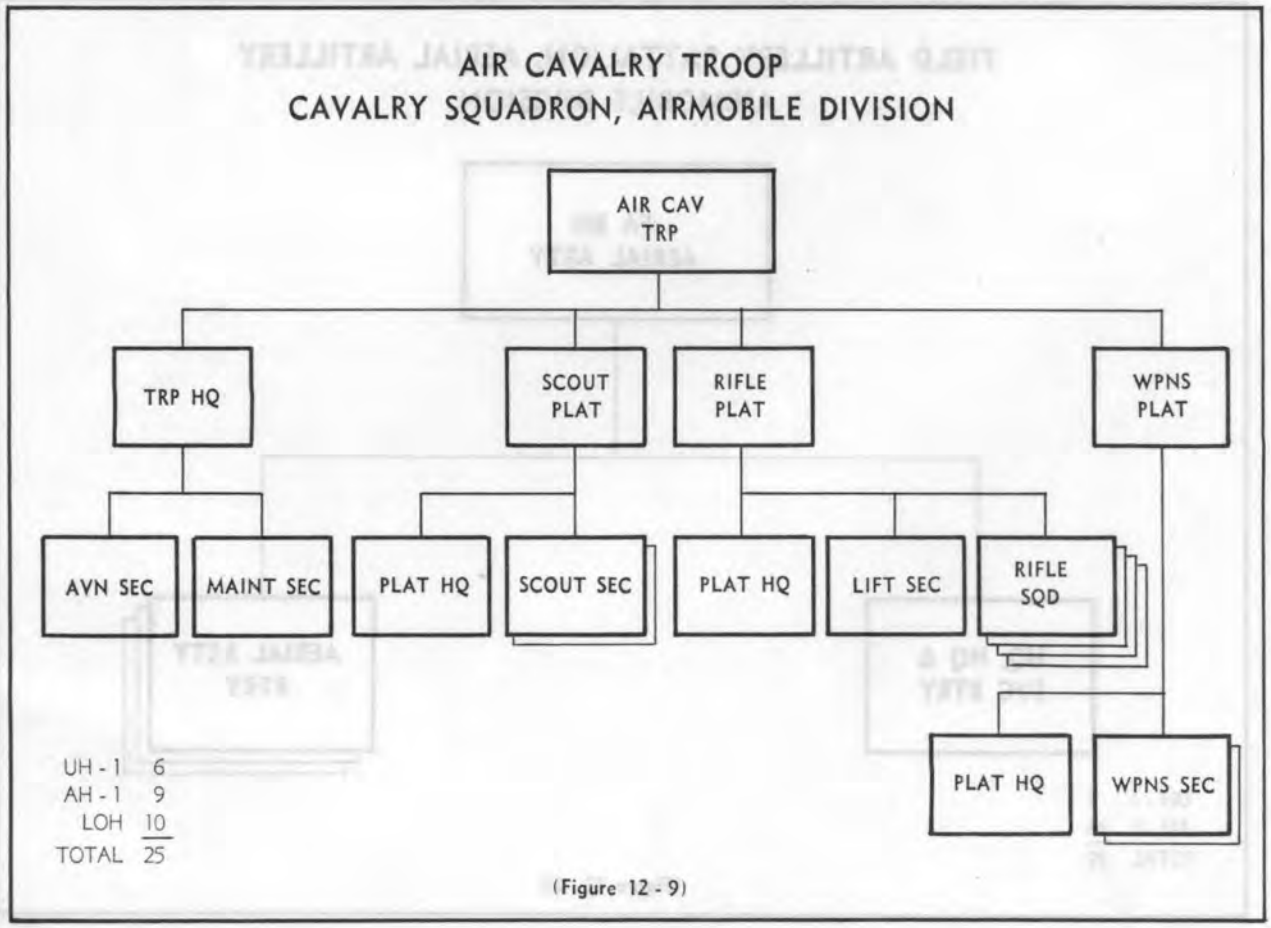
(2) To provide rear area security to division rear installations by providing a rapid reaction force supported by organic diversified fires.

(3) This unit may be employed as a squadron or may have one or more of its troops in direct support of a brigade or non-divisional unit that has been attached. When so employed the cavalry troop provides liaison to the support unit.

12-15. AIR CAVALRY TROOP

a. General. The Air Cavalry Troop is organized as shown (Figure 12-9). Its organization allows for maximum flexibility in tailoring for combat. It provides quick reaction, shock action and diversified fire power in the accomplishment of the mission.

b. Mission. To perform reconnaissance and to provide security for designated major combat elements; to engage in combat as an economy-of-force unit; and to provide limited air anti-tank defense for elements of the division.



(Figure 12 - 9)

c. Capabilities.

(1) Performs air and ground reconnaissance and provides security for unit to which assigned or attached.

(2) Conducts offensive, defensive or delaying combat operations, as required.

(3) Provides limited air anti-tank defense for unit to which assigned or attached.

d. Employment.

(1) Normally employed under squadron control on security type missions. The high mobility of the troop makes it an ideal unit to perform visual reconnaissance in all types of terrain.

(2) When the division is employed over extended frontages the troop may be placed in direct support of a brigade. When performing in the D/S role liaison is established from the troop to the brigade with Squadron monitoring mission request.

(3) Reconnaissance teams of one or two LOH's with an AH-1 escort called "Pink Teams" or "Hunter/Killer" teams may be used for visual reconnaissance of suspected enemy locations.

(4) The Rifle Platoon supported by the Weapons Platoon or sections thereof are used to man OPs, conduct ambushes, perform battle damage assessment of airstrikes, and to provide security about personnel and equipment at crash sites until extraction can be affected.

12-16. AIR CAVALRY DIVISION ARTILLERY

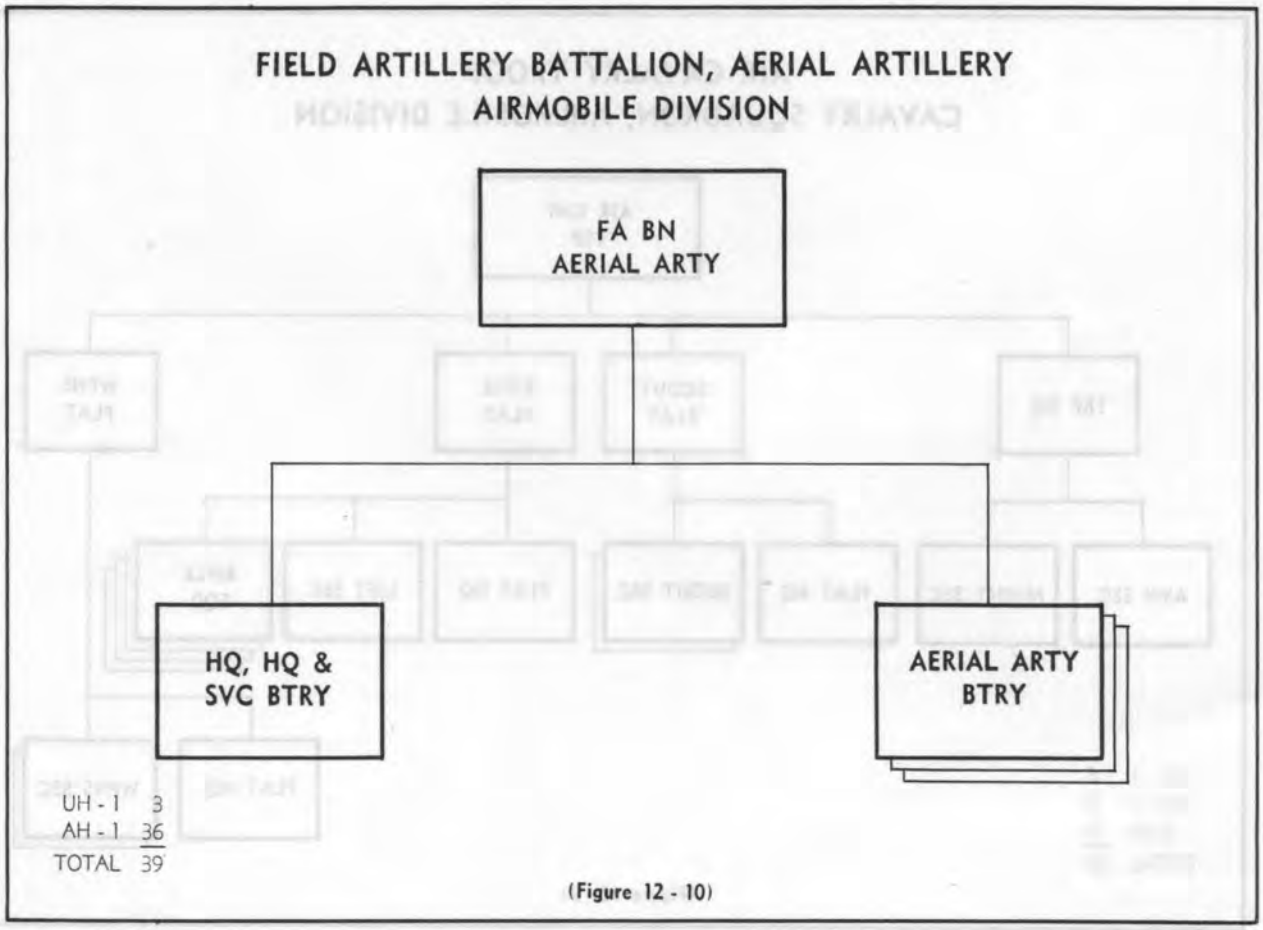
a. General. Air Cavalry Division Artillery is organized similarly to other division artillery with two exceptions. (1) In place of the 155mm Howitzer Battalion an Aerial Rocket Artillery has been substituted and (2) in place of a Target Acquisition Battery an Aviation Battery has been substituted.

b. Mission. To provide direct and general artillery support for the Air Cavalry Division.

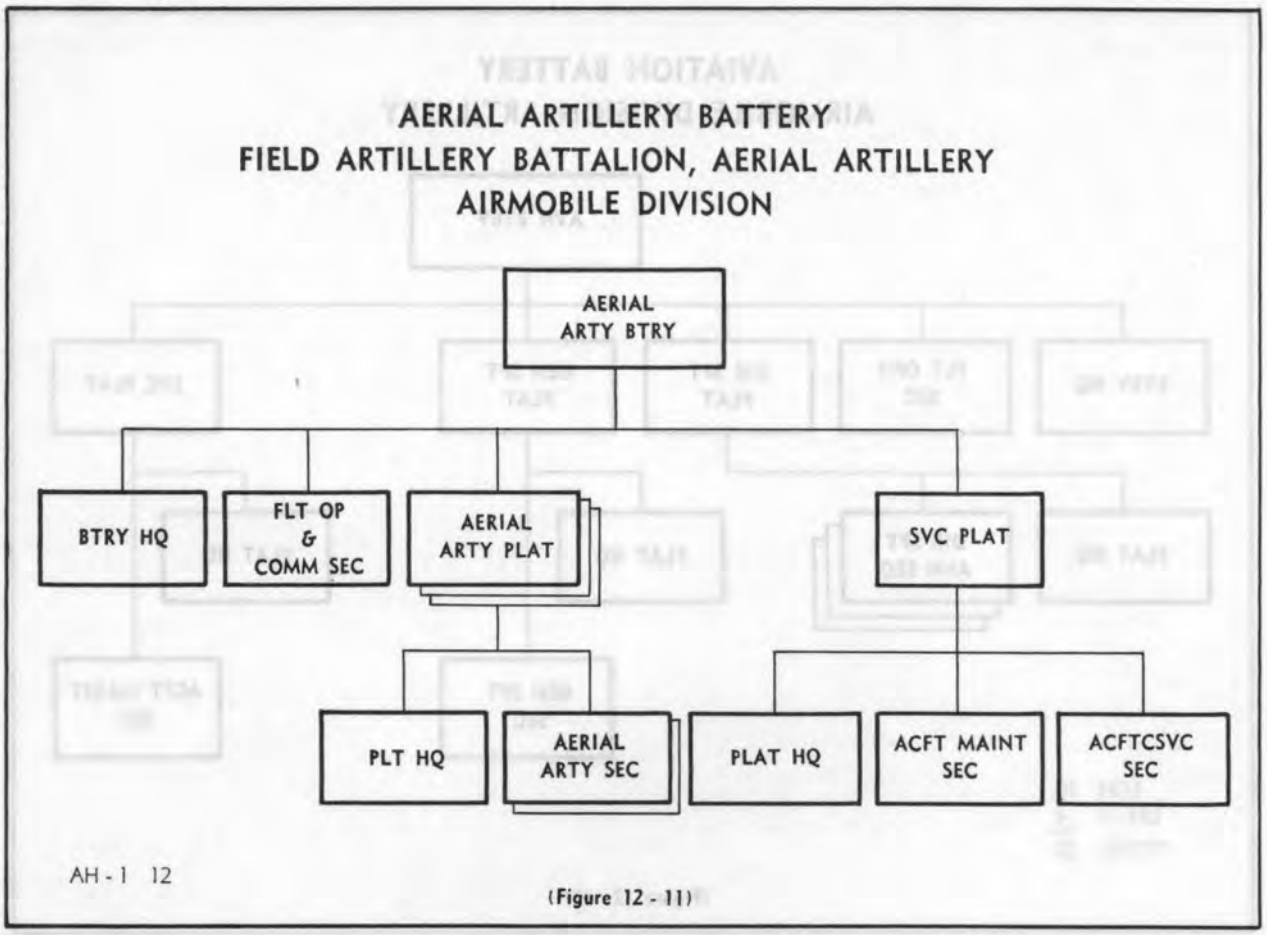
c. Employment. Normally employed as other division artillery. When supporting the division over extended frontages the Aerial Artillery Battalion or one of its battery's may be placed in direct support of a brigade or task force. Liaison is established from the aerial artillery unit to the supported unit.

12-17. AERIAL ARTILLERY BATTALION

a. General. The Aerial Artillery Battalion is organized as shown (Figure 12-10). Each of its three firing



(Figure 12 - 10)



(Figure 12 - 11)

batteries has twelve AH-1 helicopters providing rapid response and diversification of fire power. The three UH-1 helicopters are used for command and control.

b. Mission. To provide aerially mounted rocket direct fire support to the assault units of the Air Cavalry Division.

c. Capabilities.

(1) Providing highly mobile direct fire support unit with aerially mounted rocket launchers.

(2) Elements of the battalion may be detached and placed in support of specific ground units.

(3) Employment as a battalion or as individual batteries.

(1) Providing aerial mounted anti-tank capability.

d. Employment. General support to the division reinforcing the 105mm howitzer batteries with aerial delivered fires.

12-18. AERIAL ARTILLERY BATTERY

a. General. The Aerial Artillery Battery is organized as shown, (Figure 12-11). Its three Aerial Artillery Platoons of four AH-1's provide the batteries fire power.

b. Mission. To provide aerially-mounted rocket direct fire support and to furnish its portion of the battalion communications system.

c. Capabilities.

(1) Providing aerially-mounted rocket fire support.

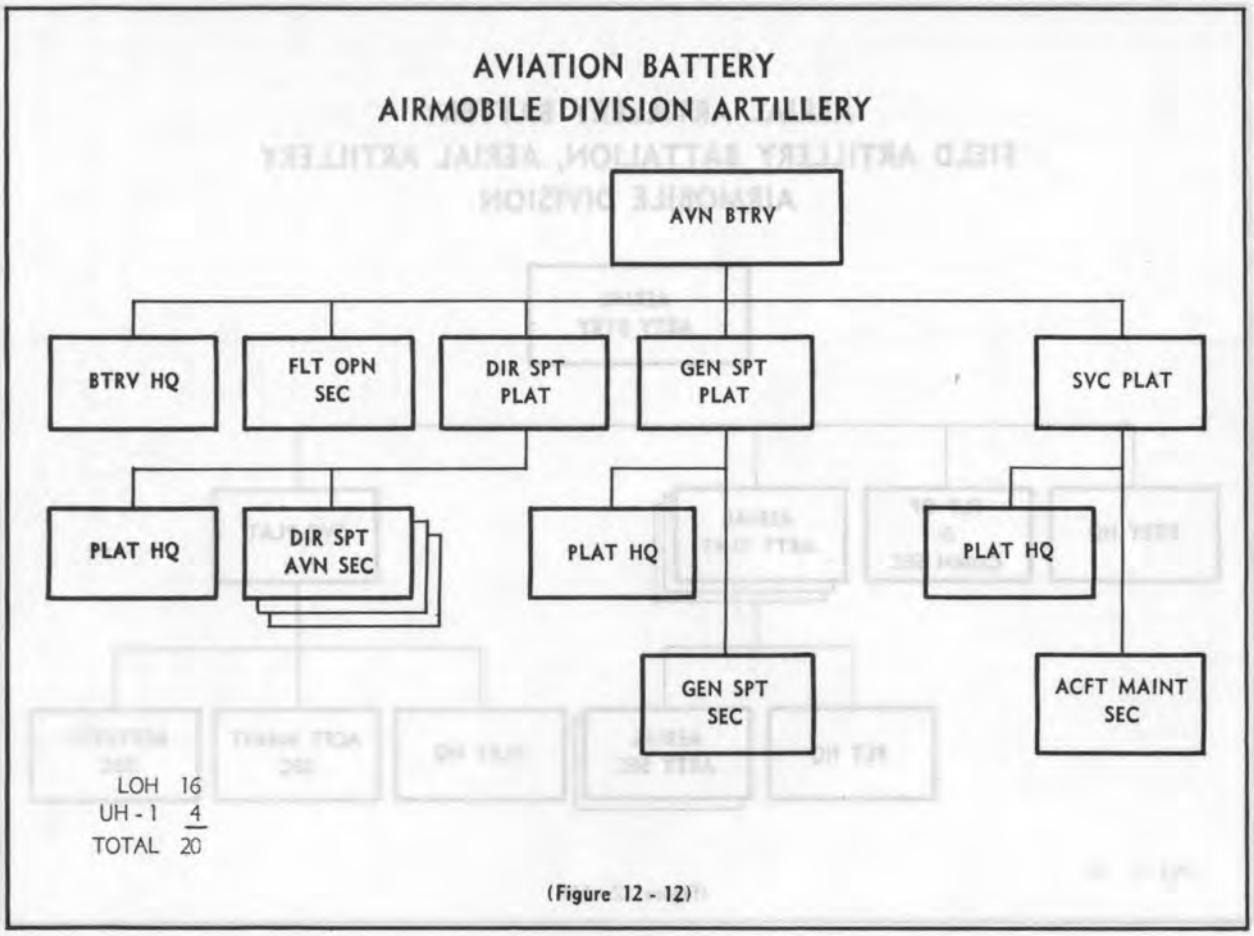
(2) Semi-independent operations.

(3) Providing aerially-mounted anti-tank capability.

d. Employment.

(1) Normally under battalion control. May under certain circumstances be placed in direct support of a brigade or other maneuver units.

(2) Provides aerial rocket fire support to airmobile columns by placing rocket fires on landing zones after the ground artillery prep is lifted and just prior to the touch down of the first troop ships. During the enroute and landing preparation phase the aerial rocket artillery is in direct support of and under control of the Air Mission Commander. Upon the landing of the lift ships and discharge of troops they become direct support to and under control of the Airmobile Task Force Commander and remain in this role until the mission is terminated by AMTF Commander.



(Figure 12 - 12)

(3) Aerial Rocket Artillery is normally used on all combat assault missions but must be requested through fire support channels.

(4) Provides reinforcing fires in defense of fire support bases by reinforcing the artillery and organic fires of the fire support base.

(5) Does not normally provide armed aerial escort to airmobile columns this type mission is a secondary role and must be specifically requested and cleared through artillery fire support channels.

12-19. AVIATION BATTERY

a. General. The Aviation Battery is organized as shown (Figure 12-12). Command and control is provided by the General Support Platoon while visual reconnaissance and target acquisition is the function of the Direct Support Platoon.

b. Mission. To increase the combat effectiveness of the Air Cavalry Division Artillery by providing its headquarters and elements with immediately responsive aviation support.

c. Capabilities.

(1) Continuous (day and night) operations during visual weather conditions and limited operations under instrument weather conditions.

(2) Aerial observation, reconnaissance and surveillance, both day and night, of enemy areas for the purpose of locating. verifying, and evaluating targets, terrain study and adjusting artillery fire.

(3) Command, liaison, reconnaissance and transportation.

(4) Aerial wire laying, radio relay and propaganda leaflet dissemination.

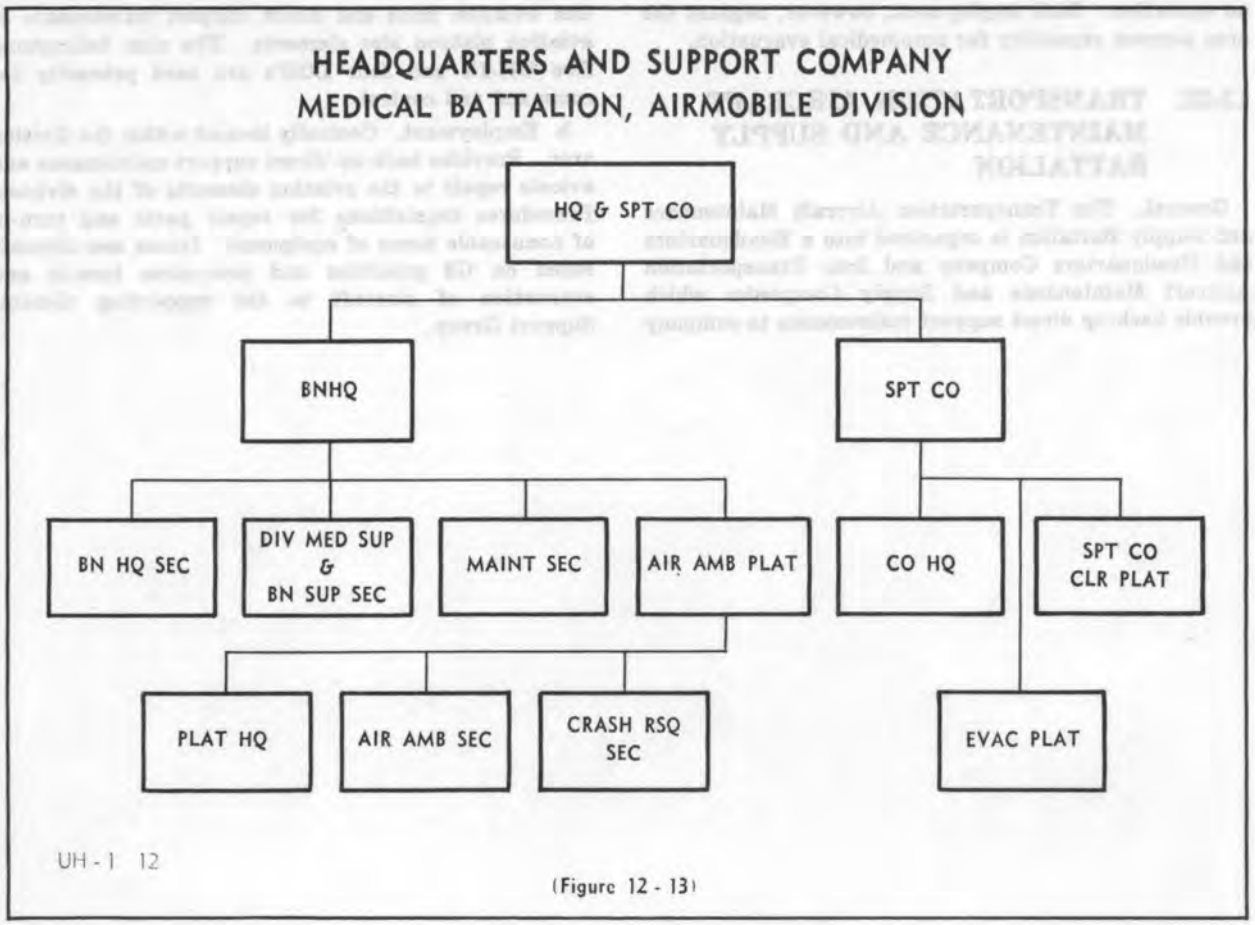
d. Employment. Normally employed under division artillery control to support the firing batteries by target acquisition and adjustment of fires.

12-20. HEADQUARTERS AND HEADQUARTERS COMPANY, AIRMOBILE DIVISION BRIGADE

a. General. Each brigade headquarters company has an Aviation Platoon of fourteen helicopters, 5 UH-1's and 9 LOH's for command and control purposes.

b. Employment.

(1) The Aviation Platoon provides command and control helicopters to the brigade commander, battalion commanders and their responsive staffs on a mission basis.



(Figure 12 - 13)

(2) Visual reconnaissance within the brigade AO and formation of Hunter/Killer teams utilizing AH-1G escorts with one or more LOH's is another function of the platoon.

12-21. HEADQUARTERS AND SUPPORT COMPANY, MEDICAL BATTALION

a. General. Headquarters and Support Company is organized as shown (Figure 12-13), and organic to the Medical Battalion of the Airmobile Division. Its Air ambulance platoon of the Battalion Headquarters Section furnishes the aeromedical evacuation capability for the battalion.

b. Mission. To provide command, control, administration and logistical support of the Medical Battalion and planning for its employment. To provide division-level medical service and unit-level medical service as required, on an area basis, to divisional units operating in the division base area.

c. Capabilities.

(1) Staff planning for Medical Battalion participation in providing medical support to division operations.

(2) Command, control and supervision of division-level and unit-level medical service rendered by elements of the Medical Battalion and attached units.

(3) Division-level medical supply support and organizational medical equipment maintenance support for units organic or attached to the division.

(4) Battalion-level organizational maintenance for aircraft. vehicles and communications equipment of organic elements.

(5) Division wide aeromedical evacuation, inflight treatment of patients and aerial delivery of whole blood, biological, medical supplies and medical personnel.

(6) Division wide air crash rescue support on an area basis.

(7) Unit-level medical service on an area basis to division base units having no organic medical element.

d. Employment.

(1) Normally employed under battalion control, in general support of the division providing aeromedical evacuation on an area basis within the division AO.

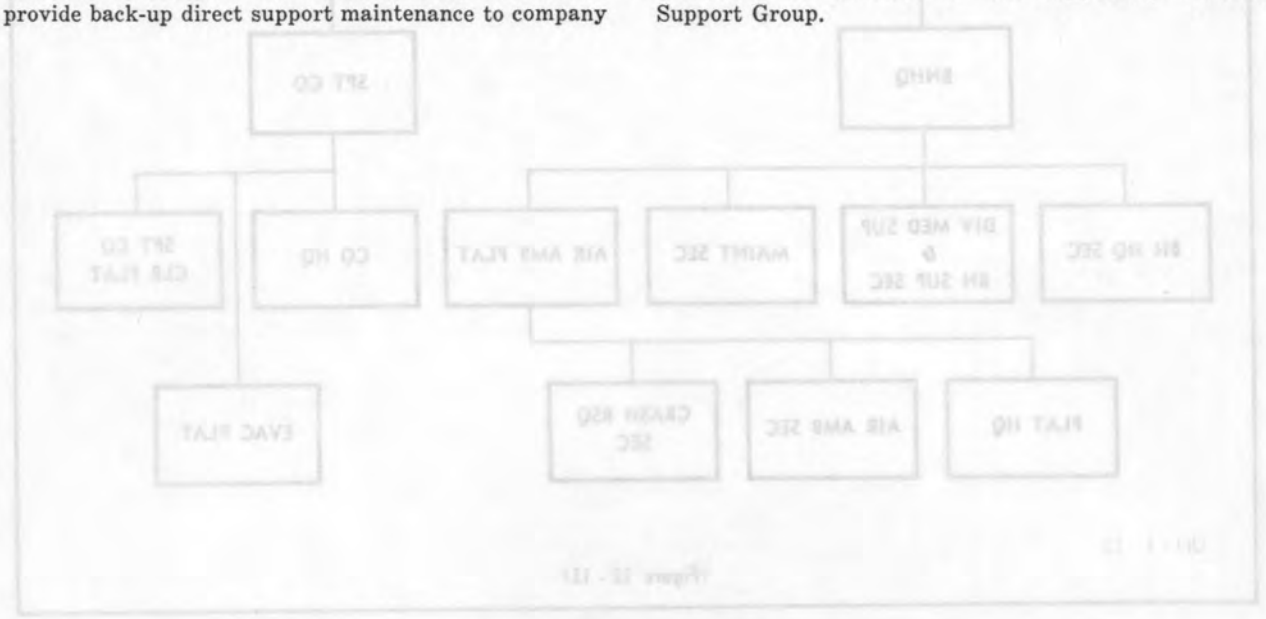
(2) The Air Ambulance section may be used to augment the direct support medical company of a committed brigade or task force for specified periods of

an operation. Such employment, however, negates the area support capability for aeromedical evacuation.

12-22. TRANSPORTATION AIRCRAFT MAINTENANCE AND SUPPLY BATTALION

General. The Transportation Aircraft Maintenance and Supply Battalion is organized into a Headquarters and Headquarters Company and four Transportation Aircraft Maintenance and Supply Companies which provide back-up direct support maintenance to company size aviation units and direct support maintenance to aviation platoon size elements. The nine helicopters, five UH-1's and four LOH's are used primarily for command and control.

b. Employment. Centrally located within the division area. Provides back-up/direct support maintenance and avionic repair to the aviation elements of the division. Procedures requisitions for repair parts and turn-in of nonuseable items of equipment. Issues new aircraft based on G3 priorities and processess turn-in and evacuation of aircraft to the supporting General Support Group.



CHAPTER 13

Section I
Introduction

13-1. PURPOSE

The purpose of this chapter is to acquaint commanders and staff officers with the organization of division aviation as it exists in the infantry division.

Section II
The Infantry Division

13-2. GENERAL

This section will provide information and guidance for commanders and staffs of non-divisional units in the planning for, and utilization of division aviation assets should they be placed in support of their units.

13-3. AVIATION BATTALION INFANTRY DIVISION

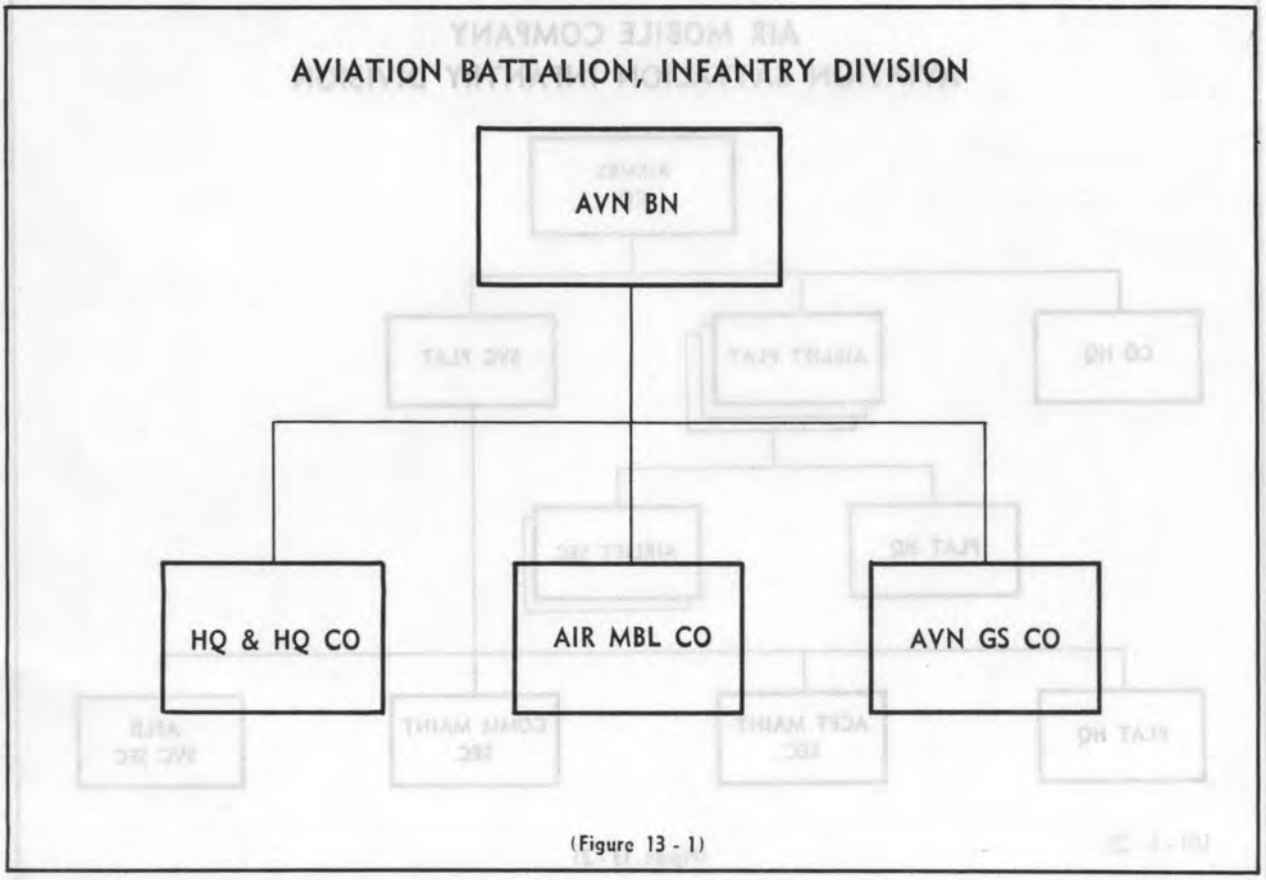
a. General. The Aviation Battalion is organized as shown (Figure 13-1).

b. Mission. To provide aviation support for the division headquarters, division support command and other divisional units without organic aircraft. To provide general support and reinforcement to units possessing organic aircraft, and to provide an aviation special staff section for the division headquarters.

c. Capabilities.

(1) Commands, controls, performs staff planning, furnishes communications and supervision of operations for companies of the battalion and attached units.

(2) Provides aviation special staff personnel for the division headquarters.



(Figure 13 - 1)

(3) Participates in airmobile combat operations. Assault elements of one dismounted infantry company can be airlifted in one airlift using organic aircraft.

(4) Operates one instrumented airfield with terminal flight facilities to include GCA.

(5) Operates a central aircraft communication and control facility.

(6) Provides aircraft to support the division headquarters, division support command and other units without organic aircraft.

(7) Provides aircraft for general support and reinforcement to units with organic aircraft.

(8) Augments aeromedical evacuation capability of medical air ambulance elements when requested by the appropriate command surgeon.

d. A pathfinder Detachment is included as an augmentation to Headquarters and Headquarters Detachment to provide the Airmobile Company (Light) and/or the General Support Company with the following capabilities:

(1) Reconnoiters and marks drop or landing sites to ensure accurate delivery of personnel and material by para-drop or landing operations.

(2) Assists in navigation and control of Army aircraft on the objective area.

e. Employment. Normally employed in general support of the division providing command control, visual reconnaissance and one company airlift capability.

13-4. AIRMOBILE COMPANY, AVIATION BATTALION

a. General. The Airmobile Company (Light) is organized as shown (Figure 13-2).

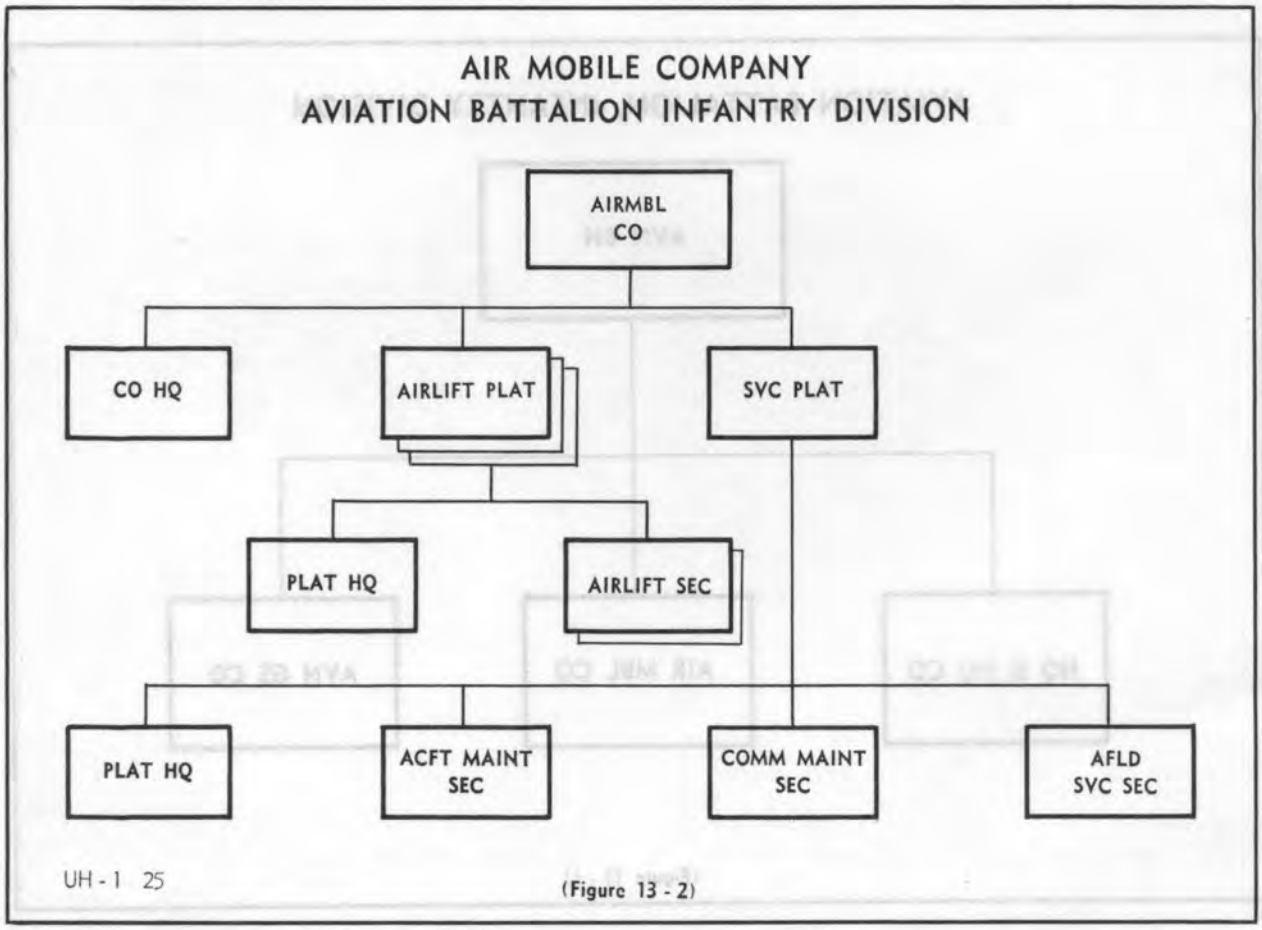
b. Mission. To provide tactical air movement of combat supplies and equipment within the combat zone.

c. Capabilities.

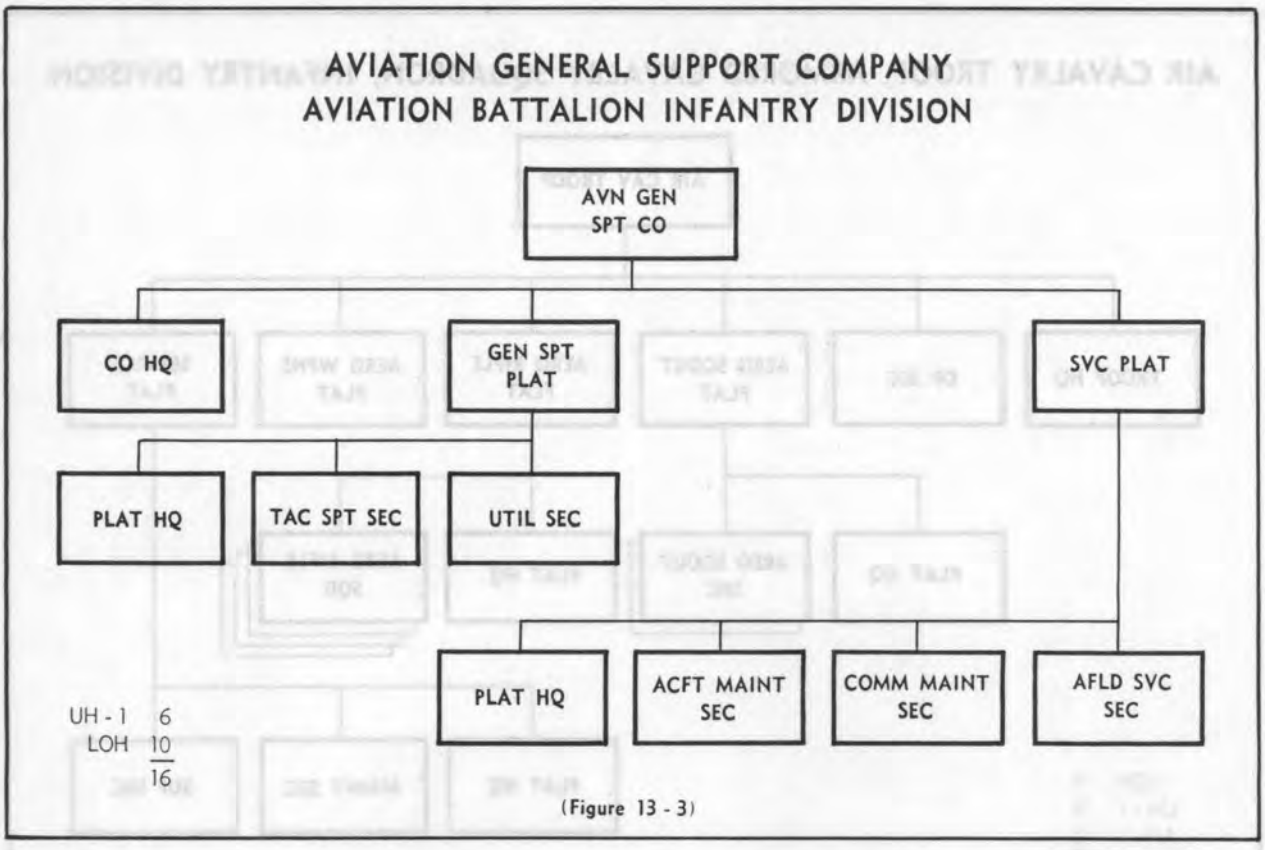
(1) Providing continuous (day and night) operations during visual weather conditions and limited operations under non-visual weather conditions in support of the force in the combat zone.

(2) Provides in a single lift, airlift for assault elements of one infantry company.

(3) Provides aerial movement of troops, supplies and equipment within the combat zone.



(Figure 13 - 2)



(Figure 13 - 3)

(4) Augments aeromedical evacuation capability of medical air ambulance elements.

d. Employment.

(1) Normally employed under battalion control in general or direct support missions.

(2) May be attached to brigades for limited periods of time.

13-5. AVIATION GENERAL SUPPORT COMPANY, AVIATION BATTALION

a. General. The Aviation General Support Company is organized as shown (Figure 13-3).

b. Mission. Provides aviation support for the division headquarters, division support command and other units without organic aircraft and limited general support and reinforcement to units with organic aircraft.

c. Capabilities.

(1) Providing continuous (day and night) operations during visual weather conditions and limited operation under non-visual weather conditions in support of the force in the combat zone.

(2) Aerial observation, reconnaissance and surveillance (day and night) of enemy areas for the purposes of locating, verifying and evaluating targets, terrain study and fire adjustment.

(3) Battlefield illumination.

(1) Radiological survey.

(5) Command control, liaison, or reconnaissance.

(6) Augments aeromedical evacuation capability of medical air ambulance elements.

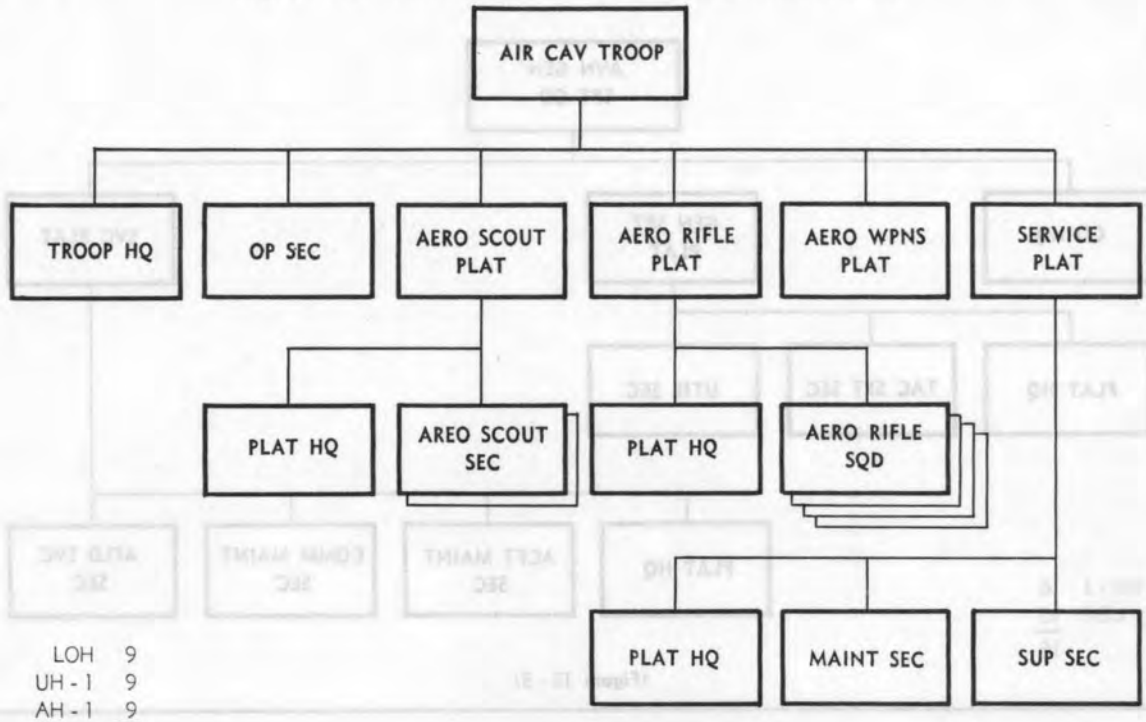
d. Employment. Normally employed by battalion in general support of the division effort. Provides the main source of command and control aircraft for the division commander, brigade commander and their respective staffs.

13-6. AIR CAVALRY TROOP, ARMORED CAVALRY SQUADRON, INFANTRY DIVISION

a. General. The Air Cavalry Troop is organized as shown (Figure 13-4).

b. Mission. To extend by aerial means the reconnaissance and security capabilities of ground units and to engage in offensive, defensive or delaying actions, within its capability to seize and dominate lightly defended areas or terrain features.

AIR CAVALRY TROOP, ARMORED CAVALRY SQUADRON, INFANTRY DIVISION



LOH	9
UH - 1	9
AH - 1	9
TOTAL	27

(Figure 13 - 4)

c. Capabilities.

(1) Performs aerial and ground reconnaissance and provides security for unit to which attached or assigned.

(2) Engages in offensive, defensive or delaying actions.

(3) Conducts independent action when properly reinforced.

d. Employment.

(1) Normally employed under squadron control in general or direct support of aerial reconnaissance and security missions but avoids decisive engagement.

(2) The Troops organization into scouts, weapons and infantry allows maximum flexibility in task organization for combat missions. The Aero Weapons Platoon habitually supports the landing and ground maneuvering of the Aero Rifle Platoon. The Aero Scout Platoon may operate independently or in teams with the Aero Weapons AH-1's providing escort and diversified fire power. This type operation is normal in anticipation of a meeting engagement or when maintaining contact with a hostile force. The Aero Rifle Platoon operates in squads, sections or as a platoon and is utilized in the manning of observation posts, or as security forces to secure landing zones, pick up zones, bridges or defiles for the use of friendly troops.

CHAPTER 14

Section I
Introduction

14-1. PURPOSE

The purpose of this chapter is to acquaint commanders and staff with the organization, capabilities and employment of non-divisional, non-brigade Army aviation units located in the Republic of Vietnam.

Section II
Separate Light Infantry and Airborne Brigade

14-2. GENERAL

This section will provide information on Army aviation organic to the separate brigades.

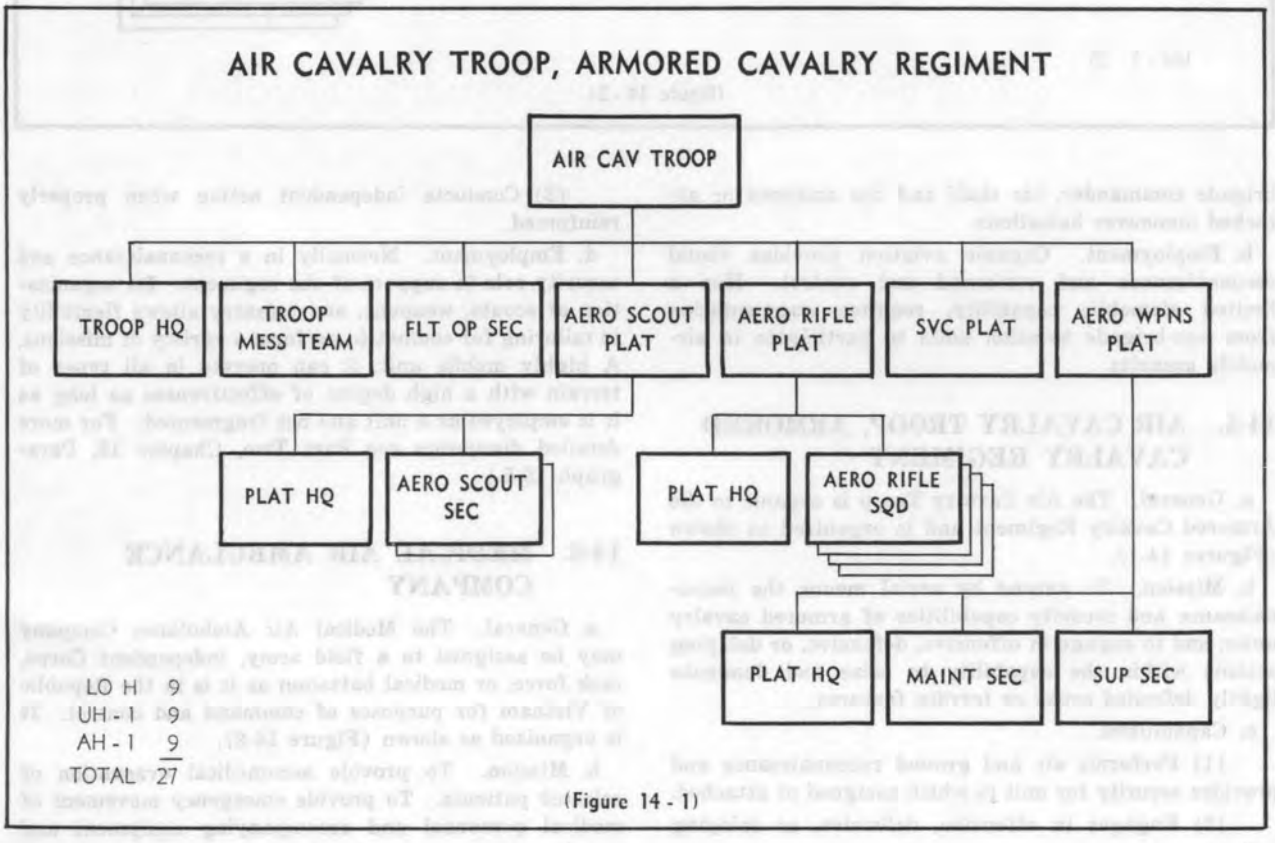
14-3. SEPARATE LIGHT INFANTRY BRIGADE

a. General. The Separate Light Infantry Brigade has an aviation section organic to its Headquarters Company, which provides eight command and control helicopters for the brigade commander, his staff and the assigned or attached maneuver battalions.

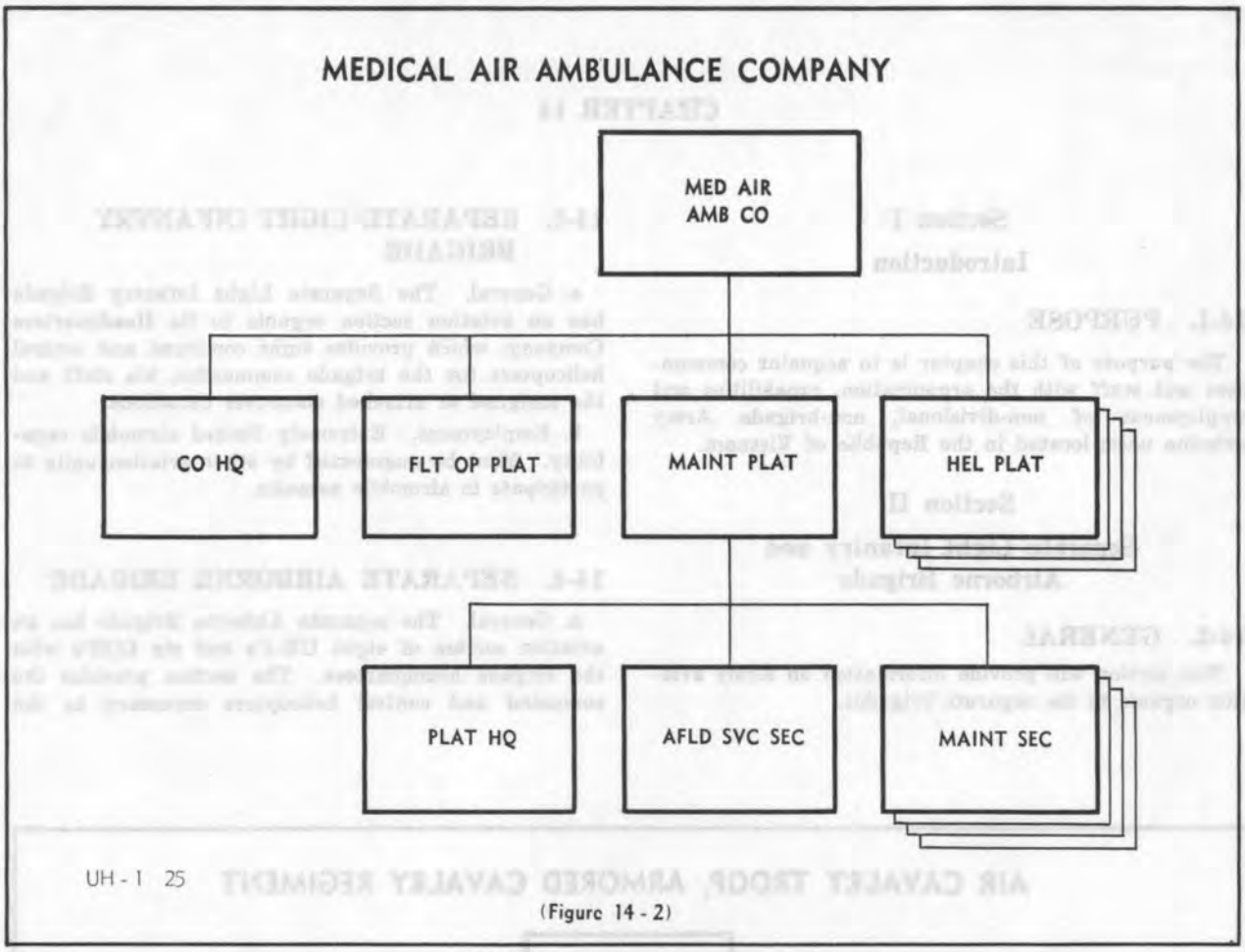
b. Employment. Extremely limited airmobile capability. Must be augmented by other aviation units to participate in airmobile assaults.

14-4. SEPARATE AIRBORNE BRIGADE

a. General. The separate Airborne Brigade has an aviation section of eight UH-1's and six LOH's with the brigade headquarters. The section provides the command and control helicopters necessary to the



(Figure 14 - 1)



(Figure 14 - 2)

brigade commander, his staff and the assigned or attached maneuver battalions.

b. Employment. Organic aviation provides visual reconnaissance and command and control. Has a limited airmobile capability, requires augmentation from non-brigade aviation units to participate in airmobile assaults.

14-5. AIR CAVALRY TROOP, ARMORED CAVALRY REGIMENT

a. General. The Air Cavalry Troop is organic to the Armored Cavalry Regiment and is organized as shown (Figures 14-1).

b. Mission. To extend by aerial means the reconnaissance and security capabilities of armored cavalry units, and to engage in offensive, defensive, or delaying actions within the capability to seize and dominate lightly defended areas or terrain features.

c. Capabilities.

(1) Performs air and ground reconnaissance and provides security for unit to which assigned or attached.

(2) Engages in offensive, defensive, or delaying actions.

(3) Conducts independent action when properly reinforced.

d. Employment. Normally in a reconnaissance and security role in support of the regiment. Its organization of scouts, weapons, and infantry allows flexibility in tailoring for combat to perform a variety of missions. A highly mobile unit, it can operate in all types of terrain with a high degree of effectiveness as long as it is employed as a unit and not fragmented. For more detailed discussion see Part Two, Chapter 13, Paragraph 13-5.)

14-6. MEDICAL AIR AMBULANCE COMPANY

a. General. The Medical Air Ambulance Company may be assigned to a field army, independent Corps, task force, or medical battalion as it is in the Republic of Vietnam for purposes of command and control. It is organized as shown (Figure 14-2).

b. Mission. To provide aeromedical evacuation of selected patients. To provide emergency movement of medical personnel and accompanying equipment and supplies to meet a critical requirement. To insure

uninterrupted delivery of whole blood, biological and medical supplies when there is a critical requirement.

c. Capabilities.

(1) Aeromedical evacuation of critically wounded or otherwise nontransportable casualties to the nearest medical unit capable of providing required surgery and medical treatment.

(2) Augmentation of ground evacuation units when vehicular evacuation is not feasible or is insufficient.

(3) Expeditious delivery of medical personnel and material to meet emergency treatment requirements within the combat zone.

d. Employment.

(1) Normally employed in general support under battalion control providing aeromedical evacuation on an area basis. Area coverage is attained by field siting of platoons or sections. Sites are determined by casualty density and/or population density of a specified area and are manned on a 24 hour basis. Capability does exist for elements of the company or the company itself to be placed in direct support of a force for a specified tactical operation. When utilized in this manner temporary field sites are established for support of the area of operation.

(2) Each company size unit has 15 or more jungle penetrators with hoists. This allows extraction from denes jungle to a depth of 250 feet. The hoist and penetrator will support in excess of a 600 pound load allowing simultaneous extraction of three casualties.

(3) Immediate medical treatment is afforded casualties on each helicopter by a Senior Medical Aidman highly trained in life saving methods such as resuscitation, heart massage and interveinous methods of saving and prolonging life.

(4) Additional support may be rendered when the Company is reinforced by a Helicopter Ambulance Detachment. This unit consits of aeromedical evacuation helicopters with the capability as previously described. These units may be assigned to the battalion but supported by the company.

14-7. OTHER ARMY AVIATION IN USARV

a. Additional Army aviation is found at a variety of headquarters such as the Artillery Groups with six LOH's, the Engineer Construction Brigade with one UH-1 and two LOH's, the Engineer Construction Group with one UH-1 and four LOH's and the Engineer Combat Group with three UH-1's and six LOH's. In each case these aircraft are utilized in the primary role of command and control.

b. Each of the units mentioned above requires augmentation from divisional or non-divisional units to give it a light, medium or heavy airlift capability.

APPENDIX I
DEFINITIONS

1. **Air Alert:** Aircraft on station in the air over a designated area or point.

2. **Air Control Point (ACP):** A geographic location along a flight route used for control of movement of air elements.

3. **Aircraft Commander (AC):** On aviator appointed on competent orders as aircraft commander. He is responsible for the actions of his aircraft and crew on all matters pertaining to successful mission accomplishment.

4. **Airmobile Combat Assault (CA):** The lift of troops into an LZ in which the enemy has the capability of offering resistance during approach, landing, and/or departure.

5. **Airmobile Extraction:** The lifting of combat troops by helicopters from terrain in which the enemy has the capability to resist. Resistance can be expected to increase as each lift is made and the friendly force's perimeter becomes smaller.

6. **Airmobile Raid:** A combat assault for the purpose of quickly seizing and/or destroying limited objectives and killing or capturing the enemy, followed by an extraction. A short duration airmobile operation.

7. **Airmobile Task Force (AMTF):** The air-lift and ground maneuver elements required to conduct an airmobile operation.

8. **Airmobile Task Force Commander:** The Commander who exercises control of all elements of an Airmobile Task Force, usually the ground force commander.

9. **Airmobility:** Tactical mobility afforded a ground maneuver force by helicopters; the capability of a ground force to tactically deploy through the air; implies tactical integrity in loading.

10. **Air Movement:** Movement of troops, supplies and/or equipment by air from one location to another; implies administrative loading.

11. **Allowable Cargo Load (ACL):** The total weight and/or number of troops that can be lifted under existing conditions by one aircraft in one load.

12. **Army Aviation Division (AAD):** An agency of the MACV J3 for coordination of Army Aviation assets among subordinate elements of the command.

13. **Army Aviation Element (AAE):** A liaison element from the supporting Army aviation element to the supported unit for coordination and planning of aviation operations. This element is found at I Field Forces Vietnam, II Field Forces Vietnam and at ARVN Corps.

14. **Armed Helicopter (Gunship):** A helicopter equipped with an attached weapons system which is fired by the pilot or copilot.

15. **Armed Escort:** Accompanying armed helicopters used for escorting helicopters, ground convoys, or protection of personnel and equipment of damaged aircraft.

16. **Attachment:** Units are bound temporarily to a command other than their assigned command. When a unit is attached to another unit, the commander to whom the attachment is made then commands the attached unit. This includes full responsibility for supply, administration, training and operations.

17. **Command and Control Aircraft (C&C):** An airborne command platform utilized by the AMTF and mission commander to monitor and control airmobile operations.

18. **Company Lift:** A unit of lift helicopters, capable of lifting the assault elements of a rifle company in one lift.

19. **Direct Support (DS):** A mission or task requiring one unit, under command of its parent unit, to support another specific unit. The supporting unit is authorized and required to answer directly the supported unit's requirements for support.

20. **Eagle Flight:** Heliborne infantry troops on air alert to perform immediate reaction missions for a ground commander.

21. **Escort Aircraft:** An aircraft which accompanies another for the purpose of providing weapons support and/or pickup of crew and passengers in the event the escorted aircraft is forced down.

22. **Fire Fly Helicopter:** A helicopter equipped with searchlights to illuminate targets and PZs or LZs.

23. **Flight:** Two or more aircraft with a common mission under the command of a designated flight leader.

24. **Flight Leader:** The aviator appointed by the commanding officer of the aviation unit responsible for a specific mission. He exercises control over all aircraft in his flight.

25. **Forming Turn:** A turn executed after takeoff to allow aircraft to join on the leader.

26. **General Support (GS):** A mission or task requiring one unit, under command of its parent headquarters, to support more than one specific unit. The supporting unit is authorized and required to answer requests for support according to priorities assigned by higher headquarters.

27. **Ground Control:** A control element located in a PZ/LZ to transmit changes in the tactical plan or

mission and to coordinate the orderly flow of air traffic in and about the PZ/LZ.

28. **Heavy Fire Team:** Three armed helicopters operating as a tactical element.

29. **Laager:** A perimeter type defense for local security of Aircraft on the ground, established by aircraft crews with friendly troops in the area. Armed aircraft are positioned where possible so that weapons systems may be employed in the defense.

30. **Landing Zone (LZ):** A designated area on the ground for landing helicopters to disembark troops, equipment, and cargo in support of an airmobile operation.

31. **Lift Helicopter (Slick):** A helicopter used for the purpose of lifting troops and/or cargo.

32. **Light Fire Team:** Two armed helicopters operating as a tactical element.

33. **Minimum Standard:** A unit is at minimum standard when its required number of aircraft are mission-ready. (In an assault helicopter company, 80% of the lift aircraft and 62.5% of gunships are normally mission-ready. In the assault support helicopter company, 50% are normally mission-ready).

34. **Mission Commander:** An officer designated to command aviation elements on a specific mission or operation.

35. **Mission-Ready:** A term used to described an aircraft which is completely capable of performing its combat mission. Requirements are: Flyable condition, operational radios, functional weapons systems, required fuel, and ammunition and a complete trained crew.

36. **Operational Control (OPCON):** Units are placed under a commander for assignment of tasks and authoritative direction to accomplish the mission. Operational Control does not include responsibility of authority for administration, logistics, discipline, internal organization or training.

37. **Pickup Zone (PZ):** A tactical landing site utilized to pickup troops and/or cargo.

38. **Platoon Lift:** See company lift, substitute platoon for company.

39. **Platoon of Aircraft:** Two sections or more of aircraft under command of a platoon commander.

40. **Prestrike:** Air Force, artillery or armed helicopter fire placed on an LZ and/or objective area prior to the arrival of the airmobile task force.

41. **Ramp Alert:** Aircraft loads prepared and aircraft ready for takeoff within 15 minutes.

42. **Reaction Force:** Airmobile reserve.

43. **Reconnaissance:** An exploratory visual survey of a route, area, or zone to gain information of the enemy, terrain and weather.

44. **Release Point (RP):** A geographic point, recognizable from the air at which a flight arrives in proper formation and the proceeds to designated areas under less centralized control.

45. **Section of Aircraft:** Two or three aircraft under control of a single commander.

46. **Sortie:** One takeoff and landing by an aircraft in performance of a mission.

47. **Stage Field:** A predetermined area where aircraft assemble prior to conducting an airmobile operation.

48. **Standardization Instructor Pilot (SIP):** A highly qualified IP who is appointed on appropriate orders as an SIP.

49. **Starlight Mission:** A mission flown with the lead helicopter utilizing a starlight scope to spot enemy movement escorted by a helicopter fire team. The lead helicopter marks the target and then armed helicopters destroy by fire.

50. **Strip Alert:** Aircraft loaded and ready for takeoff within 5 minutes.

51. **Suppressive Fire:** Fires by troop carriers or gun helicopters during the landing phase of a combat assault.

52. **Surveillance:** A continuous and close watch over a specific route, area, or point for information of the enemy; implies use of electronic sensor devices.

ABBREVIATIONS

1. A/C: Aircraft
2. AA: Anti-Aircraft
3. AC: Aircraft Commander
4. ACFT: Aircraft
5. ACL: Allowable Cargo Load
6. ACP: Air Control Point
7. AF: Air Force
8. AHC: Assault Helicopter Company
9. ALO: Air Liaison Officer (AF)
10. AM: Airmobile
11. AMTF: Airmobile Task Force
12. ARA: Aerial Rocket Artillery
13. ARVN: Army of Republic of Vienam
14. AS: Air Speed
15. ASHC: Assault Support Helicopter Company
16. ATC: Air Traffic Control
17. C&C: Command and Control
18. CAB: Combat Aviation Battalion
19. CAG: Combat Aviation Group
20. CAS: Close Air Support (AF)
21. CCP: Communication Check Point
22. CE: Crew Chief
23. CMD: Command
24. CMDR: Commander
25. COC: Combat Operation Center
26. CRC: Control and Reporting Center
27. CTZ: Corps Tactical Zone
28. CW: Continuous Wave
29. DASC: Direct Air Support Center (AF) (CORPS)
30. DCA: Directorate of Civil Aviation
31. DGR: Door Gunner
32. DZ: Drop Zone (for parachute drops)
33. FAC: Forward Air Controller (USAF)
34. FCC: Flight Coordination Center
35. FFAR: Folding Fin Aerial Rocket
36. FFS: Flight Following Station
37. FFV: Field Force Vietnam
38. FM: Frequency Modulated
39. FOC: Flight Operations Center
40. FRA: Forward Refueling Area
41. FRAGO: Fragmentary Order.
42. FRP: Forward Refueling Point
43. FSCC: Fire Support Coordination Center (Army Bn & Bde)
44. FW: Fixed Wing (Airplane)
45. FWMAF: Free World Military Assistance Forces
46. GCA: Ground Control Approach
47. HEL: Helicopter
48. HF: High Frequency (radio)
49. ICAO: International Civil Aviation Organization
50. IFR: Instrument Flight Rules
51. IP: Initial Point; Instructor Pilot
52. IR Infrared
53. LOLEX: Low Level Extraction
54. LNO: Liaison Officer
55. LOH: Light Observation Helicopter
56. LRP: Landing Zone Release Point
57. LRPP: Long Range Reconnaissance Patrol
58. LZ: Landing Zone
59. NDB: Non-Directional Beacon (radio)
60. NOTAM: Notice to Airmen
61. NVA: North Vietnamese Army
62. OPN (O): Operations (Officer)
63. OPORD: Operations Order
64. PF: Pathfinder(s)
65. PRP: Pickup Zone Release Point
66. PZ: Pickup Zone
67. RP: Release Point
68. RR: Radio Relay
69. RTT: Radio Teletype
70. RVN: Republic of Vietnam
71. RVNAF: Republic of Vietnam Armed Forces
72. RW: Rotary Wing (helicopter)
73. SIP: Standardization Instructor Piot
74. SLAR: Side-looking Airborne Radar
75. TAC: Tactical Air Command
76. TACC: Tactical Air Control Center (AF) (MACV)
77. TACP: Tactical Air Control Party (AF) (Bn, Bde and Div)
78. TASE: Tactical Air Support Element (Army) Div, FFV (MACV)
79. TOC: Tactical Operations Center
80. UHF: Ultra High Frequency (radio)
81. USARV: U.S. Army Vietnam
82. USAF: United States Air Force
83. USMACV: U.S. Military Assistance Command Vietnam
84. USMC: U.S. Marine Corps
85. VC: Viet Cong
86. VHF: Very High Frequency (radio)
87. VNAF: Vietnamese Air Force
88. VR: Visual Reconnaissance

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82. USAF: United States Air Force
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84. USMC: U.S. Marine Corps
85. VC: Viet Cong
86. VHF: Very High Frequency (radio)
87. VNAF: Vietnamese Air Force
88. VR: Visual Reconnaissance

APPENDIX II
AIRMOBILE PLANNING AND OPERATIONS CHECKLIST

ANNEX A
AIRMOBILE TASK FORCE COMMANDER'S CHECKLIST

1. Ground tactical plan.
   a. Missions(s)
   b. Objective(s)
   c. Alternate objective(s)
   d. Distance to objective(s)
   e. D-Day and H-Hour
   f. Special tasks
   g. Means avialable
      (1) Organic troops
      (2) Troop helicopter lift
      (3) CH-47 support
      (4) Air Force support
      (5) Air Cav
      (6) Engr
      (7) Signal
      (8) Aerial radio relay
      (9) Medical
   h. Fire support
      (1) Tactical air support
      (2) Tube arty
      (3) Helicopter gunships
      (4) Naval gunfire support
   i. Boundaries and control measures
   j. Assault plan
   k. Subsequent operations
   l. Rehearsals desired

2. Intelligence requirements.
   a. Enemy locations
   b. Cmdr recon of objective area
   c. Aerial photos
   d. Maps
   e. Terrain study
   f. Weather forcast
   g. Map reference system
   h. Latest INTSUM
   i. SOI SSI

3. Assault landing plan.
   a. LZs (to include identification procedures)
      (1) Colored smoke
      (2) Panels
      (3) Flares
   b. Aslt landing formation
   c. Approach and landing direction
   d. Use of gunships
   e. Other covering fires

4. Air movement plan.
   a. Flight routes (primary-alternate retrurn)
      (1) LRPs-Direction and distance to LZs
      (2) En route formation
      (3) ACPs-CCPs
      (4) Phase lines (if used)
      (5) Leg distance and times
      (6) Estimated time en route
      (7) Altitudes
      (8) Airspeed
      (9) Orbit areas for Eagle Flight and escort aircraft if appliable (Also TAC Air)
      (10) Laager areas-to include msu and security
   b. Air movement table
      (1) Unit to be lifted
      (2) Number and type lift helcopters
      (3) Avn units
      (4) Take-off times
      (5) Routes
      (6) Unit LZs
      (7) H-hour (landing time)
   c. Alternate Communications Plan
      (1) FM
      (2) UHF
   d. Marshalling plan
      (1) Staging airfields
      (2) Assembly areas
      (3) Unit PZs (primary-alternate)
      (4) PRP
   e. Gunship utilization
      (1) En route to PZ
      (2) PZ
      (3) En route to LRP

5. Supporting plans
   a. Alternate plans and procedures due to weather
   b. Downed A/C procedures
      (1) Crew
      (2) Aircraft
   c. Rally points
   d. Escape and Evasion instructions
   e. Eagle flights
   f. Laager plans
   g. Rules of engagament
   h. Deception plans
   i. Spare aircraft for maintenance emergencies
   j. CBR
   k. Reconnaissance (Air-Ground)
   l. Straggler control
   m. Reporting (en route, lift-off, touch-down, intelligence and contact)
   n. Aircraft sisposition after assault
   o. POW plan

6. Operations requirements.
   a. Warning orders
   b. LNOs (receive and dispatch)
   c. Attachments and detachments
   d. Briefings (time and place)
   e. Preparation of OPORD

7. Logistics requirements.
   a. Class five resupply
   b. Feeding plan
   c. Water
   d. Med evac
   e. Refueling

8. Debriefing.
   a. Lessons Learned
      (1) Ground units
      (2) Aviation units
   b. Actions taken for correction

9. Advance planning for subsequent operation.

ANNEX B
MISSION COMMANDER'S CHECKLIST

1. Mission
2. Alert Unit to Mission
3. Establish Liaison with Supported Unit
4. Situation
   a. Enemy
   b. Friendly
5. Supported Units General Concept of Operation
6. Reconnaissance
   a. PZ's
      (1) Size, shape, condition
      (2) Approach, departure routes
   b. Possible Flight Routes
      (1) IPs
      (2) ACPs
      (3) RPs
      (4) Altitudes
   c. Objective Area
      (1) Selection of LZs
         (a) Size, shape, condition
         (b) Approach, departure routes
         (c) Likely enemy positions
      (2) Gun Ship Orbit Areas
7. Mission Planning
   a. AMTF Cmdr's Guidance based on reconnaissance
   b. D-day and H-hour
   c. Allowable Cargo Loads (ACLs)
   d. LZs
      (1) Number of aircraft
      (2) Formation
      (3) Fire support plan
         (a) Naval gunfire
         (b) Air Force
         (c) Artillery
         (d) Gun ships
   e. Flight Route
      (1) RPs
      (2) ACPs
      (3) IPs
      (4) Time, distance, and headings
      (5) Fire support and escort plan
   f. PZs
      (1) Times
      (2) Number of Aircraft
      (3) Loading formation (color plates)
      (4) Location and identification of internal and external cargo loads
      (5) Troop load organization of supported unit
   g. Refueling
      (1) Location
      (2) Security
      (3) Time required for complete refueling
   h. Troop lift schedule (subsequent lifts)
   i. Communications
      (1) Supported Unit frequency and callsign
   j. Pathfinder support
   k. Additional aviation support units (i.e., CH-47, CH-54)
      (1) Utilization
      (2) Integration plan (if required)
   l. Reaction Force requirements
      (1) Supported unit
      (2) A/C required
      (3) Laager area
      (4) Alert status
   m. Subsequent gun ship requirements
      (1) Orbit area or reporting place
      (2) Supported unit (s)
      (3) Callsign and frequency
      (4) Number of aircraft and relief plan
   n. Additional general support aviation requirements
      (1) Logistics
      (2) C&Cs
   o. Med Evac
   p. Aircraft maintenance support
      (1) Unit
      (2) Recovery plan
   q. Proposed aircraft release times
8. Aviation Unit Briefing
   a. Time/place
   b. Location
   c. Units to attend

ANNEX C
LIAISON OFFICER CHECKLIST

1. Actions prior to departure to supported unit
   a. Obtain briefing from S-3
      (1) Current unit status (mission readiness)
      (2) Mission requirements (supported unit)
      (3) Specific problem areas
      (4) Communications
   b. Check out with CO
   c. Obtain necessary equipment
      (1) Communications
      (2) Maps, overlays, SOI extracts
      (3) Transportation
      (4) Personal gear
2. Actions at supported unit
   a. Establish communications
   b. Contact CO or S-3
      (1) Enemy situation and trend
      (2) Mission
      (3) Supported ground units
      (4) Other supporting aviation units
      (5) Pickup zone (time, location, formation, loads, pickup zone release point, size)
      (6) Enroute (initial point, air control point(s), formation, communications checkpoint, landing zones, formation)
      (7) Assault (landing zone release point, landing zones, formation)
      (8) Alternate flight routes
      (9) Escort procedures
      (10) AF support
      (11) Return mission and subsequent lifts
      (12) Communications
      (13) Artillery fires support plan
      (14) Refueling
      (15) Aircraft maintenance
   c. Disseminate necessary information to your unit
   d. Maintain close coodination with S-3
   e. Monitor situation
   f. Keep your unit informed
   g. Advise on employment of your unit (be aggressive)
   h. Prior to returning to your unit
      (1) Obtain copies of current operations orders, plans, overlays, SITREPS
      (2) Times and location of pertient conferences
      (3) Current situation
3. Actions upon return to unit
   a. Brief the S-3
   b. Check in with CO

ANNEX D

LIAISON OFFICERS CHECK LIST, AIR MOBILE OPERATIONS

Reference: Maps _____ Sheets. DATE _____

1. TYPE MISSION: _____
2. SUPPORTED UNIT(S) DESIGNATION:
   a. Location _____
   b. Call Sign & Freq _____
   c. Command Net _____
   d. Contact Officer _____ Call Sign/Phone _____
3. STAGING AREA: (S)
   a. Coordinates _____
   b. Size _____
   c. Condition _____
   d. Intelligence _____
   e. Control Freq/Call Sign _____
4. PICK UP ZONE:
   a. Coordinates _____
   b. Time _____
   c. Marking _____
   d. Condition _____
   e. Formation _____
   f. Control Freq/Call Sign _____
5. TYPE LOADS:
   a. Number Troops _____
   b. Cargo _____
      (1) Internal _____
      (2) External _____
      (3) Combination _____
   c. Priority of Loads _____
6. OBJECTIVE (S):
   a. Coordinates _____
   b. Intelligence _____

_____

_____

7. LANDING ZONE (S):
   a. LZ No 1
      (1) Primary _____ Name _____ COORD _____
         (a) Size _____
         (b) Condition _____
         (c) Intelligence _____

_____

_____

         (d) Landing Formation _____
         (e) Ground Control Freq/Call Sign _____
         (f) Marking _____
      (2) Alternate _____ Name _____ COORD _____
         (a) Size _____
         (b) Condition _____
         (c) Intelligence _____

_____

_____

         (d) Landing Formation _____
         (e) Ground Control Freq/Call Sign _____
         (f) Marking _____
   b. LZ No 2
      (1) Primary _____ Name _____ COORD _____
         (a) Size _____
         (b) Condition _____

(c) Intelligence _____

_____

_____

(d) Landing Formation _____

(e) Ground Control Freq/Call Sign _____

(f) Marking _____

(2) Alternate _____ Name _____ COORD _____

(a) Size _____

(b) Condition _____

(c) Intelligence _____

_____

_____

(d) Landing Formation _____

(e) Ground Control Freq/Call Sign _____

8. TAC AIR SUPPORT

a. Call Sign and Freq _____

b. Time on Target _____

(1) LZ No 1 _____

(a) Prestrike Begins _____

(b) Prestrike Ends _____

(2) LZ No 2

(a) Prestrike Begins _____

(b) Prestrike Ends _____

9. ARTILLERY SUPPORT:

a. Call Sign & Freq _____

b. Weapon Position/Type _____

c. Time on Target _____

(1) LZ No 1 _____

(a) Prestrike Begins _____

(b) Prestrike Ends _____

(2) LZ No 2

(a) Prestrike Begins _____

(b) Prestrike Ends _____

10. NO FLY LINES

a. LZ No 1

(1) Remain _____ of NFL 1 until _____

(2) Remain _____ of NFL 2 until _____

(3) Remain _____ of NFL 3 until _____

(4) Remain _____ of NFL 4 until _____

b. LZ No 2

(1) Remain _____ of NFL 1 until _____

(2) Remain _____ of NFL 2 until _____

(3) Remain _____ of NFL 3 until _____

(4) Remain _____ of NFL 4 until _____

11. GUNSHIP SUPPRESSIVE FIRES

a. Unit Call Sign & Freq _____

b. LZ No 1

(1) Teams Required _____

(2) Suppressive Fires Begin _____

(3) Suppressive Fires End _____

c. LZ No 2

(1) Teams Required _____

(2) Suppressive Fire Begins _____

(3) Suppressive Fire Ends _____

12. REARMING AND REFUELING

a. Rearming

(1) Rearming Location _____

(2) Type(s) Ammo Required _____
(3) Quantities by Type _____

b. Refueling
(1) Refueling Location _____
(2) Type Fuel _____
(3) Quantity Required _____
(4) Reposition Time _____

13. RESUPPLY OF GROUND UNITS
a. Type Load(s) _____
b. Time _____
c. Pickup Location _____
d. Coordinating Instructions _____

14. MEDICAL EVACUATION
a. Dustoff Unit Call Sign & Freq _____
b. Evacuate Crew Members to _____

15. DOWNED AIRCRAFT
a. Supporting Unit Call Sign & Freq _____
b. Location of Supporting Unit During Operation _____
c. Reserve Ground Element for Security _____

16. GENERAL SITUATION
a. Enemy _____

b. Friendly _____

17. TIME SCHEDULE
a. Depart Home Base _____
b. Arrive Staging Areas _____
c. Depart Staging Areas _____
d. Arrive Pickup Zone _____
e. Arrive LZ No 1 _____
f. Arrive LZ No 2 _____

18. EN ROUTE ALTITUDES
a. To Stagefield _____
b. Pickup Zone _____
c. To LZ No 1 _____
d. To LZ No 2 _____

19. SUPPORTED UNIT COMMAND AND SIGNAL
a. Tactical Command Freq/Call Sign _____
b. Location _____
c. Subordinate Units _____
(1) Lift 1 Freq/Call Sign _____
(2) Lift 2 Freq/Call Sign _____
(3) Lift 3 Freq/Call Sign _____
(4) Lift 4 Freq/Call Sign _____

20. MISCELLANEOUS
a. POWs/Detainees Delivered to _____
b. Alternate Rearm/Refuel _____
c. Nearest Friendly Compound _____
(1) Coordinates _____
(2) Azimuth from LZ _____
(3) Call Sign/Freq _____

ANNEX E
GROUND-AVIATION PLAN (GAP) MESSAGE (FORMAT)

1. a. AM Unit _____ *(Callword, Channel, size)*
   b. Avn Bn _____
2. a. OBJ _____ b. H-hour *(LZ Time)* _____
3. a. CAB Plan Plat _____ b. Co _____ c. Bn _____
4. a. ASHC Plan Plat _____ b. Co _____
5. a. Gunship plan _____ b. TGT Coord _____
   c. Join Column _____ d. Orbit area _____
6. a. 105 How Plan _____ b. TGT Coord _____
   c. Length of Prep _____ d. Fire Ctl _____
7. AF Spt: a. Orbit area _____ b. Nr of pre-plans _____
8. Cav Plan: _____

9. PZ *(Name & Coord)*	10. Formation	11. Load Type	12. Acft Rqmt
a. _____	a. _____	a. _____	a. _____
b. _____	b. _____	b. _____	b. _____
c. _____	c. _____	c. _____	c. _____
d. _____	d. _____	d. _____	d. _____

13. LZ *(Name and Coordinates)*
    a. _____ b. _____
    c. _____ d. _____
    e. _____ f. _____
14. Formation
    a. _____ b. _____
    c. _____ d. _____
    e. _____ f. _____
15. Primary Flight Route
    a. IP _____ Time: _____ b. ACP _____ Time: _____
    c. CCP _____ Time: _____ d. ACP _____ Time: _____
    e. LRP _____ Time: _____
16. Alt Flight Route
    a. IP _____ Time: _____ b. ACP _____ Time: _____
    c. CCP _____ Time: _____ d. ACP _____ Time: _____
    e. LRP _____ Time: _____
17. UHF Air Control Channel _____
18. Fire Control *(Call Word, Channel)* _____
19. PF _____
20. Remarks: _____

ANNEX F

LIFT UNIT MISSION BRIEFING CHECKLIST

Maps Required.

Task Organization.

1. Situation
   a. Enemy Forces and AA capabilities
   b. Friendly Forces
   c. Weather Forecast

2. Mission

3. Execution
   a. Concept of Operation
   b. Flight Plan (use overlay)
      (1) Route and Checkpoints
      (2) En route Formation
      (3) Altitude and Airspeed
      (4) Movement control
   c. PZ/LZ

PZ/LZ	LOCATION	PZ/LZ TIME	LAND & T/O DIRECTION	NR. OF SORTIES	NR. OF LIFTS	ACL

   d. Fire Support Plan
      (1) Naval gunfire
      (2) TAC air
      (3) Artillery
      (4) Armed helicopters
      (5) Suppressive fire by door gunners
   e. Coordinating instructions
      (1) Air traffic control
      (2) Rules of engagement
      (3) Downed aircraft procedures
      (4) Report required
      (5) Time schedule for first flight
         (a) Start engines
         (b) Commo check
         (c) Lift off
         (d) Formation to PZ
         (e) Station time at PZ
         (f) Take off time from PZ
         (g) Time hack

4. Admin and Logistics
   a. Class I
   b. Class III. Location of refueling sites; time
   c. Class V. Location of rearming sites
   d. Med Evac
      (1) Dust off
      (2) Aid station locations
      (3) Hospital for evac of aircrews
   e. Maintenance & Recovery Aircraft
   f. Special equipment required

5. Command and Signal
   a. Signal
      (1) Pyrotechnics
      (2) Panels/other
      (3) Radio

PRIM UHF	PRIM FM	PRIM VHF
ALT UHF	ALT FM	ALT VHF

CALL SIGN AND FREQUENCY			

b. Command

(1) AMTF commander _____

(2) Mission commander _____

(3) Alt mission commander _____

(4) Flight leader _____

ANNEX G

SEQUENTIAL OPERATION ORDER

(The Sequential Operation Order can be used to simplify the issuance of necessary orders for an air-mobile operation. It also simplifies the annotating of changes after the order has been published).

Sample:

ITEM	TIME	ACTION	OTHER INFORMATION
1	0730-1000	162d w/attach conducts ambl aslt w/½ Inf from QUAN LOI to LZ RED (XT645689); 25 sorties 2 lifts.	(1) Flt #1, 1st plat 162d 5 UH-1D; Flt #2, 2d plat 162d 5 UH-1D; Flt #3, 173d 5 UH-1D. 1 LFT Copperheads, 1 LFT Crossbows.
2	0730	Station time QL; line up NW side RW; final briefing. Contact QL Twr 5 Min out for landin instr.	(2) Chalk plates & Nr. Flt #1 Yellow 1-5 Flt #2 White 1-5 Flt #3 Green 1-5
3	0745	Copperheads & Crossbows dep for LZ RED. Gunships prep 3 min prior to arrival of slicks; Copperheads mark LZ w/yellow smoke.	(3) Copperheads E; Crossbows W side or LZ. No prep fires by arty or TAC air.
4	0748	Flt #1, #2, #3 dep QL for LZ RED.	(4) En route & landing formation Heavy Right; Flt route as briefed; 30 sec sep between flts; 1500'/80k. Normal rules of engagement enroute.
5	0800	Flt #1 ARR LZ RED. Followed by Flt #2, #3.	(5) Landing AZ 030; suppressive fire by door gunners Flt #1 only. Use only outboard guns. All flts rpt arr & dep LZ to C&C.
6	0813	Flt #1 & #2 ARR QL; P/U 2d lift; dep immed for LZ RED. Flt #3 refuel and standby QL.	(6) POL avail QL. Rearm at HON QUAN. Aid sta loc QL. Dust Off avail on call.
7	0826	Flt #1 & #2 ARR LZ RED: return QL, refuel & standby. Copperhead & Crossbows return to QL on order C&C; standby QL	(7) AMTF Cmdr: CO, ½ Inf (Dasher 6) Mission Cmdr: CO, 162d (Vulture 6) Alt Mission Cmdr: Vulture Lead.
8	1000	All flts released to parent unit control.	(8) Prim UHF: 248.6 Alt: 360.4 Prim FM: 66.30 Alt: 60.2 Gunships VHF: 122.5 QL TWR: 47.3 Dust Off: 45.7

ANNEX H

SPOT, SITE, PIREP REPORTS FORMAT

NOTE: Use format by reading down under each type report. Use only those items which apply.

TIME RCVD		CONTROL NO.	
	SPOT	SITE	PIREP
ALPHA:	OBSERVER	OBSERVER	OBSERVER
BRAVO:	COORDINATES *(clear)*	COORDINATES *(encode)*	COORDINATES *(encode)*
CHARLIE:	WHAT *(enemy)*	WHAT *(LZ, PZ)*	WHAT *(Visibility, WX)*
DELTA: *(Convoy, Troops Moving)*	ACTIVITY	SIZE *(plt, co)*	ACTIVITY *(Stationary, T)*
ECHO:	YOUR ACTION *(contact)*	BEST NO WIND LNDG DIRECTION	WIND DIRECTION
REMARKS			

ANNEX I

MISSION DEBRIEFING CHECKLIST

1. Estimate of mission results (Degree to which mission was accomplished).

2. Enemy activity encountered or observed during mission. Report in following sequence:

Line A—WHO made the sighting or observation (acft, mission number and type of mission, if applicable, patrol, higher or adjacent units).

Line C—WHAT was observed—(enemy, unknown or friendly forces; strength and type of target—tanks, infantry, patrol, bivouac area, include number of items observed; and what they were doing—halted, digging in, moving—if moving include directions of movement).

Line D—WHERE was the activity sighted (UTM Coordinates or cardinal point from geographic location in the clear if the report is of enemy activity).

Line E—WHERE spot (hot) reports made, and if so, to whom (if applicable).

Line F—DAMAGE reports (if applicable).

3. Estimate of aviation portion of mission:

a. Conduct of operation in the PZ. As Planned? Problems?

b. Flight Route and checkpoints. Adequate? Easily identified?

c. Formation and altitude. Most Suitable,

d. Activity in the Landing Zone (LZ). As planned? Alternate?

e. Communications. Adequate? Excessive?

(1) Air-air.

(2) Air-ground.

(3) SOI-SSI.

4. Aircraft and personnel damage:

a. Personnel.

b. Aircraft. What-When-Where-How.

5. Refueling and maintenance problems.

6. Lessons Learned.

7. Recommendations.

ANNEX J
AEROMEDICAL CHECKLIST

1. Planning Phase
   a. Gather all data pertinent to the medical support of the operation.
      (1) Number of organic aviation personnel utilized.
      (2) Geographic location of operation.
      (3) Estimated time of operation and its duration.
      (4) Estimated security of operation.
      (5) Perform aerial reconnaissance of operational area.
   b. Develop overall plan for aeromedical support.
   c. Evaluate requirements for medical support at staging area (unit airmoble station).
      (1) Personnel.
         (a) Flight surgeon.
         (b) Aidmen.
      (2) Function.
         (a) Establish airmobile aid station at staging area.
         (b) Coordination with battalion surgeon and nonorganic medics for operational contingencies.
         (c) Provide primary medical care as follows:
            1. Maintain respiration and relieve respiratory obstruction.
            2. Control hemorrhage and shock.
            3. Hydration.
            4. Dressing of wound.
            5. Splinting of fracture.
            6. Control of infection.
         (d) Treatment limited to life-saving measures.
      (3) Equipment (minimum).
         (a) Kitchen tent with poles and supports.
         (b) Red cross flag.
         (c) Smoke markers.
         (d) 2 folding litters with stands.
         (e) Medical field supply case with supplement bags for:
            1. Assorted battle dressing.
            2. Emergency medication.
            3. Routine medication.
            4. 3 bottles 5% Dextrose.
            5. 6 bottles Dextran.
            6. 3 bottles 5% dextrose/saline.
            7. Tracheostomy set.
            8. 3 minor suture sets.
         (f) Flight surgeon medical/surgical set.
         (g) AN/PRC-25 for monitoring DUSTOFF frequency.
         (h) Ambu resuscitator if available.
         (i) Special mission equipment.
            1. Coleman lantern.
            2. CP tent.
            3. Gas masks.
            4. Decontamination kit-cs.
   d. Coordination with area hospital and treatment facilities.
   e. Coordination with medical evacuation unit commander.
      (1) Number of air ambulance ships (estimated).
      (2) Type of mission support and distance.
      (3) Radio frequencies and call signs.
      (4) Standard landing area markings.
      (5) Evaluation of evacuation aircraft available from adjacent operations.
   f. Coordination of overall aeromedical plan with commander and supporting units.
   g. Report procedures material.
      (1) FMC DD Form 1380 prepared on all casualties.
      (2) After action report relayed within 24 hours, post operation through command channels.

2. Briefing Phase.

a. Flight surgeon participates actively in mission briefing.

(1) Provides commander with current status of health of the command.

(2) Provides revised estimates of medical requirements.

(3) Accounts for all possible medical contingencies.

b. Final coordination of aeromedical evacuation coverage.

(1) Verify radio frequencies and call signs listed in unit SOP.

(2) Establish staging area and collecting points.

(3) Establish evacuation chain and destination hospitals.

(4) Review possible requirements for utilization of organic aircraft for evacuation.

c. Establish means for moving medical personnel, equipment and supplies to staging area.

3. Excuation Phase.

a. Move medical personnel, equipment and supplies to staging area.

b. Perform final reconnaissance for tactical area.

(1) Accompany initial assault in medical evacuation aircraft, command and control ship or recovery aircraft.

(2) Return to staging or PZ area as required.

c. Provide primary medical care at staging area as required.

d. Provide initial and continued direction of both organic and nonorganic medical evacuation activities.

(1) Patient Load.

(2) Location of patients.

(3) Nature and severity of injuries.

(4) Destination of patients under contingency condition.

4. Post-Operational Phase.

a. Active participation in mission debriefing.

b. Review overall medical support of operations.

c. Reevaluate health status of organic personnel and advise cmdr.

d. Revise requirement for future operation.

e. Develop, improve aeromedical plan and continue training programs.

b. Perform final reconnaissance for tactical area.

(1) Accompany initial assault in medical evacuation aircraft, command and control ship or recovery aircraft.

(2) Return to staging or PZ area as required.

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b. Review overall medical support of operations.

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APPENDIX III

TYPE LOADS

The following type loads are some examples of loads which can be carried on the various types of Army aircraft under normal conditions in Vietnam. Weight limitations will vary from one mission to another as atmospheric conditions change. Reducing fuel loads on the aircraft will also increase carrying capabilities. Other variable such as the size and shape of PZs and LZs will affect allowable cargo loads (ACL). The following examples are only a guide. The aviation LNO can provide exact ACLs for a given mission.

UH-1D/H

ALC 1200 (2 + 30 HRS Fuel)

Type	Cargo	Weight	Total
1.	6 personnel	1200	1200
2.	Bulk Cargo	1200	1200
3.	1 ea Mule (Sling)	900	
	Cargo	300	1200
4.	1 ea ¼ ton TLR (Sling)	565	
	Cargo	500	1065

ACL 2100 (1 + 00 HRS Fuel)

5.	8 personnel	1920	1920
6.	1 ea Mule (Sling)	900	
	Cargo	600	
	2 personnel	580	2080
7.	1 ea ¼ TLR (Sling)	565	
	Cargo	500	
	4 personnel	960	2025

U-1A

ACL 1920 (2 + 00 HRS Fuel)

1.	8 personnel	1920	1920
2.	Cargo	1920	1920
3.	4 personnel	960	
	Cargo	960	1920

CH-54

The optium load for best utilization is 14,000 to 14,500 pounds. Loads weighing between 15,000 and 18,000 pounds require special planning to include full load and range adjustment according to load.

Type	Cargo	(Approx) Weight
1.	CH-47A w/o blades or engines	17,500
2.	1 ea 2½ ton Trk	14,000
3.	Four M-102 Howitzers with section equipment	13,200
4.	1 ea 175mm gun tube	12,050
5.	Four 500 gal fuel cells	14,000
6.	D4 tractor with bulldozer	17,100
7.	M426 bridge section	11,600
8.	HD6M tractor w/o blade	14,200

U-21

ACL 1000 (4 + 30 HRS Fuel)

Type	Cargo	Weight	Total
1.	5 personnel	1000	1000
2.	Cargo	1000	1000

ACL 2000 (2 + 30 HRS Fuel)

3.	8 personnel	1600	1600
4.	5 personnel	1000	
	Cargo	1000	2000

CH-47A

ACL 8000 LBS (1 + 50 HRS Fuel)
(The CH-47B has an ACL of 10,000 lbs)

1.	33 personnel	7920	
	Cargo	80	8000
2.	1 ea ¼ ton TLR	600	
	1 ea ¼ ton TRK	2350	
	17 personnel	4080	
	Cargo in TLR	1000	8030
3.	1 ea ¾ ton Trk	5900	
	1 ea ¼ ton TLR	600	
	Driver	240	
	Cargo	1250	7990
4.	2 ea 500 gal fuel drums (external)	7100	
	2 personnel	480	7580
5.	1 ea 105mm Howitzer w/shields (external)	4990	
	30 rnds ammo in fiber containers (external)	1450	
	6 personnel	1400	
	Cargo	110	7990
6.	66 boxes 105mm ammo (132 rnds) (external)	7950	7950
7.	160 rnds 105mm ammo in fiber containers) (external)	7600	7600
8.	(Battery FDC 1 ea ¼ ton w/radios	2450	
	1 ea ¾ ton TRL	1350	
	8 personnel	1920	
	Section equip on TLR	600	
	Cargo	1680	8000

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	Cargo	300	1200
4.	1 ea # ton TLR (Sling)	565	
	Cargo	500	1065

ACL 2100 (1 + 00 HRS Fuel)

5.	8 personnel	1820	1820
6.	1 ea Mule (Sling)	900	
	Cargo	600	
	2 personnel	580	2080
7.	1 ea # TLR (Sling)	565	
	Cargo	500	
	4 personnel	960	2025

U-1A

ACL 1920 (2 + 00 HRS Fuel)

1.	8 personnel	1920	1920
2.	Cargo	1320	1920
3.	4 personnel	960	
	Cargo	960	1920

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The optimum load for best utilization is 14,000 to 14,500 pounds. Loads weighing between 15,000 and 18,000 pounds require special planning to include fuel load and range adjustment according to load.

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4.	1 ea 175mm gun tube	12,050
5.	Four 500 gal fuel cells	14,000
6.	D4 tractor with bulldozer	17,100
7.	M42B bridge section	11,600
8.	HD8M tractor w/o blade	14,200

U-21

ACL 1000 (4 + 30 HRS Fuel)

Type	Cargo	Weight	Total
1.	6 personnel	1000	1000
2.	Cargo	1000	1000

ACL 2000 (2 + 30 HRS Fuel)

3.	8 personnel	1600	1600
4.	6 personnel	1000	
	Cargo	1000	2000

CH-47A

ACL 8000 LBS (1 + 30 HRS Fuel)
(The CH-47B has an ACL of 10,000 lbs)

1.	33 personnel	7920	
	Cargo	80	8000
2.	1 ea # ton TLR	600	
	1 ea # ton TRK	2350	
	17 personnel	4080	
	Cargo in TLR	1000	8030
3.	1 ea # ton Trk	5500	
	1 ea # ton TLR	600	
	Driver	240	
	Cargo	1250	7590
4.	2 ea 500 gal fuel	7100	
	drums (external)		
	2 personnel	480	7580
5.	1 ea 105mm Howitzer	4990	
	w/shield (external)		
	30 rnds ammo in fiber		
	containers (external)	1450	
	6 personnel	1400	
	Cargo	110	7990
6.	66 boxes 105mm ammo		
	(132 rnds) (external)	7950	7950
7.	160 rnds 105mm ammo in fiber		
	containers) (external)	7600	7600
8.	(Battery PDC 1 ea # ton		
	w/radios	2450	
	1 ea # ton TRL	1350	
	8 personnel	1920	
	Section equip on TLR	600	
	Cargo	1650	8000

APPENDIX IV

1ST AVIATION BRIGADE MINIMUM REQUIREMENTS FOR AIRCRAFT COMMANDERS

1. The minimum criteria for the selection and designation as Aircraft Commander is as follows:

a. Aviators to be considered for appointment as Aircraft Commander will:

(1) Be recommended by their immediate commander. This recommendation will be based on an evaluation of the applicant's maturity, judgment, knowledge of Brigade, unit and local procedures, proficiency, in aircraft in which he will be an aircraft commander and leadership ability.

(2) Be knowledgeable in the Brigade Safety Program, artillery advisory procedures and air traffic control procedures.

(3) Pass a Standardization Check Ride stressing duties of Aircraft Commander with unit IP or SIP.

(4) Pass written examination on the —10 operations manual of the appropriate aircraft.

2. Aviators selected to be an Aircraft Commander must meet the following minimum requirements for type, model and series aircraft:

a. UH-1D/H

(1) 300 hours flown in country in helicopters.

(2) 25 hours flown in country in aircraft series within the past 30 days.

b. UH-1B/C, AH-1G

(1) 300 hours flown in country in helicopters.

(2) 25 hours flown in country in aircraft series within the past 30 days.

(3) 50 hours in weapons control position of the aircraft.

(4) Thorough working knowledge, of, and proficiency in, all weapons systems mounted on the aircraft.

c. CH-47

(1) 300 hours flown in country in the CH-47.

(2) 100 hours flown in country in CH-47 within the past 3 months.

d. CH-54

(1) 100 hours flown in country in the CH-54.

(2) 50 hours flown in country in CH-54 within the past 3 months.

e. U-1, U-6

(1) 200 hours flown in country in the aircraft model.

(2) 50 hours flown in country in aircraft model within past 3 months.

f. U-21

(1) 250 hours flown in country in twin engine airplanes.

(2) 100 hours flown in country in the U-21.

(3) 50 hours flown in country in U-21 within past 3 months.

3. The criteria contained herein is the minimum required by 1st Aviation Brigade. Commanding Officers of subordinate headquarters may increase the criteria as they deem appropriate. Aircraft commanders will not be appointed just because requirements have been met by individual aviators.

4. Appointing orders are required for all aircraft commanders. Appointing orders will be published as directed by paragraph 10b, USARV Regulation 95-1.

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(2) Be knowledgeable in the Brigade Safety Program, artillery advisory procedures and air traffic control procedures.

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(1) 300 hours flown in country in helicopters.

(2) 25 hours flown in country in aircraft series within the past 30 days.

b. UH-1B/C, AH-1G

(1) 300 hours flown in country in helicopters.

(2) 25 hours flown in country in aircraft series within the past 30 days.

(3) 50 hours in weapons control position of the aircraft.

(4) Thorough working knowledge, of, and proficiency in, all weapons systems mounted on the aircraft.

c. CH-47

(1) 300 hours flown in country in the CH-47.

(2) 100 hours flown in country in CH-47 within the past 3 months.

d. CH-54

(1) 100 hours flown in country in the CH-54.

(2) 50 hours flown in country in CH-54 within the past 3 months.

e. U-1, U-6

(1) 300 hours flown in country in the aircraft model.

(2) 50 hours flown in country in aircraft model within past 3 months.

f. U-21

(1) 250 hours flown in country in twin engine airplanes.

(2) 100 hours flown in country in the U-21.

(3) 50 hours flown in country in U-21 within past 3 months.

3. The criteria contained herein is the minimum required by 1st Aviation Brigade. Commanding Officers of subordinate headquarters may increase the criteria as they deem appropriate. Aircraft commanders will not be appointed just because requirements have been met by individual aviators.

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APPENDIX V
FLIGHT CREW DUTIES

Annex A. Flight Crew Duties (General).

The following is a list of Flight Crew Duties for the crew members on type aircraft indicated. This list is not intended to limit the duties of flight crew members and may be supplemented by unit commanders as they deem necessary.

1. UH-1, AH-1G Crew Duties

a. Aircraft Commander/Pilot in command responsibilities:

(1) Before flight

(a) Insure the following items are in accordance with existing directives:

(1) Airworthiness of the aircraft (i.e., Preflight and run-up IAW the appropriate -10CL utilizing the call and response method).

(2) Aircraft Loading (load is properly secured and does not exceed the capabilities of the aircraft).

(b) Procure items necessary for mission accomplishment (i.e., Maps, SOI, and Survival Kits).

(c) Obtain general knowledge of the tactical situation in the area of operation.

(d) Select routes and altitudes during all flights flights when not under the control of an air/mission commander.

(e) Make weather decisions when not under the control of an air/mission commander.

(f) Supervise the arming of weapons systems.

(g) Conduct crew briefings for missions to be performed. Ensure each crew member understands the rules of engagement.

(h) Conduct emergency procedures briefing for passengers.

(i) Insure passenger and crew compliance with safety requirements (i.e., proper uniforms with sleeves rolled down, use of seat belts, wearing of dog tags, crew—use of helmets and gloves).

(2) In flight

(a) Operation of the aircraft in the safest possible manner (i.e., safe approach and takeoffs, no turns on the ground or in the air without receiving clearance from crew chief and gunner).

(b) Accomplish mission.

(c) Obtain general knowledge of the tactical in the area of operation if not determined before flight.

(d) Comply with air traffic procedures, (i.e., flight following, artillery advisories, airfield procedures, IFR procedures if applicable).

(e) Select routes and altitudes during all flights when not under the control of an air/mission commander, if not determined before flight.

(f) Make weather decisions when not under the control of an air/mission commander.

(g) (UH-1 only) Designate which pilot will fly the aircraft. The pilot not flying the aircraft will tune the radios and closely monitor aircraft instruments. (NOTE: Both pilots will be on the controls during all all takeoff and landing where hostile fire may be encountered.)

(h) Keep the tactical commander or senior occupant informed of hazards and considerations when he proposes courses of action which differ from regulations, policies and SOP's. (NOTE: The AC or pilot in command makes the final decisions during administrative flights.)

(i) Insure that during hot refueling operations all personnel vacate the aircraft with the exception of a designated pilot who will remain at the controls of the aircraft. The pilot exiting the aircraft will supervise refueling operations. NOTE: The pilot occupying the back seat of the AH-1G will deplane at all times, and will refuel the aircraft if POL point has no attendant.

(j) Insure that all weapons systems are safe prior to landing in a secure area. NOTE: All applicable circuit breakers will be pulled. Arm switches will not be placed in the armed position execpt immediately prior to a gun run.

(3) After flight—Conduct post flight inspection and complete appropriate forms, records and reports.

b. Pilot/Copilot responsibilities:

(1) Before flight

(a) Perform duties as may be assigned to him by the aircraft commander or the pilot in command.

(b) Perform preflight inspection.

(2) In flight

(a) Perform duties as may be assigned to him by the aircraft commander or pilot in command.

(b) (AH-1G) Perform duties as the copilot/gunner of the aircraft and fires weapons directed by the pilot in command.

(c) (AH-1G) Remains at the controls during hot refueling operations.

(d) During flight continually observes for other aircraft and advises the pilot in command.

(3) After flight

(a) Perform duties as may be assigned to him by the aircraft commander or the pilot in command.

(b) Conducts postflight inspection.

c. Crewchief/Gunner responsibilities (UH-1):

(1) Before flight

(a) Conduct daily inspection of the aircraft and weapons. Maintain all forms and records as applicable and advise the aircraft commander/pilot in command of any discrepancy which may affect the mission.

(b) Except during combat assaults check each passenger to insure seat belts are properly fastened and sleeves rolled down.

(c) Prior to lift-off to a hover, check the cargo doors and announce, "cargo door open and retaining pin secure".

(2) In flight

(a) During hot refueling operations insure that all passengers vacate the aircraft. The crewchief will refuel the aircraft while the gunner procures the aircraft fire extinguisher and performs fire guard duties. The pilot and copilot doors will be opened and armor plates retracted. All crew members will have helmets on with visor down, gloves on and sleeves rolled down.

(b) Prior to the pilot making any turns in flight or at a hover, observe his side and to the rear for any aircraft and/or obstruction and advise the pilot. If the aircraft is clear state "you are clear left/right".

(c) During flight, continuously observe his side of the aircraft for other aircraft and advise the pilot. (i.e., high performance, fixed wing, 2 o'clock, low, 2 miles)

(d) Prior to landing in unimproved areas check below the aircraft for obstacles and advise the aircraft commander/pilot in command if he is or is not cleared to land the aircraft.

(e) Be knowledgeable of the rules of engagement and fire his weapons only on command from the aircraft commander/pilot in command.

(f) Be knowledgeable of first aid and administer the same if required, to any wounded personnel.

(g) Clear his weapons prior to landing in a secure area and state "guns are cold".

(3) After flight—Provide security for the aircraft and personnel in the event of a forced landing in an unsecure area.

d. Crewchief (AH-1G)

(1) Before flight

(a) Conducts all first echelon maintenance.

(b) Prepares aircraft for missions as directed.

(c) Coordinates maintenance requirements for weapons systems with armament repairmen.

(d) Maintains forms and records pertaining to the maintenance of the aircraft.

(e) Performs fire guard and ground guide duties.

(2) After flight

(a) Conducts all first echelon maintenance.

(b) Coordinates maintenance requirements for weapons systems with armament repairmen.

(c) Maintains forms and records pertaining to the aircraft and its maintenance.

(d) Performs routine servicing.

(e) Performs fire guard and ground guide duties.

2. OH-6A/OH-58A Crew Duties

a. The pilot's responsibilities:

(1) Before flight

(a) Insure the airworthiness of the aircraft (i.e., preflight, and run-up procedures IAW the appropriate —10 CL).

(b) Insure his observer and/or passengers comply with safety requirements (i.e., helmet, gloves and nomex uniforms for observers and proper use of seat belts by all personnel aboard the aircraft).

(c) Insure the observer and/or passengers are briefed on emergency procedures.

(2) In flight

(a) Visually check the clearance of his aircraft prior to making any turns. either in the air or on the ground.

(b) Comply with air traffic procedures.

(c) Monitor artillery firing information for his flight route and insure flight following is being conducted by an appropriate facility or another aircraft.

(d) Conduct his assigned mission in the safest possible manner and to be familiar with proper emergency procedures, and be especially alert during hazardous mission (i.e., VR missions).

(e) Shut down the aircraft for refueling operation at POL points where no attendant is available and only one pilot is aboard the aircraft. (NOTE: He will not at any time leave the aircraft controls unattended with the rotors turning.)

(f) Insure that all applicable weapons are safe prior to landing in secure areas.

(3) After flight—Conduct postflight inspection and complete appropriate forms, records and reports.

b. During the flight the observer is responsible for:

(1) Assisting the pilot with the radios as directed.

(2) Performing his specific responsibilities as an aerial observer during missions.

(3) Refueling of the aircraft during hot refueling operations if directed by the pilot.

(4) Observing for other aircraft and advising the pilot of all approaching aircraft (i.e., high performance, fixed wing, 2 o'clock, low, 2 miles).

c. Crewchief (OH6/OH58) duties

(1) Before flight

(a) Conducts all first echelon maintenance.

(b) Prepare aircraft for missions as directed.

(c) Maintains forms and records pertaining to the maintenance of the aircraft.

(d) Performs fire guard and ground giude duties.

(2) After flight

(a) Conducts all first echelon maintenance.

(b) Maintains all forms and records pertaining to the maintenance of the aircraft.

(c) Performs routine servicing.

(d) Performs fire guard and ground guide duties.

3. CH-47 Crew Duties

a. Aircraft commander/pilot in command responsibilities:

(1) Before flight

(a) Insure the following items are in accordance with existing directives.

(1) Airworthiness of the aircraft (ie., Preflight, and run-up IAW the appropriate —10CL utilizing the call response method).

(2) Aircraft loading (load is properly secured and does not exceed the capabilities of the aircraft).

(b) Procure items necessary for mission accomplishment (i.e., maps, SOI, and Survival Kits).

(c) Obtain general knowledge of the tactical situation in the area of operations.

(d) Select routes and altitudes during all flights when not under the control of an air/mission commander.

(e) Make weather decisions when not under the control of an air/mission commander.

(f) Supervise the arming of weapons systems.

(g) Conduct crew briefings for missions to be performed. Ensure that each crew member understands the roules of engagement.

(h) Conduct emergency procedures briefing for passengers.

(i) Insure passenger and crew compliance with safety requirements, (i.e., proper uniforms with sleeves rolled down, use of seat belts, wearing of dog tags, crew use of helmets and gloves).

(2) In flight

(a) Operation of the aircraft in the safest possible manner (ie., safe approach and takeoffs, no turns on the ground or in the air without receiving clearance from the crew chief and gunner).

(b) Accomplish the mission.

(c) Obtain general knowledge of the tactical situation in the area of operations if not determined in the before flight phase.

(d) Comply with all air traffic procedures, (i.e., flight following, artillery advisories, airfield procedures, IRF procedures if applicable).

(e) Select routes and altitudes during all flights when not under the control of an air/mission commander if not determined before flight.

(f) Make weather decisions when not under the control of an air/mission commander if not determined before the flight.

(g) Desïgnate which pilot will fly the aircraft. The pilot not flying the aircraft will tune the radios and closely monitor aircraft instruments. (NOTE: Both pilots will be on the controls during all takeoff and landings where hostile fire may be encountered.)

(h) Safe landing in the event of an emergency (i.e., aircraft will not be flown single engine or single hydraulic system other than to the first available secure area).

(i) Keep the tactical commander or senior occupant informed of hazards and considerations when he proposes courses of action which differ from regulations, policies and SOPs. (NOTE: The AC or pilot in command makes the final decisions during administrative flights).

(j) Insure that during hot refueling operations that a minnmum crew remains in the aircraft and supervizes all refueling operations.

(3) In-flight and pickup procedures with sling load:

(a) The aviator on the controls will inform the crew that the aircraft is on a final approach, will turn off all radio receiver switches and announce "pilot radios are off".

(b) The flight engineer will turn off his radio receiver and announce "radio off in the rear". He will then verbally call out the altitude above the ground beginning at 50 feet, and then in increments of 10 feet until reaching 10 feet above the load.

(c) The pilot not flying the aircraft will monitor the radios and maintain communications with ground personnel and escort aircraft as required. The cargo switch will be placed in the "armed" position.

(d) As the load comes under the nose of the aircraft, the pilot on the controls will announce "load under the nose".

(e) As the load comes into sight of the flight engineer, he will announce "load in sight". As the main hook becomes centered on the load the flight engineer will say "hold". If the hook is not centered on the load the flight engineer will give instructions to the pilot using the following terms: "up", "down", "left", followed by the number of feet he desires the aircraft to move. Example, "right 5", "down 3".

(f) When hookup is accomplished the flight engineer tells the pilot "load is hooked". The flight engineer will visually check the load and cargo straps and advise the pilot on the condition of the load and carrying equipment. prior to takeoff.

(g) The flight engineer will give the pilot instructions to center the aircraft over the load and announce "ready for liftoff'.

(h) Slowly lift the load clear of the ground and complete a hover check. The pilot not flying the aircraft will keep the engines matched and adjust the rotor speed as required by the appropriate current TM.

(i) After the hover check is completed, make a takeoff into the wind as near as possible. When airspeed reaches 40 knots the pilot not flying the aircraft turns the radio switches back on for the pilot flying the aircraft. After single engine A/S is reached place cargo switch in "safe" position.

(j) The flight engineer will advise the pilot of distance from bottom of the load to the barrier on takeoff. When barrier is cleared the flight engineer will announce "load is clear of barrier".

(4) Landing procedures with sling load:

(a) Land into the wind as near as possible. Do not fly over heavily populated areas (cities, towns or villages).

(b) The pilot not flying the aircraft will keep the engines matched and adjust the roter speed as required on short final.

(c) Procedures for approach into the area with a load are as outlined in approaching the load for pickup, example: announce short final, radio switches off, etc.

(d) The flight engineer will verbally call out the distance from the load to the ground in 1 foot increments after reaching 10 feet. After the load has touched down and the hook opened the flight engineer will announce "lock released".

(e) After the load is released climb out straight ahead, when the airspeed reaches 40 knots the pilot not flying will take control of the aircraft. (Change control of aircraft at a hover only in an emergency.)

(5) After flight—Conduct postflight inspection and complete appropriate forms, records and reports.

b. Pilot/Copilot responsibilities:

(1) Before flight

(a) Perform duties as may be assigned to him by the aircraft commander or pilot on command.

(b) Perform preflight inspection.

(2) In flight

(a) Perform duties as may be assigned to him by the aircraft commander or pilot in command.

(b) Remains at the controls during hot refueling operations.

(c) During flight continually observe for approaching aircraft, insure adequate clearance from other aircraft and obstacles during takeoffs and landing on his side of the aircraft and advise the pilot in command.

(3) After flight—Conduct postflight inspection.

c. Flight Engineer responsibilities:

(1) Before flight

(a) Flight engineer will be at the aircraft a minimum of one hour prior to scheduled takeoff time.

(b) DA Form 2408 (Log Book) out for inspection by the pilot.

(c) Inventory all required equipment and survivial gear.

(d) Remove all protective covers (i.e., engine exhaust, engine intake plugs, and pilot covers).

(e) Perform a complete preflight of aircraft IAW current TM.

(f) With aircraft commander or pilot:

(1) Monitor preflight.

(2) Fire guard posted for APU starting and engine starting.

(3) Insure top of aircraft is clear of personnel prior to starting of engines.

(4) Have communications between flight engineer and pilot when starting APU and engines.

(5) Monitor starting of APU, number 1 engine and number 2 engine from outside of aircraft. Advise pilot of any abnormal conditions.

(6) Clear rotors for starting number 1 engine.

(7) Clear number 2 engine to start.

(8) Insure wheel chocks are removed and check doors for security.

(9) Check DA Form 2408 (Log Book) stowed in container.

(10) Notify pilots when the crew is ready to go.

(2) In flight

(a) Coordinates all turns with pilot to insure aft portion of aircraft remains clear of obstacles.

(b) Observe the aircraft at all times (listen for unusual noises, watch for any visible signs of hydraulic or fuel leaks, etc.).

(c) Inform pilot of any approaching aircraft from the rear or side by using hour directions from the pilots direction of flight.

(d) If carring a load, keep the pilot informed at to how the load is riding and the approximate distances between the bottom of the load and wheel base of the aircraft.

(e) When landing, inform the pilot when the aft portion of the aircraft is clear of obstacles/or barriers.

(f) Call out altitude above the ground beginning at 50 feet, then in increments of 10 feet, unless otherwise directed by the aircraft commander Advise pilot of necessary directions required during hookups and dropoffs.

(3) After flight:

(a) Upon landing check the main landing gear wheels.

(b) Post crewchief as fireguard.

(c) Check oil levels in each engine and gearbox as soon as practical after shutdown, adding the prescribed oil as necessary. Check all critical items on PMD List.

(d) After last flight of the day the daily inspection will be completed IAW current TM.

d. Crewchief responsibilities

(1) Before flight: Perform duties as may be assigned to him by the flight engineer, aircraft commander or pilot in command.

(2) In flight:

(a) Perform duties as may be assigned to him by the flight engineer, aircraft commander or pilot in command.

(b) Insure clearance on his side of the aircraft during ground and in-flight operations by advising the pilot of any obstacles or approaching aircraft.

(c) Serve as right door gunner during all in-flight operations.

e. Gunner responsibilities:

(1) Before flight

(a) Perform duties as may be assigned to him by the flight engineer, aircraft commander or pilot in command.

(b) Service and maintenance of all crew served weapons.

(2) In flight

(a) Perform duties as may be assigned to him by the flight engineer, aircraft commander or pilot in command.

(b) Insure clearance on his side of aircraft during ground and in flight operations by advising the pilot of any obstacles or approaching aircraft.

(c) Serve as left door gunner during all in-flight operations.

(3) After flight

(a) Perform duties as may be assigned to him by the flight engineer, aircraft commander or pilot in command.

(b) Service and maintenance of all crew served weapons.

4. CH-54A Crew Duties

a. Aircraft commander/pilot in command responsibilities:

(1) Before flight

(a) Check the technical operations of the aircraft to include:

(1) Airworthiness of the aircraft (i.e., preflight and run-up IAW the appropriate —10CL utilizing the call and response method).

(2) Aircraft loading (properly secured load does not exceed the capabilities of the aircraft).

(b) Procuring items necessary for mission accomplishment (i.e., maps, SOI, Emergency and Survival Kits).

(c) Obtain a general knowledge of the tactical situation in the area of operations.

(d) Selection of routes and altitudes during all flights when not under the control of the air/mission commander.

(e) Decisions concerning weather operations when not under the control of an air/mission commander.

(f) Complete crew briefings for the mission to be performed.

(g) Crew compliance with safety regulations (i.e., proper uniforms with sleeves rolled down, wearing of dog tags, crew use of helmets and gloves, individual sidearm secured on person, and use of seat belts).

(2) In flight

(a) Constantly check the technical operation of the aircraft while in flight.

(b) Operation of the aircraft in the safest possible manner (i.e., safe approaches and takeoffs, no turns on the ground or in the air without receiving clearance from crew chief and flight engineer).

(c) Accomplish mission.

(d) Obtain knowledge of the tactical situation in the area of operation if not determined before flight.

(e) Compliance with air traffic procedures (i.e., flight following, artillery advisories, airfield procedures, IRF procedures if applicable)

(f) Selection of routes and altitudes during all flights when not under the control of the air mission commander.

(g) Decisions concerning weather operations when not under the control of an air mission commander if not determined before flight.

(h) Designate which individual will fly the aircraft. The pilot not flying the aircraft will tune the radios and closley monitor aircraft instruments for normal operations, adjust engine ERP's and lightly follow through on the controls during all approaches and takeoffs.

(i) Safe landing in the event of an emergency (i.e., no aircraft will be flown single engine or single hydraulic system other than to the first available secure area).

(j) Keep the tactical commander informed of hazards and considerations when he proposes courses of action which differ from regulations, policies and SOPs.

(k) Insure that during hot refueling operations that a minimum crew remains in the aircraft and supervises refueling operations.

(3) In flight and pickup procedures with a sling load:

(a) The aviator on the controls will inform the crew that the aircraft is on final approach, will turn off all radio receiver switches and announce "pilot radio are off".

(b) The flight engineer or aft pilot will turn off his radio receiver and announce "radio off in the rear". He will then verbally call out the altitude above the ground beginning at 50 feet, and then in increments of 10 feet until reaching 10 feet from the ground.

(c) The pilot not flying the aircraft will monitor the radios and maintain communications with ground personnel and escort aircraft as required. Cargo switch will be placed in "elect Rel" position.

(d) As the load comes under the nose of the aircraft, the pilot on the controls will announce "load under the nose". The flight engineer will then let out the appropriate amount of cable for hookup.

(e) As the load comes into sight of the aircraft's flight engineer he will announce "load in sight". As the main hook comes centered on the load the flight engineer will say "hold". If the hook is not centered on the load the flight engineer will give instructions to the pilot using the following terms: "up", "down", "right", "left", followed by the number of feet he desires the aircraft to move. Example: "Right 6", Down 3".

(f) When hookup is accomplished, the flight engineer tells the pilot, "load hooked and winching the aircraft down over the load". During the winching process the aft crew will visually check the load and cargo strap. The pilot will be advised by the flight engineer on the condition of the load and carrying equipment prior to takeoff.

(g) The flight engineer will give the pilot necessary instructions to center the aircraft over the load and announce "ready for lift off".

(h) After lift off, slowly lift the load to approximately 10 feet and complete a hover check. The pilot not flying the aircraft will operate the N-2 speed trim switches to keep the engines matched and bring the N-r to 104%.

(i) After the hover check is completed, make a takeoff into the wind as near as possible. When airspeed reaches 40 knots the pilot not flying the aircraft brings the N-r back to 100% and turns the radio switches back on for the pilot flying the aircraft.

(j) The flight engineer will advise the pilot of distance from bottom of load to the barrier on takeoff. When the barrier is cleared the flight engineer will annonuce "load is clear barrier".

(3) Landing procedures with sling load:

(a) Land into the wind as near as possible. Do not fly over heavily populated areas (cities, towns, or villages).

(b) The pilot not flying the aircraft will keep the engines matched and adjust the N-r to 104% on short final.

(c) Procedures for approach into the area with a load are as outlined in approching the load for pickup, example: annonuce short final, radio switches off, etc.

(d) The flight engineer will verbally call out the distance from the load to the ground in 1 foot increments after reaching 10 feet. After the load has touched down the pilot will lower the aircraft to put slack in the cable and then open the hook. The flight engineer will announce "load is released". The pilot not flying will stow the hook to over-ride position and place cargo switch to "off" position.

(e) After load is released climb out straight ahead, the pilot not flying adjusts the N-r to 100% and when the airspeed reaches 40 knots takes conrtol of the aircraft. (Change control of aircraft at a hover only in an emergency.)

b. Pilot/Copilot responsibilities:

(1) Before flight: Performs duties as may assigned to him by the aircraft commander or pilot in command.

(2) In flight

(a) Performs duties as may be assigned to him by the aircraft commander or the pilot in command.

(b) Remains at the controls during hot refueling operations.

(c) During flight continually observes for approaching aircraft, insure adequate clearance from other aircraft and obstacles during takeoffs and landings on his side of the aircraft and advises the pilot in command.

(3) After flight

(a) Performs duties as may be assigned to him by the aircraft commander or the pilot in command.

(b) Conduct a postflight inspection.

c. Flight engineer responsibilities:

(1) Before flight

(a) Flight engineer will be at the aircraft a minimum of one hour prior to scheduled takeoff time.

(b) DA Form 2408 (Log Book) out for inspection by pilot.

(c) Inventory all required equipment and survival gear.

(d) Remove all protective covers (i.e., engine exhaust, engine intake plugs and pilot covers).

(e) Perform a complete pre-flight inspection of the aircraft IAW current TM.

(f) With the aircraft commander or pilot:

(1) Monitor pre-flight with AC or pilot.

(2) Post fire guard for APP starting and engine starting.

(3) Insure top of aircraft is clear of personnel prior to starting of engines.

(4) Have communications between flight engineer and pilot when starting APP and engines.

(5) Monitor starting of APU, number 1 engine and number 2 engine from outside of aircraft. Advise pilot of any abnormal conditions.

(6) Clear rotor to engage, report when droop stops are out.

(7) Clear number 2 engine to start.

(8) Remove outside intercom cord, insure wheel chocks are removed and check doors for security.

(9) Check DA Form 2408 (Log Book) stowed in container.

(10) Notify pilot when crew in aft cockpit is ready to go.

(2) In flight

(a) Coordinates all turns with pilot to insure aft portion of aircraft remains clear of obstacles.

(b) Observe the aircraft at all times (listen for unusual noise, watch for any visible signs of hydraulic or fuel leaks, etc.).

(c) Inform pilot of any approaching aircraft from the rear or side by using hour directions from the pilots direction of flight.

(d) If carrying a load, keep the pilot informed as to how the load is riding and approximate distance between the bottom of the load and wheel base of the aircraft.

(e) When landing, inform the pilot when the aft portion of the aircraft is clear of obstacles.

(f) Call out altitude above the ground beginning at 50 feet, then in incurements of 10 feet, unless otherwise directed by the aircraft commander. Advise the pilot of necessary directions required during hookups and dropoff.

(g) Inform the pilot when the aircraft main landing gear first touches the ground.

(3) After flight

(a) Upon landing, check the main landing gear wheels.

(b) Connect the intercom cord to establish communications with the pilots.

(c) Post crewchief as fire guard.

(d) Verbally inform the pilot when and if all of the droop restraints go in.

(e) Check oil levels in each engine and gearbox as soon as practical after shutdown, adding the prescribed oil as necessary. Check all critical items on the PMD list.

(f) After the last flight of the day, the daily inspection will be completed IAW current TM.

d. Crewchief responsibilities:

(1) Before flight: Perform duties as may be assigned to him by the aircraft commander or pilot in command, or the flight engineer.

(2) In flight

(a) Performs duties as may be assigned to him by the aircraft commander, flight engineer, or pilot in command.

(b) Insure clearance on his side of the aircraft during ground and in flight operations by advising the pilot of any obstacles or approaching aircraft.

5. U-1A, U-6A, U-21A, OV-1 Crew duties

a. Pilot in command responsibilities:

(1) Before flight

(a) Procure all information pertinent to the flight, to include

(1) Notams.

(2) DOD Flip.

(3) Charts and maps.

(4) Weather reports and forecasts.

(5) Alternate action in event mission cannot be completed.

(6) Fuel requirements.

(7) Physical and psychological limitations.

(8) Possible traffic delays.

(9) Routes, obstructions, hazards and equipment requirements.

(10) Tactical situation.

(11) Decisions concerning weather operations.

(12) Radio frequencies and IFF Codes as applicable.

(b) Select route of flight and insure flight following by an appropriate facility.

(c) Supervise pre-flight (to include sensor and/or camera equipment in the OV-1) IAW applicable —10CL.

(d) Supervise loading of cargo and passengers (U-6A, U-1A. U-21A)

(c) Insure all actions in and around the aircraft are conducted in a safe and efficient manner.

(f) Preflight ejection seat and individual survival gear. (OV).

(2) In flight

(a) Insure the technical operation of the aircraft is in consonance with current directives.

(b) Comply with Air Traffic Procedures (i.e., Flight Following, Artillery Advisories, Airfield Procedures, and IFR Procedures).

(3) After flight

(a) Supervises securing of A/C.

(b) Supervises postflight inspection.

(c) Checks the correctness of forms, records and other reports required.

(d) Insures imagery is delivered to opns (OV-1)

(e) Attends mission debriefing.

b. Copilot responsibilities: (N/A in OV-1)

(1) Before flight

(a) Performs preflight inspections.

(b) Assists the pilot in command as directed.

(2) In flight: Assists the pilot in command as directed.

(3) After flight: Assists the pilot in command as directed.

c. Crewchief responsibilities:

(1) Before flight

(a) Perform daily inspection.

(b) Perform engine runup.

(c) Remove pilot covers, air intake covers and gust locks.

(d) Insure that quantities of fuel and oil are aboard as requested by the pilot.

(e) Assist the pilot in pre-flight inspection.

(f) Have parachutes as required.

(g) Seat passengers.

(h) Stand fire guard.

(i) Ground guide the aircraft when necessary.

(j) Supervise all vehicles in the vicinity of the aircraft.

(2) In flight (N/A in IV-1)

(a) Watch for approaching aircraft and advise the pilot.

(b) Watch for enemy ground activity.

(c) Insure passengers observe safety precautions (i.e., use of seat belts, sleeves rolled down and dog tags on their person).

(3) After flight

(a) Assist in parking the aircraft if required.

(b) Aid passengers.

(c) Unload cargo.

(d) Service aircraft with fuel and/or oil.

(e) Perform postflight inspection.

(f) Complete required forms.

d. Aerial Sensor Operator (OV-1)

(1) Before flight

(a) Assist the pilot in mission planning.

(b) Insure required forms are present.

(c) Preflight cameras and/or sensor systems IAW applicable —10CL.

(d) Preflight ejection seat and individual survival gear.

(2) In flight

(a) Watch for approaching aircraft and advise the pilot.

(b) Watch for enemy ground activity.

(c) Operate camera and/or sensor systems.

(d) Assist pilot with radios as directed.

(e) Visually check landing gear up after T/O and down on final.

(f) Notify pilot of runway in sight during IFR approaches.

(g) Assist the pilot with in flight spot reports as directed.

(3) After flight

(a) Post flight cameras and/or sensor systems.

(b) Deliver imagery to operations.

(c) Complete required forms.

(d) Attend mission debriefing with pilot.

6. O-1 Crew Duties

a. Pilot responsibilities:

(1) Before flight

(a) Receive an intellegence briefing.

(b) Check Notams.

(c) Prepare charts and maps.

(d) Study weather.

(e) Determine fuel requirement.

(f) Study the tactical situation.

(g) Determine routes, equipment necessary, and mission paramete.

(h) Coordinate frequencies and call signs.

(i) Brief observer.

(j) Conduct preflight and runup.

(2) In flight

(a) Insure flight following with the appropriate agency.

(b) Coordinates flight around artillery impact areas if required.

(c) Has responsibility for conduct of the mission including:

(1) Coordination with other aircraft.

(2) Coordination and possible direction of artillery, gunships and airstrikes.

(3) Prompt reporting of sightings.

(4) All aspects of safety of flight.

(d) Has specific duties on certain types of missions including:

(1) Operating of aircraft mounted cameras.

(2) Drops flares for night illumination.

(3) Performing of radio relay automatically or manually.

(4) Checks navigational aids.

(3) After flight

(a) Conducts postflight inspection.

(b) Conducts postflight briefing.

b. Observer responsibilities: Performs a specific mission which may be:

(1) Visual reconnaissance of an area.

(2) Photography using hand held cameras.

(3) Coordination and direction of artillery, Naval gunfire, tactical airstrikes, or helicopter gunships.

(4) Airdrops of messages or small bundles.

(5) Command and control of ground units.

(6) Radio relay.

(7) Reports mission results to parent unit.

c. Crewchief duties (does not normally fly in the aircraft):

(1) Before flight

(a) Is responsible for all ground handling of the aircraft and first echelon maintenance.

(b) Performs fire guard and ground guide duties.

(c) Maintains aircraft maintenance records.

(2) After flight

(a) Performs routine servicing.

(b) Performs fire guard and ground guide duties.

(c) Maintains aircraft maintenance records.

Annex B. Flight Crew Duties (Special Operations)

1. Command & Control Console: Aircraft Commander and/or Pilot Responsibility: During preflight procedures the C&C will be operationally checked while the engine is running. All stations will be checked in both the secure and unsecure mode, with all headsets and cords.

2. "McGuire" Rigs (90-130 ft length ropes): "McGuire" Rigs are ropes securely affixed to the aircraft cargo floor and used for extraction and/or insertion of personnel and equipment from areas that do not permit use of a landing zone.

a. Aircraft Commander and Pilot: Primary duties are similiar to sling loads on any other operation involving out of ground effect.

(1) Ensure that adequate power is available prior to commencing the operation.

(2) Strong reliance must be placed in instructions received from the crew chief and gunner inasmuch as visability of the ropes is greatly limited in the cockpit.

b. Crew Chief and Gunner:

(1) Required to lie in the prone position on the cargo floor in order to observe the ropes and manipulate the ropes through the thick vegetation.

(2) Be equipped with knives capable of quickly cutting ropes on order from A/C.

(3) Immediate and accurate relay of information to aircraft commander and pilot concerning condition of ropes (entanglement in trees, etc.) as well as enemy action; i.e., right 2 feet, left 2 feet, down-rope tangled, etc.

3. Aeromedical Evacuation by Hoist:

a. Aircraft Commander:

(1) Coordinates entire mission by radio with ground troops and armed helicopter support.

(2) Assure crew and medic have proper safety equipment on prior to take-off for hoist mission.

(3) Assures that the patient's condition actually requires a hoist extraction, and that it is not feasable to establish a helicopter landing zone near the casualty.

(4) Assures that the area is adequately secure to successfully accomplish the hoist extractions without undue hazard to the air-crew or aircraft.

(5) After radio contact with ground unit has been made, the aircraft commander will brief the ground commander on:

(a) Stokes or Semi-rigid litter; how to load the patient and how to secure the patient for hoisting.

(b) Forest penetrator; description and instructions for use of penerator.

(6) The aircraft will be hovered with the nose into any existing wind, and a minimum of 10 feet above the highest obstacle in the immediate vicinity of the aircraft.

(7) Limit hovering time to 15 minutes. If additional hovering is required it is strongly recommended that the aircraft depart the area, off-load on-board casualties either to another aircraft or to the nearest treatment facility. If this is not feasable, orbit the aircraft for a few minutes to allow all crew members to relax and regain their alertness prior to resuming hoist operations. This procedure to be repeated until completion of all casualty extractions with the optimum of crew efficiency maintained during the critical hovering/hoisting operation.

(8) Relieves pilot as necessary (approximately each 5 minutes) while the aircraft is hovering for an extended period.

(9) Assures the hoist is operated on the "FAST" mode at all times unless otherwise requested by the crew chief.

(10) Is the authority to abort the mission or sever the cable of the hoist (Exception—See crew chief).

b. Pilot Duties:

(1) Will fly the aircraft as directed by the aircraft commander during hoist operations. He will monitor intercom on "Hot Mike" of the crew chief, medic and patient protector in order to maintain the aircraft in a safe position in relation to obstacles in the pick-up zone.

(2) When the aircraft commander relieves the pilot at the flight controls, the aircraft commander then places his intercom toggle switch in a position to monitor and respond to crew directions for efficient and safe hoist operation, in addition to monitoring FM, VHF, and UHF radios. The aircraft commander may direct that the pilot monitor a particular frequency.

c. Crew Chief Duties:

(1) Takes litters down from rack prior to hoist mission to allow maximum freedom of movement of crew members in cargo compartment.

(2) Operate hoist in accordance with manufacturer's directions and additional guidelines listed. Hoist operator may be the medic, at discretion of aircraft commander, based on relative experience of crewmen.

(3) Places crew ICS switch in "Not Mike" position just prior to aircraft terminating approach to a hover pick-up site.

(4) Lays on floor of aircraft in prone position so he is able to look straight down into pick-up zone, and give continuous verbal directions to the pilot. His primary responsibility is to position the aircraft hoist directly over the patient to be hoisted and provide continuous direction to maintain the aircraft in that position during the lowering of litter/penetrator, preparing of patient for extraction and raising patient into helicopter.

(5) If the hoist cable. litter, or penetrator become fouled in a tree (with NO patients at the end of hoist) and it appears to the crew chief that his producing maximum slack in the cable will not prevent an eminently dangerous obstacle to safe flight, the crew chief

is authorized to immediately sever the cable by actuating the "cable cut" switch on the hoist. The decision to shear the cable when a person is suspended on the hoist cable will be made ONLY by the aircraft commander. If the crew chief exercises his authority to sever the cable, he will annonuce to the aircraft commander—"Cable fouled. cutting the cable".

(6) At the completion of the litter loading penetrator loading) the aircraft commander will advise the crew chief either:

(a) Breaking ground by hovering straight up.

(b) Break ground by cable reel-in.

d. Medical Aid Man:

(1) Is fitted with nylon safety suit and tethered securely on left side of aircraft.

(2) Is responsible for assuring helicopter clearance from all obstacles to the aircraft, especially main and tail rotor blades. Clearance should be 10 feet between aircraft and highest obstacles in immediate vicinity of aircraft. Verbal directions to the pilot will be essentially as the crew chief's except that emphasis will be on tail rotor and main blade clearance.

(3) Assists the crew chief in guiding the stokes litter or penetrator into the aircraft and off-load the patient into the litter.

(4) Proceeds with medical treatment as soon as aircraft is clear of obstacles and departing area.

(5) If a second casualty is to be extracted, the decision to remain in the area for the second casualty or depart to a hospital immediately will depend on the condition of the first casualty, the reported seriousness of the second casualty, and the degree of fatigue of the crew. The final decision to depart or to continue with a second hoist extraction will rest with the aircraft commander, based on recommendations from the medical aid man.

e. Patient Protector:

(1) Remains on the opposite side of the aircraft from crew chief and medic. Does not leave seat unless directed to do so by the aircraft commander.

(2) He is responsible for providing directions to the pilot to assure aircraft clearance between the helicopter and all obstacles. His primary emphasis will be on the tail rotor and main rotor blade clearance and assuring a 10 feet altitude above trees or other obstacles in the immediate vicinity of the aircraft.

(3) Provide immediate suppressive fire from left side of aircraft if fired upon, until hoist operation can be terminated and aircraft depart the area.